Building a Model Plan for Knowledge Sharing among the Library and Information Science Professionals in the Selected Public and Private University Libraries of Bangladesh: A Study

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Declaration

I declare that the thesis entitled "Building a Model Plan for Knowledge Sharing among the LIS Professionals in the Selected Public and Private University Libraries of Bangladesh: A Study" is my own work. The information used in this study from different sources has been duly acknowledged.

Examination Roll No.: 2606

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Signature of the Supervisor: _____

Dedicated to my beloved mother, father and elder sister

Acknowledgement

At first i would like to express my deepest gratitude to my respected Supervisor who guided me in the best possible manner to conduct this research. His timely and proper direction kept me in the right path in the long journey of this research. I am very much thankful to him as he praised my right approaches, constructively criticized my weak points and appreciated my arguments where they seem to be logical. I also state my heartiest appreciation to all my respected teachers of the Department of Information Science and Library Management, University of Dhaka.

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Abstract

The main purpose of the study is to formulate a model plan for KS among the LIS professionals in the selected public and private university libraries of Bangladesh. In accomplishing this purpose, the study advanced by generating three precise objectives and three research questions (RQs) on the basis of the literature reviewed. It also tested several hypotheses to find the answers to the RQs. In conducting this study; survey, quantitative, comparative and exploratory approaches were adopted. A pre-coded questionnaire was used to collect primary data from the sample drawn from the LIS professionals of the selected public and private university libraries through personal visit. The collected data were analyzed by applying frequency distribution, cross tabulation and descriptive statistical tools while the hypotheses were tested by applying Chi-square test and Mann Whitney U test based on the scale of measurement. The major findings of the study were the perceptions of the LIS professionals from the selected university libraries about the prerequisites for KS (intellectual capital, factors influencing KS, and KS skills); facilitators (KS process, KS methods, KS techniques, and KS tools) and barriers to KS; and consequences of KS (influences of KS on learning, feedback, and transferring knowledge after KS). In fact, this study proposed a model plan for KS among the LIS professionals in the selected university libraries of Bangladesh. The study has the potentiality for implementation in the practical field to introduce and/or transform the conventional and unorganized KS practices by a systematic and organized KS culture. The major limitations of the study are the selection of the university libraries situated only in Dhaka city, excluding the university library users from the population and not justifying the proposed model plan. Therefore the study suggested future research by selecting university libraries from different part of the country, including the user category in the population and attempting to justify the model plan.

Keywords: Knowledge Sharing Model; LIS professionals; University Libraries of Bangladesh.

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List of Acronyms

Acronyms	Elaboration
AUST	Ahsanullah University of Science and Technology
BALID	Bangladesh Association of Librarians, Information Scientists and Documentalists
BAS	Bangladesh Academy of Sciences
BBRI	Bangladesh Business Reference Initiative
BIPC	Bangladesh INASP-PERI Consortium
BRACU	BRAC University
BSMMU	Bangabandhu Sheikh Mujib Medical University
BUET	Bangladesh University of Engineering and Technology
BUHS	Bangladesh University of Health Sciences
BUP	Bangladesh University of Professionals
BUTex	Bangladesh University of Textiles
CAS	Current Awareness Service
CD	Compact Disc
CDROM	Compact Disc Read Only Memory
CDS/ISIS	Computerized Documentation System/Integrated Set of information System
DDC	Dewey Decimal Classification
DSE	Dhaka Stock Exchange
DU	Dhaka University
DUL	Dhaka University Library
DVD	Digital Video Disc
HEQEP	Higher Education Quality Enhancement Project
HRM	Human Resource Management
IC	Intellectual Capital
ICT	Information Communication Technology

INASP	International Network for the Availability of the Scientific Publications
ISBN	International Standard Book Number
ISSN	International Standard Serial Number
IUB	Independent University of Bangladesh
KM	Knowledge Management
KS	Knowledge Sharing
KT	Knowledge Transfer
LIS	Library and Information Science
LRKM	Library Reference Knowledge-Sharing Model
NSU	North South University
OPAC	Online Public Access Catalogue
OSS	Open Shelve System
PERI	Program for Enhancement of Research Information
PUA	Private University Act
RQ	Research Questions
SAU	Sher-e-Bangla Agricultural University
SDI	Selective Dissemination of Information
UDL	UGC Digital Library
UGC	University Grants Commission
ULAB	University of Liberal Arts Bangladesh
UNIC	United Nations Information Center
VAS	Visual Analogue Scale
WHO	World Health Organization

Chapter One:
Introduction

Chapter One

Introduction

1.1 Introduction

Libraries act as gateways for social and intellectual interactions in communities and organizations (Robertson & Reese, 1999). However, these gateways face huge challenges, as various knowledge resources are contained within them. These knowledge resources include electronic journals, online databases, professional websites and other digital resources, making it more difficult for librarians to handle the readers' problems. Librarians need a variety of information and solutions in a timely manner. Information creation was embedded in knowledge sharing; knowledge sharing was based on information creation fundamentals (Robert, 2009).

In this situation, knowledge and experience sharing between librarians becomes increasingly important and necessary. The last two decades have seen a growing importance being placed on research into the ability to create and transfer knowledge internally in the library (Seonghee & Boryung, 2008). One of the major preoccupations of knowledge sharing in past research has been investigating the nature of differentiated networks, whereby knowledge is created in various parts of the organization. The concept of knowledge sharing has been widely used in the fields of organizational development, and organizational learning seeks to overcome the practical problem of getting a packet of knowledge from one part of an organization to another (or all other) part. In particular, with the development of the web environment, knowledge sharing in libraries is becoming increasingly important. As librarians face various situations or problems every day, they need various kinds of knowledge from specific domains. Efficient knowledge sharing has been particularly influential in contributing insights into library institutions (Liu, Chang, & Hu, 2010).

1.2 Background of the study

LIS professionals have the core information management skills required to manage knowledge once it becomes explicit, that is, to identify, catalogue and maximize the visibility and availability of the products in which knowledge is stored (Webster, 2007). Traditionally, information professionals' roles were limited to the identification, acquisition and organization of explicit knowledge or information. Today, that role is being expanded to include other forms of knowledge activities - tacit and implicit knowledge in the form of skills and competencies (Hawamdeh et al, 2004). Managing the 'tacit' intuitions and 'know-how 'of organizational members or knowledge workers has become a great challenge for information professionals (Bishop, 2001; Maponya, 2004). Probst, Raub and Romhardt (2000, p.164) have pointed out that it is vital that knowledge should be shared and distributed within an organization, so that isolated information or experience can be used by the whole company. In reality, distribution and sharing knowledge is not easy task (Probst, Raub, & Romhardt, 2000). Parirokh and Fattahi (2005) reported, how sharing of knowledge among librarians can improve organizational learning in academic libraries (Parirokh & Fattahi, 2005). The librarians capture knowledge directly or indirectly from the users and then the captured knowledge is then accessed and shared by the librarians in order to be contextualized and used for enhancing existing services and developing new ones (Daneshgar & Parirokh, 2012).

During knowledge sharing and dissemination phase the created knowledge from the knowledge capture and/or creation phase is integrated, and then disseminated and shared among librarians whom might be experienced librarians and/or educated ones and other decision makers within the library. However, sometimes for understanding the users needs and being able to provide adequate services or to match services with suitable philosophies and theories it is crucial for librarians and decision makers within the library to share the knowledge which was captured from the knowledge capture and/or creation phase with some experts in LIS or other related disciplines. The underlying aims of knowledge sharing and dissemination phase are (i) satisfying immediate needs of customers, (ii) enhancing existing services, and (iii) designing new and innovative services (Parirokh, Daneshgar, & Fattahi, 2009). There is also growing acknowledgement in the literature of the need to train and motivate librarians to share

and use organizational knowledge (Shanhong, 2000; Townley, 2001) and of configuring knowledge sharing and management into the staff annual performance reviews for library staff (Wen, 2005). Arif and Alsuraihi (2012) coducted a study case study in King Abdulaziz University central library *and found that* respondents see that practicing knowledge sharing should be part of the job evaluation and saw its absence as a big challenge (Arif & Alsuraihi, 2012).

In the context of academic libraries, it can be noted that a great deal of knowledge sharing is entirely uncoordinated and any sharing of information and knowledge has been on an informal basis and usually based on conversation. Although knowledge has always been present in organizations, and to some extent shared, this has been very much on an *ad hoc* basis, until recently it was certainly not overtly managed or promoted as the key to organizational success (Webb, 1998). Jantz (2001, p.35) had pointed out that in many library settings, there is no systematic approach to organizing the knowledge of the enterprise, and making it available to other librarians and staff in order to improve the operation of the library. For academic libraries to utilize their know-how, it is necessary that they become knowledge-based organizations. Academic libraries need to prepare themselves for using and sharing knowledge. To determine if there is any practice of knowledge sharing in academic libraries, we need to ask ourselves these questions: are academic librarians encouraged to share knowledge? Are the skills and competencies in the academic library identified and shared? How is the knowledge shared? Is knowledge sharing the norm? Academic libraries as constituents of the parent university should rethink and explore ways to improve their services and become learning organizations in which to discover how to capture and share tacit and explicit knowledge within the library (Maponya, 2004).

1.3 Statement of the problem

Orientation of organizational culture towards learning and knowledge sharing will help ensure success and long-term development of organizations, including libraries and information services. The values and attitudes promoted in libraries and information services, their encouragement and development at the employee level have a major influence in supporting processes such as learning and knowledge sharing. Promoting these values which facilitate and stimulate learning and knowledge sharing among employees is very important in libraries.

Libraries and information services should encourage and support at organizational level training and development of well-knit communities that collaborate and learn. They should encourage employees to develop and express new ideas, to participate in all activities and decisions within the library. Participation and knowledge sharing contribute to the development and transformation of libraries and information services into learning and also long-term successful organizations (Madge, 2012). The expertise and know-how of organizational members should be valued and shared. However, it is important for organizations to motivate why knowledge is being shared. The importance of knowledge sharing should be based on the capability of academic librarians to identify, integrate and acquire external knowledge. This should include knowledge denoting library practices, users and operational capabilities (Maponya, 2004). Some researchers from the library profession have attempted to identify requirements by which libraries can promote knowledge sharing among librarians, their customers and suppliers in their every day activities. However, this is an emerging interest that is relatively new in this profession, and therefore approaches that deal with these issues are mainly general in nature (Parirokh, Daneshgar, & Fattahi, 2008). Therefore the present study attempted to explore the solution to the problem as to how knowledge sharing (KS) can take place among the library and information science (LIS) professionals in the selected public and private university libraries of Bangladesh.

1.4 Scope of the study

The study covers 12 university libraries; those are situated in the Dhaka city, the capital of Bangladesh which is a rising developing country in the South Asian subcontinent. Among them the number of public university library is six while the number of private university library is six as well. Moreover the study deals only with the LIS professionals of those selected university libraries. Thus, the instance i.e. university library professionals from the domain of academic library which is one of the important type of library from the three major types of libraries (i.e. public library, academic library and special library) (Dilli, 1997) is the matter of consideration for this research.

1.5 Rationale of the study

The study was carried out to demonstrate the concept of KS in front of the LIS professionals in the university libraries of Bangladesh by working on a selected set of sample university libraries. In fact the LIS professionals of the university libraries intentionally or unintentionally share knowledge among themselves when they face any problem while performing their job. But they have a lack of understanding about the precursors, mediators, constraints and outcomes of KS. As a result this study was conducted to serve the LIS professionals in the university libraries of Bangladesh with a better understanding about the concept of KS so that they can share their knowledge among themselves in a systematic manner to attain the desired outcome.

1.6 Objectives of the study

The major objective of the study is to formulate a model plan for KS among the LIS professionals in the selected public and private university libraries of Bangladesh. In order to attain this major objective, this study proceeded with the following three precise objectives:

- to examine the perception of the LIS professionals about the prerequisites for KS from the selected public and private university libraries of Bangladesh;
- to investigate their view about the facilitators and barriers to KS; and
- to assess their opinion about the consequences of KS.

1.7 Research Questions for the study

In quantitative studies, investigators use quantitative research questions and hypotheses, and sometimes objectives, to shape and specifically focus the purpose of the study. Quantitative research questions inquire about the relationships among variables that the investigator seeks to know. They are used frequently in social science research and especially in survey studies. Quantitative hypotheses, on the other hand, are predictions the researcher makes about the expected relationships among variables (Creswell, 2009).

To meet the above objectives, this study has generated the following research questions (RQs):

RQ1: Is the perception of the LIS professionals same about the prerequisites for KS from the selected public and private university libraries of Bangladesh?

RQ2: Is the view of the LIS professionals same about the facilitators and barriers to KS from the two types of university libraries?

RQ3: Is the opinion of the LIS professionals same about the consequences of KS from the selected university libraries?

1.8 Significance of the study

The main objective of the study is to formulate a model plan for KS among the LIS professionals in the selected public and private university libraries of Bangladesh. The study is significant in this aspect that it accommodates the overall process of KS into a conceptual composition by integrating the essential components. Even it investigated the perception of the LIS professionals from the selected public and private university libraries about those components to determine their level of agreement. As such it opens up the new horizon for the LIS administrators and professionals in the university libraries to rethink about their conventional KS practices. Moreover, the recommendations outlined will aid them in converting their conventional KS practices into a systematic form.

1.9 Definitions of important terms

Knowledge: When information is analyzed, processed, and placed in context, it becomes knowledge (Gandhi, 2004).

Knowledge Sharing: Knowledge-sharing means being aware of knowledge needs, constructing technical and systematic infrastructure, and making knowledge available to others who need it. Knowledge-sharing between individuals is the process by which knowledge possessed by one individual is converted into a form that can be understood and used by others (Ipe, 2003).

Prerequisites for KS: The prerequisites for KS are those objects that are identified as necessary for fostering KS practices among the employees i.e. intellectual capital in the form of knowledge, influential factors (trust, collaboration, etc.) , and skills and/or competencies etc.

Intellectual Capital: The term intellectual capital has received different interpretations (Kaufmann & Schneider, 2004) and is defined as the total of intangible/knowledge assets/resources held by an organization that are amassed over time, not included in the balance sheet and can be identified and analyzed separately.

Factors Influencing KS: These are the issues or matters that affect the quality and quantity of KS by either increasing or decreasing it. It was found that different critical success factors can aid and lead to effective knowledge sharing between individuals in an organization (Egbu, Wood, & Egbu, 2010).

KS Skills: KS skills can be defined as the ability of the employees to share knowledge with their colleagues. LIS professionals must encounter rapidly changing environments that require diverse skills, new thinking and broader perspectives and must be prepared to develop innovative ideas for the capture, process and sharing of knowledge and demonstrate good management practices if they want to remain relevant in the emerging knowledge age (Smythe, 1999).

KS Facilitators: KS facilitators can be defined as those processes, methods, techniques, and tools that facilitate fruitful KS among the employees within the organization.

KS Process: KS process is the conversion of knowledge form tacit to tacit, tacit to explicit, explicit to explicit, and explicit to tacit while employees sharing knowledge among themselves through different methods, techniques and tools. The SECI model deals with two knowledge dimensions; tacit knowledge and explicit knowledge, respectively. Knowledge that can be shared easily is referred to as explicit knowledge, while knowledge that is difficult to share is referred to as tacit knowledge (Nonaka & Takeuchi, 1995).

KS Methods: These are the different types of schemes and procedures that can be adopted for sharing knowledge based on their suitability in different contexts.

KS Techniques: KS techniques can be defined as the different types and forms of practices that are performed to share knowledge among the employees either through internal or external activities of the organization.

KS Tools: KS tools can be defined as those mediums that are basically ICT (Information and Communication Technology) based and helps the employees to share knowledge among them by resolving time, cost and distance barriers.

Barriers to KS: The barriers to KS refer to those problematic issues that create obstacles to KS practices among the employees within and/or outside the organization.

Consequences of KS: The consequences of KS can be described as the outcome or result of the KS practices in the organization which may include but not limited to effective feedback, learning, transfer of knowledge to other department or other organization.

Feedback: It refers to the expectations of the employee who once share knowledge with his/her colleague that he/she will also get similar response when needed.

Organizational Learning: At the core of organizational learning is the process of sharing information in a way that helps individuals to cooperate with each other in achieving organizational goals (Swift & Hwang, 2013). One of the earliest conceptualization of organizational learning is Huber's (1991) definition of this construct: "An organization learns if any of its units acquires knowledge that it recognizes as potentially useful to the organization" (p. 89) (Huber, 1991).

Knowledge Transfer: According to van den Hooff and De Ridder (2004), knowledge transfer involves either actively communicating to others what one knows, or actively consulting others in order to learn what they know. When organizations or employees within an organization identify knowledge that is critical to them, they can use knowledge transfer mechanisms to acquire the knowledge. They can then constantly improve it and make it available in the most effective manner for others who need it. They also can exploit it creatively or innovatively to add value as a normal part of their work (Hooff & Ridder, 2004).

1.10 Structure of the thesis

The thesis is organized into seven chapters as shown in the following figure.

Chapter One: This chapter includes the background, problem statement, scope, rationale, objectives, research questions, significance, definitions of important terms and the structure of the thesis.

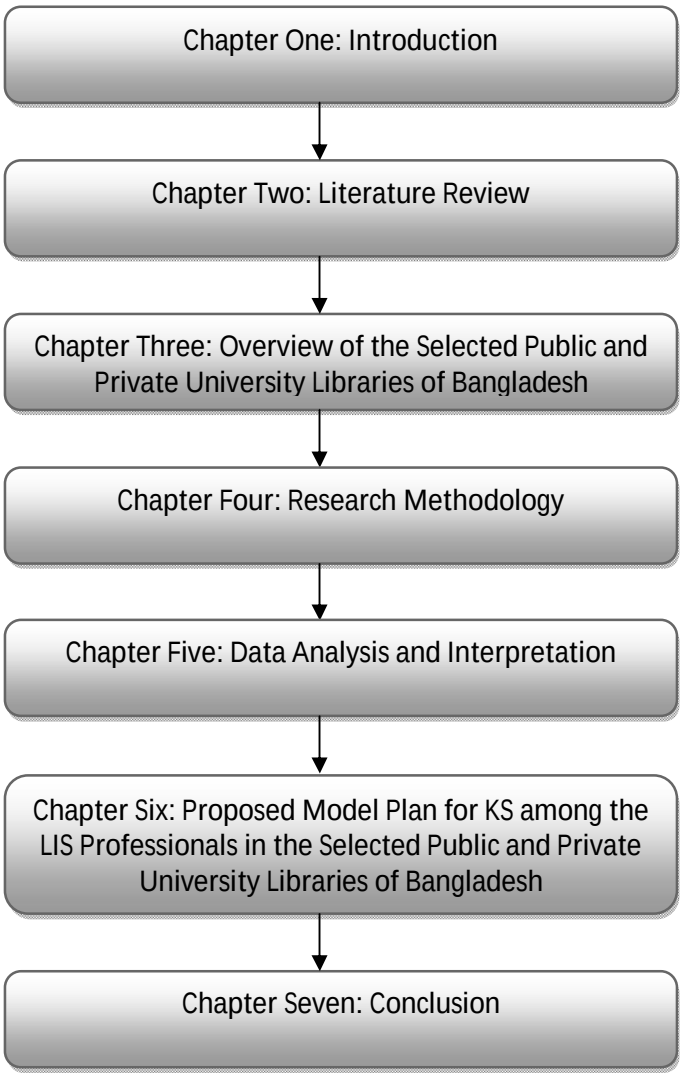


Figure-1: Structure of the thesis

Chapter Two: This chapter focuses on the extensive review of previous literatures by covering the following aspects: concept of data, information, knowledge and KS; KS among the professionals; KS among the LIS professionals; KS among the LIS professionals in university libraries; review of some KS models and finally an overview of the works conducted in Bangladesh and/or by Bangladeshi authors on KS and allied areas.

Chapter Three: This chapter represents a brief overview of the selected public and private university libraries of Bangladesh that constitutes the problem area for this study in accordance with review of some studies conducted on those university libraries.

Chapter Four: This chapter describes the methods employed in conducting this research study including determination of the problem, thorough review of relevant literature, selection of research approaches, types of data used, data collection method, technique, tool and procedure, population and sample, techniques of data analysis and interpretation of data.

Chapter Five: This chapter analyzes the data obtained from the respondents of the study and interprets them in order to comprehensively understand their view about the prerequisites for KS, facilitators and barriers to KS and consequences of KS.

Chapter Six: In this chapter emphasis is given on the proposed model plan for KS among the LIS professionals in the selected public and private university libraries of Bangladesh by discussing the background, objective, scope, and description of the diagrammatic representation of the model plan, its implications and limitations.

Chapter Seven: This is the final chapter and it intended to discuss the major findings of the study by answering the research questions, recommend some measures for the fruitful KS among the LIS professionals, and ends up with directions for practical implications and future research on the basis of the major limitations of the study.

Chapter Two:
Literature Review

Chapter Two

Literature Review

2.1 Introduction

The literature review provides a framework for establishing the importance of the study as well as a benchmark for comparing the results with other findings. It relates a study to the larger, ongoing dialogue in the literature, filling in gaps and extending prior studies (Creswell, 2009). This chapter presents the review of related literature for this study by highlighting the concepts of data, information, knowledge and KS; comparison of knowledge sharing, knowledge transfer and knowledge exchange; KS among the professionals; KS among the LIS professionals; KS among the LIS professionals in university libraries; review of KS models and overview of the works on KS and allied areas in Bangladesh and/or by Bangladeshi authors. The keywords used in searching the literature are knowledge sharing models, knowledge sharing among LIS professionals, knowledge sharing in university libraries etc. The literature was accessed from several databases as Springer, ACM Digital Library, JSTOR, Emerald, Science Direct, DOAJ, etc. through the Dhaka University Library website and also by searching through the search giant Google and Google Scholar.

2.2.1 Concept of data

Data is the plural of datum, although the singular form is rarely used. There is little disagreement as regards the definition of data. A commonly held view is that data are raw facts that have no context or meaning of their own (Abram, 1999). Typical examples of data include statistics, list of items and names and addresses (Gandhi, 2004). Data are numbers. They are numerical quantities or other attributes derived from observation, experiment, or calculation (Bergeron, 2003). Data is a number or word or letter without any context. For example, numbers like 5 or 100, without any context, are mere data. Without reference to either space or time, these numbers or data are meaningless points in space and time. The key phrase here is “out of context”. And since it is out of context then it has no meaningful relation to anything

else (Uriarte, 2008). Data refers to codes, signs and signals that do not necessarily have any significance as such (Suurla, Markkula, & Mustajarvi, 2002). It means that data are raw facts that have no context or meaning of their own. Organizations collect, summarize and analyze data to identify patterns and trends. Most of the data thus collected is associated with functional processes of the organization. On the other hand, information as a concept takes up different meanings, depending on the context in which it is discussed. Data becomes information when organized, patterned, grouped, and or categorized; thus increasing depth of meaning to the receiver (Maponya, 2004).

2.2.2 Concept of information

When data is organized in a logical, cohesive format for a specific purpose, it becomes information (Gandhi, 2004). Wiig (1999) defines information as facts and data organized to characterize a particular situation. Similarly information has been defined as data made meaningful by being put into a context (Bouthillier & Shearer, 2002). In a hierarchical view, information is data transformed by the value-adding processes of contextualization, categorization, calculation, correction and condensation (Davenport & Prusak, 1998). However, some authors believe that information itself is a kind of knowledge which they call empirical knowledge, rather than representing an intermediate stage between data and knowledge (Zins, 2007). A mere collection of data is not information. This means that if there is no relation between the pieces of data, then it is not information. What makes a collection of data information is the understanding of the relationships between the pieces of data or between the collection of data and other information. In other words, what is essential in making data or a collection of data information is the context, that is, the relation between the pieces of data (Uriarte, 2008). Drucker (1995, p. 109) defined information as data "organized for a task, directed toward specific performance, applied to a decision"; for O'Dell and Grayson (1998, p. 5) it is "patterns in the data", while Nonaka and Takeuchi (1995), as well as Galup, Dattero, and Hicks (2002), described information as data in context. Smith (2001, p. 312) combined the two latter definitions and stated that "information is data that have relevance, purpose, and context."

2.2.3 Concept of knowledge

In the hierarchical view, knowledge is the product of information. When information is analyzed, processed and placed in context, it becomes knowledge. This has been reflected in the definition of knowledge as information possessed in the mind of individuals (Alavi & Leidner, 2001). To some commentators, knowledge has more value because it is closer to action than are data and information (Cheng, 2000). Furthermore, knowledge differs from information in that it is predictive and can be used to guide action, while information merely is data in context or documentation of any pieces of knowledge (Bouthillier & Shearer, 2002). Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knower's. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms (Davenport & Prusak, 1998). Awad and Ghaziri (2004, p. 37) defined knowledge as: "a higher level of abstraction that resides in people's minds and includes perceptions, skills, training, common sense, and experience". Similarly, Liebowitz and Wilcox (1997) deemed knowledge to be the whole set of insights, experience, and procedures that are considered correct and true and that therefore guide the thoughts, behavior, and communication of people. Karl Wiig (1999), one of the most influential and most often-cited writers on KM in the business sector, defines knowledge as a set of truths and beliefs, perspectives and concepts, judgments and expectations, methodologies and know-how.

2.2.4 Data-Information-Knowledge-Wisdom (DIKW) hierarchical pyramid

Concepts of data, information, knowledge, and wisdom are the building blocks of library and information science. Discussions and definitions of these terms pervade the literature from introductory textbooks to theoretical research articles (Zins, 2007). Expressions linking some of these concepts predate the development of information science as a field of study (Sharma, 2008). But the first to put all the terms into a single formula was Russell Lincoln Ackoff, in 1989. Ackoff posited a hierarchy at the top of which lay wisdom, and below that understanding, knowledge, information, and data, in that order. Furthermore, he wrote that "each of these includes the categories that fall below it," and estimated that "on average about forty percent

of the human mind consists of data, thirty percent information, twenty percent knowledge, ten percent understanding, and virtually no wisdom" (Ackoff, 1989). This phraseology allows us to view his model as a pyramid, and indeed it has been likened to one ever since (Rowley, 2007). Data is the product of observations, and are of no value until they are processed into a usable form to become information. Information is contained in answers to questions. Knowledge, the next layer, further refines information by making "possible the transformation of information into instructions. It makes control of a system possible" (Ackoff, 1989), and that enables one to make it work efficiently. A managerial rather than scholarly perspective runs through Ackoff's entire hierarchy, so that "understanding" for him connotes an ability to assess and correct for errors, while "wisdom" means an ability to see the long-term consequences of any act and evaluate them relative to the ideal of total control (Bernstein, 2009).

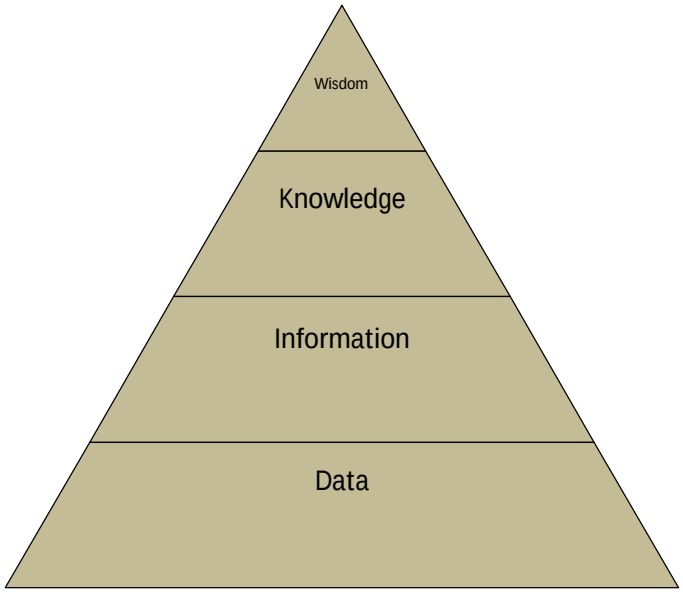


Figure-2: The DIKW hierarchy as a pyramid (Frické, 2007)

2.2.5 Conceptual progression from data to wisdom

The model depicts transitions from data to information, knowledge, and wisdom through an ascending amount of connectedness and understanding. The model asserts that data is transformed into information, then into knowledge and eventually into wisdom through the influence of understanding of relations, patterns, and principles respectively. The model

therefore suggests that understanding is the transformational relationship among data, information, knowledge, and wisdom which permits creation of an outcome of a higher level. Although this model does not address the issue of whether one can make transition in the reverse direction from wisdom to data, it adds value by providing an initial holistic perspective employing the notion of connectedness (Faucher, 2010).

According to this model, data are the most basic level and they come in the form of raw observations without meaning. Information adds context and meaning to data by analyzing relationships and connections. Once it is clear how the information can be used and it helps the owner to make decisions and act, in other words, it has become useful, it is knowledge. Using, sharing and enriching knowledge leads to wisdom, which, beyond knowledge, allows the owner to know when and why to use of his or her knowledge (Ackoff, 1989; Cleveland, 1982). Information is further processed when one finds a pattern relation existing among data and information. And when one is able to realize and understand the patterns and their implications, then this collection of data and information becomes knowledge (Uriarte, 2008).

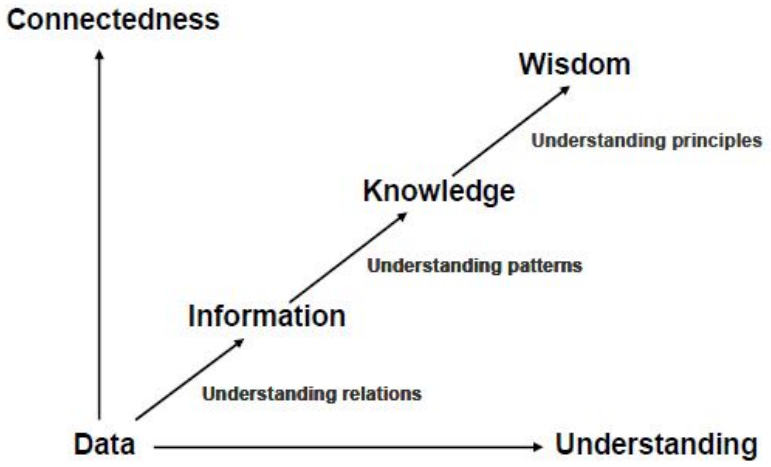


Figure-3: Conceptual progression from data to wisdom (Bellinger, Castro, & Mills, 2004)

2.2.6 Classification of knowledge

Both Polanyi (1969, p.138) and Wallace (2007, p.11) based on *epistemology*, philosophic studies on the nature of knowledge, its extent and validity, defined knowledge as "justified true belief", following the ideas of Aristotle and Plato (Wallace, 2007), that reflects the commonly shared opinion that something is true combined with explicit understanding (Suppramaniam, Arumugam, & Kim, 2012). The recognition of the different types of knowledge is necessary in revealing its potential contribution to the organization's performance and in assigning the appropriate channels to facilitate the transmission of knowledge (Pemberton & Stonehouse, 2000). Reviewing knowledge it can be seen that the classification of knowledge is diverse and it is hard to find common features. There are some exceptions, since some of the classifications consider knowledge as mainly connected to the knower, who can be an individual or a group, as something that depends upon different features, and as something that is used within the organization for some kind of purpose or to achieve something (Csepregi, 2011). The different types of knowledge are shown in tabular form in table 1 and table 2.

Table-1: Classification of knowledge by different authors before 2000

Authors	Classification of Knowledge	Meaning
(Sackmann, 1992)	Dictionary Knowledge	Commonly held descriptions used in a particular organization, "what" of situations and their content
	Directory knowledge	Commonly held practices, chains of events and their cost-and-effect relationships, "how" of things and events, their processes
	Recipe knowledge	Based on judgments, prescriptions for repair and improvement strategies, "should" and recommends of certain actions
	Axiomatic knowledge	Reasons and explanations of the final causes perceived to underlie a particular event, "why" things and event happen, why a particular problem emerged, or why people are promoted in a given organization
(Lundvall & Johnson, 1994)	Know-what	Knowledge about 'facts'
	Know-why	Knowledge of principles and laws of motion in nature, in the human mind and in the society
	Know-how	Knowledge about skills, the capability to do something
	Know-who	Information about who knows what, and who knows to do what, a mix of different kinds of skills
(Nonaka & Takeuchi, 1995)	Explicit knowledge	Knowledge that can be expressed in words and numbers and can be easily communicated and shared in the form of hard data, scientific formulae, codified procedures or universal principles
	Tacit knowledge	Knowledge that is highly personal and hard to formalize, making it difficult to communicate or to share with others; subjective insights, intuitions, and hunches fall into this category of knowledge
(Blackler, 1995)	Embrained knowledge	Depends on conceptual skills and cognitive abilities
	Embodied knowledge	Emphasizes practical thinking, action oriented
	Encultured knowledge	Emphasizes meanings, shared understanding arising from socialization and acculturation
	Embedded knowledge	Emphasizes the work of systematic routines
	Encoded knowledge	Embedded in signs and symbols
(Ruggles, 1997)	Process knowledge	How-to, compilation of all facts about a manufacturing process
	Catalog knowledge	What is, knowledge of information
	Experiential knowledge	What was, context dependent knowledge
(Probst, 1998)	Individual knowledge	Relies on creativity and systematic problem solving
	Collective knowledge	Involves the learning dynamics of teams
(Blumentritt & Johnston, 1999)	Codified knowledge	Effectively information of all kinds, facts and figures
	Common knowledge	Knowledge that is accepted as standard without being made formally codified
	Social knowledge	Knowledge of social links and shared values
	Embodied knowledge	Knowledge that is rooted in experience, background and skill of a person

Table-2: Classification of knowledge by different authors since 2000

Authors	Classification of Knowledge	Meaning
(Long & Fahey, 2000)	Human knowledge	What individuals know or know how to do something
	Structural knowledge	Embedded in the systems, processes, tools and routines of an organization
	Social knowledge	Largely tacit, shared by the member of the group, developed as the result of working together
(Sanchez, 2001)	Theoretical knowledge	A bunch of ideas that might not have any correlation towards management or business development
	Practical knowledge	More action-oriented and emerges more from past experience, such as know-how
(Becerra-Fernandez, Gonzalez, & Sabherwal, 2004)	General knowledge	Held by a large number of individuals, can easily be transferred across individuals
	Specific knowledge	Possessed by a very limited number of individuals, not easily transferred
(Christensen, 2007)	Professional knowledge	Is created and shared within communities-of-practices either inside or across organizational barriers
	Coordination knowledge	Makes each employee knowledgeable of how and when he is supposed to apply knowledge
	Object-based knowledge	Knowledge about an object that passes along the organization's production-line
	Know-who	Knowledge about who knows what, or who is supposed to perform activities that influence other's organizational activities
(Wallace, 2007)	Practical knowledge	Useful in work, decision making, and actions
	Intellectual knowledge	Satisfying intellectual curiosity, regarded as part of liberal education, humanistic and scientific learning, general culture
	Small-talk and pastime knowledge	Satisfying nonintellectual curiosity, or desire for light entertainment and emotional stimulation
	Spiritual knowledge	Related to religious knowledge
	Unwanted knowledge	Outside of interest, usually accidentally acquired, aimlessly retained
(Zhang, Li, Chen, Song, Wang, & Shi, 2008)	Individual knowledge	Related to the process, that is the elementary cell for knowledge creation, storage and use
	Team knowledge	The accumulated knowledge capital of the team is more than the sum of knowledge of each member, creates a valuable result
	Organization knowledge	To form a complete organization it possesses own unique structure, function partition and procedure

2.2.7 Emergence of KS concept

Knowledge, its definition, source and method in which it is acquired has been discussed (at least) since the time of the philosophical debates by Aristotle and Plato. We would, therefore, propose that the initial emergence of the term comes from these discussions and that the suggestion on how to deal with efficient and effective knowledge sharing has been ongoing to a varying degree of intensity since then. The reemergence of the terms can be traced to two different streams of research (Paulin & Suneson, 2012).

The first can be found in product innovation and technology transfer literature in which the relationship and communication between units have been studied (Allen, 1977; Clark & Fujimoto, 1991). The second stream is based on the writings of Michael Polanyi and the terms tacit and explicit knowledge. In an influential Harvard Business Review article, Ikujiro Nonaka touches on the issues of knowledge sharing, even though he does not mention them explicitly. He writes "Explicit knowledge is formal and systematic. For this reason, it can be easily communicated and shared" (Nonaka, 1991). Later in the same article, he said, "This helps create a common cognitive ground" among employees and thus facilitates the transfer of tacit knowledge" (Nonaka, 1991).

These two streams have, to some extent, merged after Nonaka's original article. Since that article and later articles and books by him (Nonaka & Takeuchi, 1995), in which they said that "knowledge sharing is a critical stage in knowledge transfer and have had a strong impact on the research community"; we regard this as the starting point for the reemergence of knowledge transfer and knowledge sharing as we know them today. Since then, the terms have developed gradually and extensively. Initially, the terms were used interchangeably (Badaracco, 1991; Hansen, 1999) but lately there has been an ongoing separation between them, which we will demonstrate in the following sections.

2.2.8 Development of KS concept

In the early work presented after Nonaka's Harvard Business Review article, 'Knowledge Transfer' and 'Knowledge Sharing' is used interchangeably with predominance towards 'Knowledge Transfer'. One author that adopts the term 'Knowledge Sharing' is (Appleyard, 1996). Here, she includes both comparisons on the industry level of interaction (by comparing

knowledge sharing in the semiconductor industry with knowledge sharing in the steel industry) and on a national level (Japan is compared to the US) using individual respondents. Other researchers in the same stream are (Dyer & Nobeoka, 2000). Their findings include the statement that Toyota's relative productivity advantages are explained in part by their ability to create and sustain network-level knowledge sharing processes.

Other perspectives that are strong in the KS stream of research are the psychological and the sociological. Cabrera and Cabrera (2002), for example, include the psychological notion of social dilemmas when analyzing the inclination of individuals to share knowledge with other individuals regardless of the fact that the company that they work for has invested in specific technology to enable such knowledge sharing (Cabrera & Cabrera, 2002).

Fernie et al. (2003) has a strong focus on personal knowledge. They argue that knowledge is highly individualistic and that it is embedded in specific social contexts. This article is a good example of the direction within knowledge sharing that is focused on the individual level – context-specific subjective knowledge (Fernie, Green, Weller, & Newcombe, 2003). Another example of this stream is when knowledge sharing between individuals in organizations is examined. Here, four major factors that influence KS are identified: 1) The nature of knowledge, 2) The motivation to share, 3) The opportunities to share and 4) The culture and the work environment (Ipe, 2003).

In a recently published article, an in-depth review of articles on individual-level knowledge sharing is presented (S.Wang & Noe, 2010). They state that their article is the first to systematically review individual knowledge sharing and previous reviews have focused on technological issues of knowledge sharing or knowledge transfer across units or organizations, or within inter-organizational networks.

2.2.9 Concept of KS

Davenport and Prusak, two of the outstanding writers in knowledge management (KM), suggest the global competitiveness among other factors has stimulated the need for sharing. Davenport and Prusak, as cited by (Kimiz, 2005, p.2) suggest that multiple factors have led to the current "knowledge boom" the perception and the reality of a new global competitiveness is one of the driving forces therefore, the only sustainable advance a firm has, comes from what it

collectively knows, how efficiently it uses what it knows and how quickly it acquires and uses new knowledge. This has led to a strong need for a deliberate and systematic approach for cultivating and sharing an organization's knowledge base, (Davenport, 2000). Knowledge sharing is a two-way process (giving and receiving knowledge) between knowledge giver(s) and knowledge receiver(s) who as participants of knowledge sharing exchange the knowledge found in their minds or the knowledge found in electronic or paper documents and knowledge sharing can occur at the same time when the participants are present or at different times when they make their knowledge explicit (Csepregi, 2011). The approach of Bartol and Srivastava (2000), refers to information as an element of knowledge sharing and defines it as the action in which relevant information are diffused by employees to others across organization. Moller and Svahn (2004:220) emphasize that knowledge sharing is "sharing not only codified information, such as production and product specifications, delivery and logistic information, but also management beliefs, images, experiences, and contextualize practices such as business-process development." Ipe (2003) believes that the sharing of knowledge between individuals is a process by which knowledge is transformed into a form that could be understood, absorbed and used by other individuals. From another point of view the sharing of knowledge is referred to as the provision of know-how and task information in order to help others and foster the collaboration with others in order to develop new ideas, to solve problems, or to implement procedures or policies (Cummings, 2004; Pulakos et al, 2003). Further, the sharing of knowledge can take place through not only written correspondence or face-to-face communication, but also through networking with others, or capturing, documenting or organizing knowledge for others (Cummings, 2004; Pulakos et al, 2003).

2.2.10 Classifying KS

Kocsis (2004) differentiates two basic models of knowledge sharing depending on the activity of the individual taking part in the transaction. In the "two-way knowledge sharing" model both participant share their knowledge with the other, thus play an active role in the knowledge sharing process. While in the "one-way knowledge sharing" model only one of the participants plays an active part in the process which means that one of the party transmits the knowledge while the other receives it (Kocsis, 2004).

According to Li (2008) knowledge sharing can be broken into the following activities:

- Knowledge Contributing: sharing materials, answering questions, making recommendations;
- Knowledge Consuming: browsing, searching.

Formal and informal knowledge sharing as a continuum with two extrimities is determined by Taminiau et al. (2009) in their research when describing the concept of knowledge sharing. Formal sharing of knowledge contains all those knowledge sharing forms which are institutionalized by the management. Examples of these forms are activities, resources, services that are designed by the organization and are organized to help the sharing of knowledge and the learning from each other (Taminiau, Smit, & Lange, 2009). Other examples are meetings and organized brainstorming sessions (Taminiau, Smit, & Lange, 2009). In connection with informal knowledge sharing informal networks and informal communication is also mentioned (Awazu, 2004; Bresnen, Edelman, Newell, Scarbrough, & Swan, 2003). Informal knowledge sharing is determined as forms that exists alongside all the institutionalized forms and examples are activities, resources and services that are used, but not necessarily designed, to enhance knowledge exchange (Taminiau, Smit, & Lange, 2009).

Knowledge sharing is realized by De Vries et al. (2006) in terms of knowledge sharing behaviors and knowledge sharing attitudes (Vries, Hooff, & Ridder, 2006). Following Van den Hoff's and De Ridder's (2004) idea De Vries et al. (2006) groupes knowledge sharing behaviours into knowledge donating in which one individual's personal intellectual capital is communicated to others, and into knowledge collecting, where people are consulting with each other to enable them to share their intellectual capital. Regarding knowledge sharing attitudes a distinction is made between willingness and eagerness to share knowledge through which it is possible to explain the results of a field experiment that considers the relationship between knowledge sharing and group norms (Hoff & Ridder, 2004). Willingness is characterized by "the extent to which an individual is prepared to grant other group members access to his or her individual intellectual capital" while egarness can be refer to as "the extent to which an individual has a strong internal drive to communicate his or her individual intellectual capital to other group members (Vries, Hooff, & Ridder, 2006).

Depending on prior solicitation the study of Teng and Song (2011) differentiates between two forms of knowledge sharing the are solicited and voluntary knowledge sharing. Thus "the sending and receiving of requests for knowledge, as well as the subsequent fulfillment of these requests" is called solicited knowledge sharing while "the sending and receiving of knowledge without any prior solicitation" is referred to as voluntary knowledge sharing (Teng & Song, 2011). Comparing the two types, voluntary sharing behavior is considered by Teng and Song (2011) to be a richer and also a more proactive knowledge sharing form, which is facilitated more by culturally ingrained conditions.

Similar classification of knowledge sharing was determined by Vazsonyi (2003) as well, who determined two types organizational knowledge sharing which contains spontaneous and forced knowledge sharing. Spontaneous sharing of knowledge has the following features (Vazsonyi, 2003):

- The knowledge sharing process occurs without any outside force;
- High level of knowledge approach is required by employees of the organization, which is based on a supporting organizational culture;
- Knowledge is shared voluntarily with organizational employees and with the organization.

On the other hand motivational incentives or administrational rules are used during forced knowledge sharing to trigger the employees into sharing information and knowledge that otherwise would not be shared voluntarily (Vazsonyi, 2003). In connection with motivating knowledge sharing Afiouni (2007) emphasizes the importance of sharing knowledge voluntarily and taking an active role in the knowledge sharing process since the success of knowledge sharing initiatives highly depend on these factors (Afiouni, 2007). Regarding forced knowledge sharing Vazsonyi (2003) makes a distinction between forced knowledge sharing based on reward and based on sanction. The forced knowledge sharing based on reward is considered as the more moderate technique between the two parties, since the sharing of knowledge is rewarded, and avoiding the sharing of the desired knowledge does not result in any negative consequence (Vazsonyi, 2003). When the forced knowledge sharing is based on sanction, the management of the organization makes the sharing of knowledge compulsory and sanctions

are used when the employee do not share their knowledge as it is expected. Thus this regarded to be more rigorous (Vazsonyi, 2003).

Table 3 summarises the different classifications of knowledge sharing that have been discussed above.

Table-3: Classification of KS

Authors	Classification of Knowledge Sharing	
(Kocsis, 2004)	One-way knowledge sharing	
	Two-way knowledge sharing	
(Li, 2008)	Knowledge contribution	
	Knowledge consuming	
(Taminiau, Smit, & Lange, 2009)	Formal knowledge sharing	
	Informal knowledge sharing	
(Vries, Hooff, & Ridder, 2006)	Knowledge sharing behaviors	➢ Knowledge donating ➢ Knowledge collecting
	Knowledge sharing attitudes	➢ Willingness ➢ Eagerness
(Teng & Song, 2011)	Solicited knowledge sharing	
	Voluntary knowledge sharing	
(Vazsonyi, 2003)	Spontaneous knowledge sharing	
	Forced knowledge sharing	

2.2.11 Comparison among knowledge sharing, knowledge transfer (KT) and knowledge exchange

Knowledge exchange is defined by Boyd et al. (2007) as a process during which knowledge is imparted for something in return. Knowledge transfer according to Boyd et al. (2007) applies existing knowledge from one context to another while knowledge sharing discloses existing knowledge to others through which new knowledge is created. Furthermore Boyd et al. (2007) view knowledge transfer as an involuntary and voluntary process depending on the context, while only voluntary regarding knowledge sharing and only involuntary during knowledge

exchange. Investigating these processes from the point of view of reciprocity it can be seen that only knowledge transfer is non-reciprocal while the processes of knowledge sharing and knowledge exchange are reciprocal. Table 4 contains a comparison of knowledge share, knowledge transfer and knowledge exchange (Boyd, Ragsdell, & Oppenheim, 2007).

Table-4: Comparison of knowledge share, knowledge transfer and knowledge exchange

Features	Knowledge Share	Knowledge Transfer	Knowledge Exchange
Definition	Disclosure of existing knowledge to others-thus creating new knowledge	Applying existing knowledge from one context to another	Imparting of knowledge for something in return
Being voluntary/involuntary	Voluntary	Involuntary/voluntary	Involuntary
Being reciprocal/non-reciprocal	Reciprocal	Non-reciprocal	Reciprocal
Via	Social interaction	Training/Social interaction	Contract

The exchange of knowledge can also be identified as consisting of both knowledge sharing and knowledge seeking. Knowledge sharing here is similar to the process when employees provide knowledge to others, while the process when employees search for knowledge from others is considered to be similar to knowledge seeking (Wang & Noe, 2010). Knowledge exchange can also be viewed as a transaction in which both participants have to transmit knowledge vice-versa (Kocsis, 2004). Finally, Al-Adaileh and Al-Atawi (2011:213) consider knowledge exchange as "the translation or transferring of knowledge among people within a certain context as a part of their interaction" (Al-Adaileh & Al-Atawi, 2011).

The transfer of knowledge can also have another approach. It can contain both the sharing of the source's knowledge and also the acquisition and application of the recipient's knowledge (Wang & Noe, 2010). It is usually used to describe how knowledge moves between different organizations, divisions, units, but not between individuals (Szulanski, Cappetta, & Jensen, 2004).

Knowledge transfer and knowledge sharing, “are often mixed up and replaced as substitutes, designating the process of knowledge exchange between actors and across organizational units and boundaries” (Antonova, Csepregi, & Marchev, 2010). Mohannak (2007:39) claims that while knowledge transfer is “largely a one-way process”, knowledge sharing is more optimal because it “focuses on a two-way process, in which each partner has access to skills and competencies of their partners and suggests an equally beneficial flow of information” (Mohannak, 2007). From other points of views the concept of knowledge sharing is rather used in organizational and social research, and highlights the role of individual and organizational factors for knowledge sharing (Hendriks, 1999; Lin, 2007). While the term knowledge transfer is applied rather on an abstract level, and studies the transfer process, media and information and communication technologies implementation ” (Antonova, Csepregi, & Marchev, 2010).

Knowledge sharing represents the key knowledge management processes in organizations and is fundamental for generating new ideas and developing new business opportunities (Lin, 2007). Huysman and de Wit (2002:23) also stress the significance of knowledge sharing while determining knowledge management, which according to them is nothing other than knowledge sharing (Huysman & Wit, 2002). Gero (2000) emphasizes the significance of knowledge sharing besides other activities by mentioning that nowadays one of the biggest challenges includes the mapping, using and also the sharing of available knowledge (Gero, 2000). Other important features are that knowledge sharing contributes to higher performance, increases the knowledge of organizations, enhances innovation, and the ability with which it is possible to respond to internal and external challenges (Antonova, Csepregi, & Marchev, 2010).

The reason why knowledge sharing within an organization is so important is defined by Dunford (2000:296) as follows: “much of the key knowledge is held by individuals unless there is some structure to retain it within the organizational memory” (Dunford, 2000). However, as a social behavior this knowledge sharing, “is inevitably susceptible to social influences arising from other people” (Xue, Bradley, & Liang, 2011). Furthermore Swift et al. (2010) claim that the value of costs and benefits of knowledge sharing is valued by individuals differently, since it depends on their goal orientation which forms the types of knowledge they want to share and their partners to share it with (Swift, Balkin, & Matusik, 2010). Finally, the goal of knowledge

sharing according to Christensen (2007:37) , "can either be to create new knowledge by differenty combining existing knowledge or to become better at exploiting existing knowledge (Christensen, 2007).

2.3.1 KS among professionals

Knowledge sharing is an important part of building knowledge-based competitive advantage (Argote & Ingram, 2000; Cohen & Levinthal, 1990; Kogut & Zander, 1992). Knowledge sharing can be studied and managed at organizational, group, and individual levels of analysis (Jackson, Chuang, Harden, & Jiang, 2006).There were old theories that linked knowledge sharing to communication theory where the sharing of knowledge was seen as a form of information exchange between individuals in organizations (Shannon and Weaver, 1949, as cited in Cummings, 2003). Knowledge sharing often involves mutual exchanges among individuals, including sending and receiving knowledge. It is a relational act based on a sender-receiver relationship that incorporates communicating one's knowledge to others as well as receiving others' knowledge (Hooff & de Leeuw van Weenen, 2004). Knowledge, however, is often highly personal, not easily expressed, and thus difficult to share with others (Kogut & Zander, 1992; Szulanski, 1996). The knowledge sharing perspective of Hendriks (1999) assumes a relation between a party that possesses knowledge and another party that acquires the knowledge. The party who possesses the knowledge according to Hendriks (1999) should communicate it willingly and consciously or not and in other ways. The party acquiring the knowledge should be able to perceive the expressions of the knowledge and understand it (Hendriks, 1999).

Bhatt (2002) narrows down the role of actors taking part in the knowledge sharing process by stating that the kind of knowledge shared and the way it is shared are determined by the professionals and not by the management. The sharing of knowledge is described by him as a choice that is used and selected differently by different professionals (Bhatt, 2002). On the other hand, as Fenyvesi (2010) sees it when investigating the motivators of knowledge sharing based on game theory, it is the management's responsibility to understand the causes of knowledge sharing (Fenyvesi, 2010):

- Why certain employees are open to share their knowledge with others, while other employees are not?

- What effects employees' behavior of cooperating one time and competing in the other?

The sharing of knowledge is considered to be effective according to Bosua and Scheepers (2007) when knowledge is shared within a minimum cost of time, effort or expense (Bosua & Scheepers, 2007). According to Smith (2005) the success or failure of any knowledge sharing activity depends on two things: how individuals and/or groups feel about the process, and how these individuals and/or groups feel about the network of people with whom they are socializing during the knowledge sharing process (Smith, 2005). Erikkson and Dickson (2000) also emphasize the significance of processes, and claim that different knowledge sharing process can result in difference in work performance (Erikkson & Dickson, 2000). Regarding the relationship of knowledge sharing and work performance Kang et al. (2008) revealed the significant mediative role of mutual trust between these features (Kang, Kim, & Chang, 2008). As Bogel (2005) puts it one of the biggest problems regarding knowledge sharing is that people consider the situation when knowledge could be shared as a resource of power (Bogel, 2005), and during which their special position, monopoly and credibility could be lost if their knowledge is shared (Azudin, Ismail, & Taherali, 2009). Further more due to being afraid of losing their indispensable position in their organization they usually make an attempt to avoid situations that may affect their knowledge sharing behavior (Noszkay, 2008).

On the other hand, from the point of view of Bratianu and Orzea (2010) if all employees apply and work with the knowledge that is received by them then it will be useful to involve the entire organization into the knowledge sharing process (Bratianu & Orzea, 2010). Since "employees are becoming valuable production factors instead of being only a uniform working mass of little value" (Boda & Lorincz, 2009), the sharing of knowledge can be accomplished easier. According to Gaal et al. (2008) knowledge sharing will become realistic within an organization if employees who work there understand that sharing can support them in retaining their jobs, doing their jobs more effectively and helping their personal development (Gaal, Szabo, Obermayer-Kovacs, Kovacs, & Csepregi, 2011). Furthermore Szabo et al (2009) stress that the future and business success of organizations significantly also depend upon the way their shared knowledge is utilized (Szabo, Overmayer-Kovacs, & Csepregi, 2009). Regarding

projects Adenfelt (2010) also highlights that the level of shared knowledge that exist among project members has an effect on the success of knowledge sharing (Adenfelt, 2010).

Knowledge sharing requires the dissemination of individual employees' work-related experiences and collaboration between and among individuals and subsystems within the organization (Kim & Lee, 2006). Robertson (2004) pointed out that although knowledge sharing is a desirable goal, for many organizations, however, in practice it is difficult to achieve. He explains that employees are reluctant to share knowledge but are willing to do work activities that are required in their jobs. He added that knowledge sharing in their terms is "updating client details, discussing project schedules, and completing given assignments" (Robertson, 2004). In today's business environment, change is constant and multidimensional. New competitors, new potential customers, advanced new technology, and intense global competition alter or completely modify most industries in unexpected manners. To prosper, organizations should use this turbulent environment as an opportunity rather than a threat. Organizations need to adapt quickly to new conditions. Knowledge sharing is considered an important factor related to the ability of both employees and organizations to respond quickly to a changing business environment (Almahamid & McAdams, 2010). Knowledge resides within individuals, especially, within knowledge workers, namely, employees who create, collect, access, and apply knowledge in carrying out their tasks. Consequently, individuals' knowledge does not transform easily into organizational knowledge, and ultimately the transfer of knowledge across individual and organizational boundaries dependents on employees' knowledge-sharing behaviors (Mongkolajala, Panichpathom, & Ngarmyarn, 2012). Knowledge sharing supports the labor force in becoming fully aware to their new jobs and responsibilities as well as carrying out particular credit in the unit (Kathiravelu, Mansor, & Kenny, 2013).

2.3.2 KS among LIS professionals

Jantz (2001, p.35) had pointed out that in many library settings, there is no systematic approach to organizing the knowledge of the enterprise, and making it available to other librarians and staff in order to improve the operation of the library (Jantz, 2001). Motivating library staff to share their knowledge is perceived to be another challenge in KM implementation in the library. Human resource managers should find ways to increase librarians' willingness for

knowledge sharing (Sarrafzadeh, 2005). Orientation of organizational culture towards learning and knowledge sharing will help ensure success and long-term development of organizations, including libraries and information services (Madge, 2012). Wen (2005) suggests knowledge sharing/management should be configured into the staff annual performance review or the librarian's portfolio for tenure or promotion (Wen, 2005). According to Yaacob et al. (2010), middle and top managers of the large libraries of Malaysia perceive that inadequacy in leadership and IT skills is the most deficient area in Malaysian librarians which influence the organization's knowledge sharing efforts in a positive way (Yaacob, Jamaluddin, & Jusoff, 2010).

Libraries act as gateways for social and intellectual interactions in communities and organizations (Robertson and Reese, 1999). However, these gateways face huge challenges, as various knowledge resources are contained within them. These knowledge resources include electronic journals, online databases, professional websites and other digital resources, making it more difficult for librarians to handle the readers' problems. Librarians need a variety of information and solutions in a timely manner. Information creation was embedded in knowledge sharing; knowledge sharing was based on information creation fundamentals (Robert, 2009). In this situation, knowledge and experience sharing between librarians becomes increasingly important and necessary. In particular, with the development of the web environment, knowledge sharing in libraries is becoming increasingly important. As librarians face various situations or problems every day, they need various kinds of knowledge from specific domains. Efficient knowledge sharing has been particularly influential in contributing insights into library institutions. However, knowledge sharing in libraries remains a neglected research area (Liu, Chang, & Hu, 2010).

2.3.3 KS among LIS professionals in university libraries

Academic libraries as constituents of the parent university should rethink and explore ways to improve their services and become learning organizations in which to discover how to capture and share tacit and explicit knowledge within the library (Maponya, 2004). The changing role of academic librarians as knowledge managers emphasizes the need to constantly update or acquire new skills and knowledge to remain relevant to the today's library environment.

Academic libraries may need to restructure their functions, expand their roles and responsibilities to effectively contribute and meet the needs of a large and diverse university community (Gurteen, 1999; Hansen, Mors, & Lovas, 2005). According to Gurteen (1999), it is also fundamental about sharing knowledge and putting that knowledge to use. Thus, to create a knowledge sharing culture it needs to encourage people to collaborate and work together more effectively, to collaborate and to share ultimately to make organizational knowledge more productive (Heiman & Nickerson, 2004). In the context of academic libraries, it can be noted that a great deal of knowledge sharing is entirely uncoordinated and any sharing of information and knowledge has been on an informal basis and usually based on conversation. Although knowledge has always been present in organizations, and to some extent shared, this has been very much on an *ad hoc* basis, until recently it was certainly not overtly managed or promoted as the key to organizational success (Webb, 1998). For academic libraries to utilize their know-how, it is necessary that they become knowledge-based organizations. Academic libraries need to prepare themselves for using and sharing knowledge (Maponya, 2004). Anna and Puspitasari (2013) conduct a study on knowledge sharing strategy in Indonesian university libraries and revealed that knowledge sharing has not been formally adopted by many libraries. But in the process of implementation of knowledge sharing, it is visible from the strategy that only focuses on the implementation of knowledge sharing (face to face meeting) or just to share the results of the seminar / training without considering knowledge sharing as a complex process for knowledge creation. While the long term and the most important goal in knowledge sharing which is the creation of new knowledge and innovation has not been so visible (Anna & Puspitasari, 2013).

Shanhong (2000) described how libraries can manage the creation and sharing of knowledge among their staff. She proposed that libraries should create and develop their own ‘‘document information resources’’. She also emphasizes that, in sharing of knowledge, libraries should make comprehensive utilization of expert systems and all media (Shanhong, 2000). Some researchers from the library profession have attempted to identify requirements by which libraries can promote knowledge sharing among librarians, their customers and suppliers in their every day activities. However, this is an emerging interest that is relatively new in this

profession, and therefore approaches that deal with these issues are mainly general in nature (Parirokh, Daneshgar, & Fattahi, 2008). The global economic and information age urges libraries to adopt knowledge sharing in order to enhance knowledge creation. Library is the same as other organizations, through knowledge sharing, it can accelerate the process of knowledge creation and reuse of knowledge, so the library services and products are constantly evolving (Anna & Puspitasari, 2013). Pan and Scarbrough (1999) have points out that knowledge sharing activities are the most difficult aspect to achieve. In this point of views, Librarians are used to sharing information to their respective communities. They are competent in disseminating of information, especially in terms of reprocessing materials and minimizing information overload of their clients (Pan & Scarbrough, 1999). Due to information and knowledge explosion knowledge is decaying faster than ever before. It is indeed important to practice KM to deal with the rapid knowledge decay to serve the users with the right knowledge at the right time and avoid sifting through decayed and obsolete knowledge. This requires academic librarians to renovate the existing library environment and promote a knowledge-sharing culture by initiating communities of practice, management of best practices, change management, organizational learning, and use of appropriate knowledge-sharing technologies (Roknuzzaman & Umemoto, 2009). Academic librarians have to share knowledge with their students, teaching staff and other stakeholders. However, a knowledge sharing culture is more conducive to knowledge creation and enhanced performance and reduces duplication of efforts. A knowledge sharing culture involves both organization and library staff. Organizations need to put in place appropriate incentives and training plans in order to motivate library staff for knowledge sharing and individual staff need change of mindsets to appreciate the benefits of knowledge sharing (Jain P. , 2012). Academic librarians are involved in constant interactions with information sources and with their colleagues for acquiring knowledge, and they believes in knowledge sharing as a source of information and this results in accumulation of a vast amount of knowledge and experience (Arif & Alsuraihi, 2012). Academic librarians have a stimulating and exciting journey ahead of them as they face the constant changes and developments that characterize the new economy. With these changes, academic librarians will have to reinvent themselves through continuous learning to take on new, expanded, and

challenging roles. Knowledge sharing and leveraging their collective knowledge will help them continue to demonstrate their value adding capabilities to the university and all its users (Foo, Chaudhry, Majid, & Logan, 2002).

2.4 Review of KS models

2.4.1 Organizational knowledge capabilities and KS

Yang and Chen (2007) have created a model that supposes that organizational knowledge capabilities have effect on the knowledge sharing behavior within an organization. Organizational knowledge capabilities in the model of Yang and Chen (2007) contain cultural, structural, human, and technical knowledge capabilities and emphasize the ability with which the deployment and mobilization of knowledge resources could be more effective. Each organizational knowledge capability was also supported by knowledge resources. The results of Yang and Chen's (2007) study showed that organizational knowledge capabilities as a whole are significantly and positively related with knowledge sharing behavior within an organization (Yang & Chen, 2007).

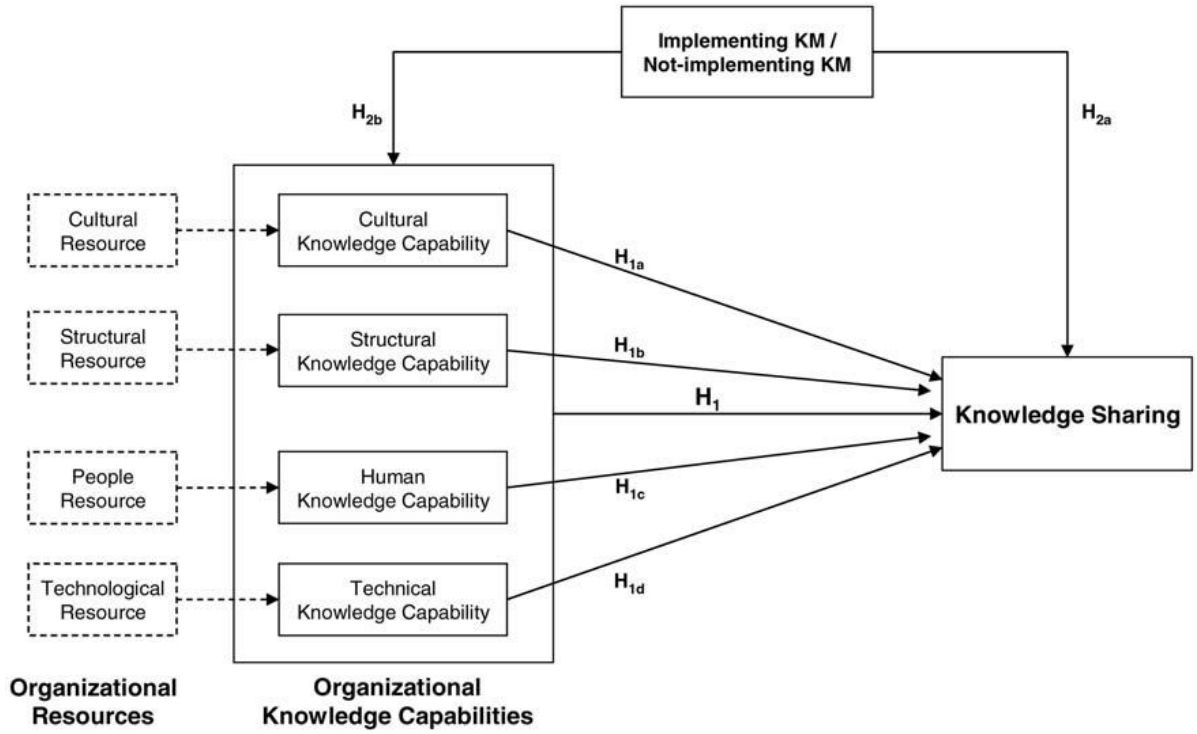


Figure-4: A Framework Linking organizational knowledge capabilities to KS (Yang & Chen, 2007)

2.4.2 Factors influencing employee KS capabilities

The study by Kim and Lee (2006) on "The Impact of Organizational Context and Information Technology on Employee Knowledge Sharing Capabilities" in five public and five private sectors in South Korea is noted as the pioneer study on Knowledge Sharing Capability. The impact study was only on the organizational factors (organizational culture and organizational structure) and information technology (IT) factor, but lack on the individual factor (Kim & Lee, 2006).

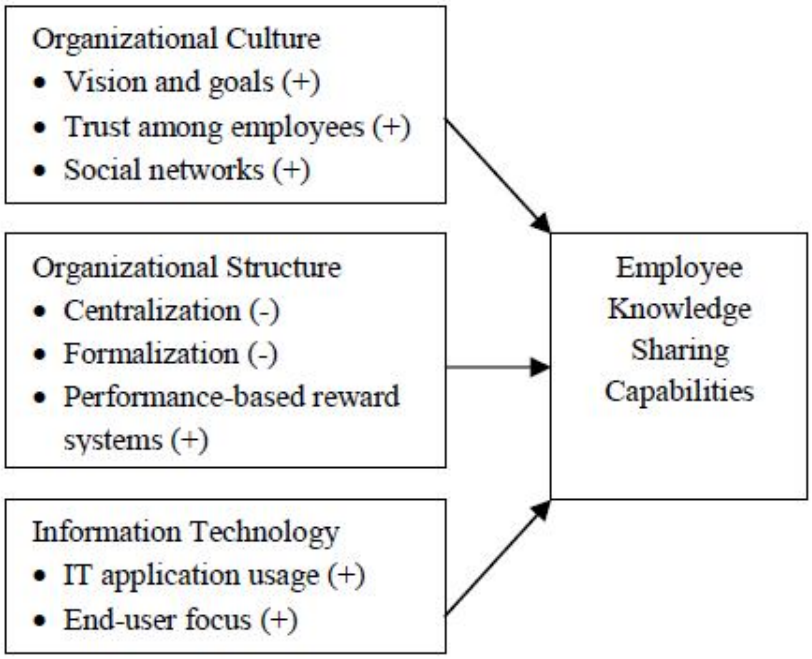
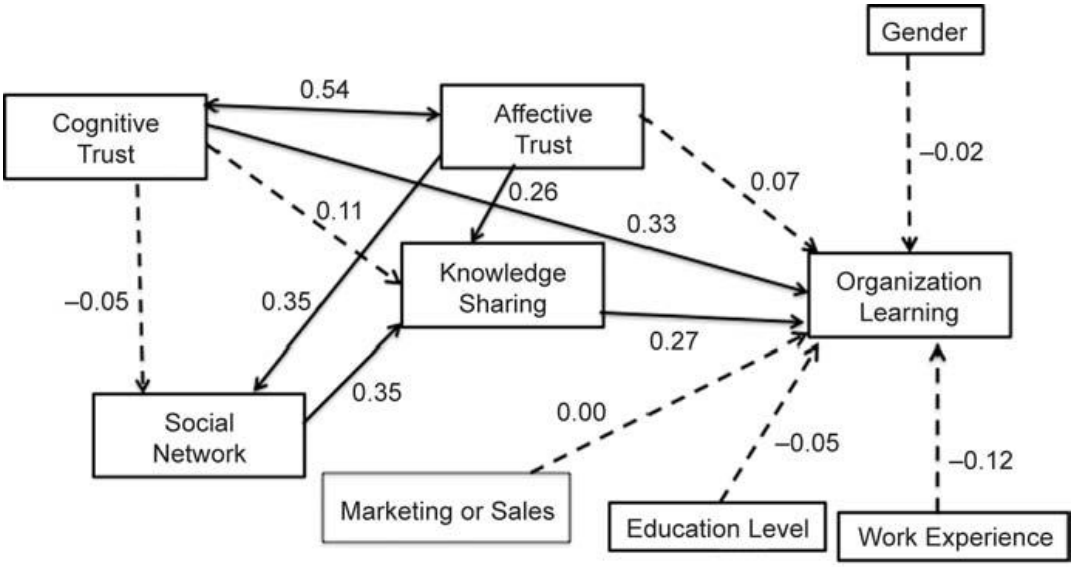


Figure-5: Factors influencing employee KS capabilities (Kim & Lee, 2006)

2.4.3 Relationship between KS and organizational learning

Swift and Hwang (2013) in their study examined the relationship between knowledge sharing and organizational learning along with the variables affective trust, cognitive trust, social network, education level, work experience, gender, marketing or sales to test their relationship with knowledge sharing and organizational learning and also the interrelationship among them. The results of the study found that knowledge sharing was positively correlated with organizational learning (Swift & Hwang, 2013).



Notes: CFI = 0.846; RMSEA = 0.092; χ^2 (23 d.f.) = 53.219 (p = 0.000). All continuous arrows represent relationships that are significant at $p < 0.05$. Dotted arrows are relationships that were tested but which were not significant

Figure-6: Rlelationship between KS and organizational learning (Swift & Hwang, 2013)

2.4.4 KS model based on KS approaches

Zin (2013) in his study proposed a knowledge sharing model that comprises of the enablers/input (key factors that impact the successful implementation of knowledge sharing), the process (knowledge-sharing approaches), and the outcomes (organizational performance). It is a pragmatic model for the study of knowledge-sharing approaches. In summary, the proposed research model illustrates the relationship among 39 variables. An understanding of these factors and how they interact in complex ways to improve knowledge-sharing approaches in organization is important for improve organizational performance (ZIN, 2013).

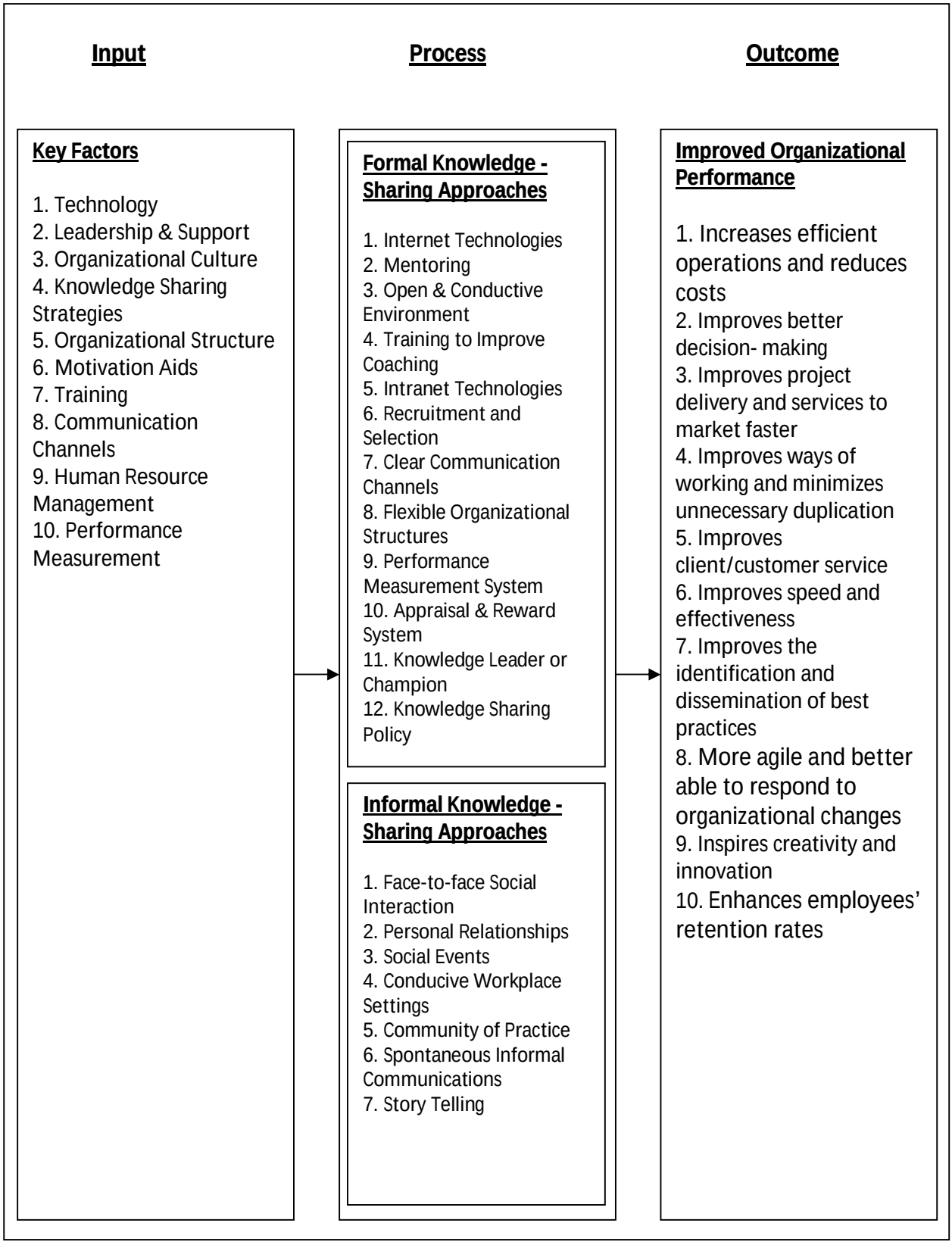


Figure-7: KS model based on KS approaches (ZIN, 2013)

2.4.5 Library Reference KS Model (LRKM)

Based on the importance of knowledge sharing in today's university libraries, Parirokh, Daneshgar, & Fattahi (2007) presents a modified version of an existing conceptual knowledge-sharing model called library reference knowledge-sharing model (LRKM) that was originally designed for generic collaborative business processes (Daneshgar, 2004), which was modified for library-specific collaborative processes. The major goal of the LRKM is to identify knowledge-sharing requirements of librarians when working collaboratively within the reference and information services (RIS) process in university libraries.

The LRKM model of Figure 8 is a connected graph that shows a knowledge map of the context of collaboration in today's typical western university libraries. It consists of a set of collaborative semantic concepts including roles, knowledge artifact and tasks as its building blocks. The filled ovals represent process roles, and plain ovals represent tasks. A line connecting a role to a task is a role artifact, and a line connecting two tasks is a task artifact. A role artifact is a kind of knowledge artifact that a role utilizes in order to execute its relevant task. It corresponds to that component of the knowledge artifact that the role utilizes privately for execution of the task. A task artifact, on the other hand, is the other component of the knowledge artifact that a pair of roles utilizes (e.g. share, update, jointly create, etc.) in order to collaborate in a pair of related tasks.

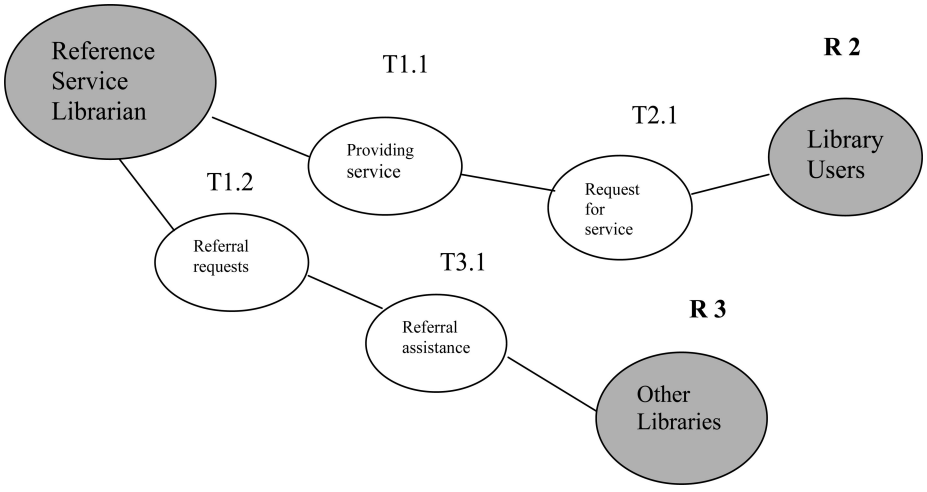


Figure-8: Library Reference KS Model (LRKM) (Parirokh, Daneshgar, & Fattahi, 2007)

2.4.6 KS model of public university libraries based on intellectual capital

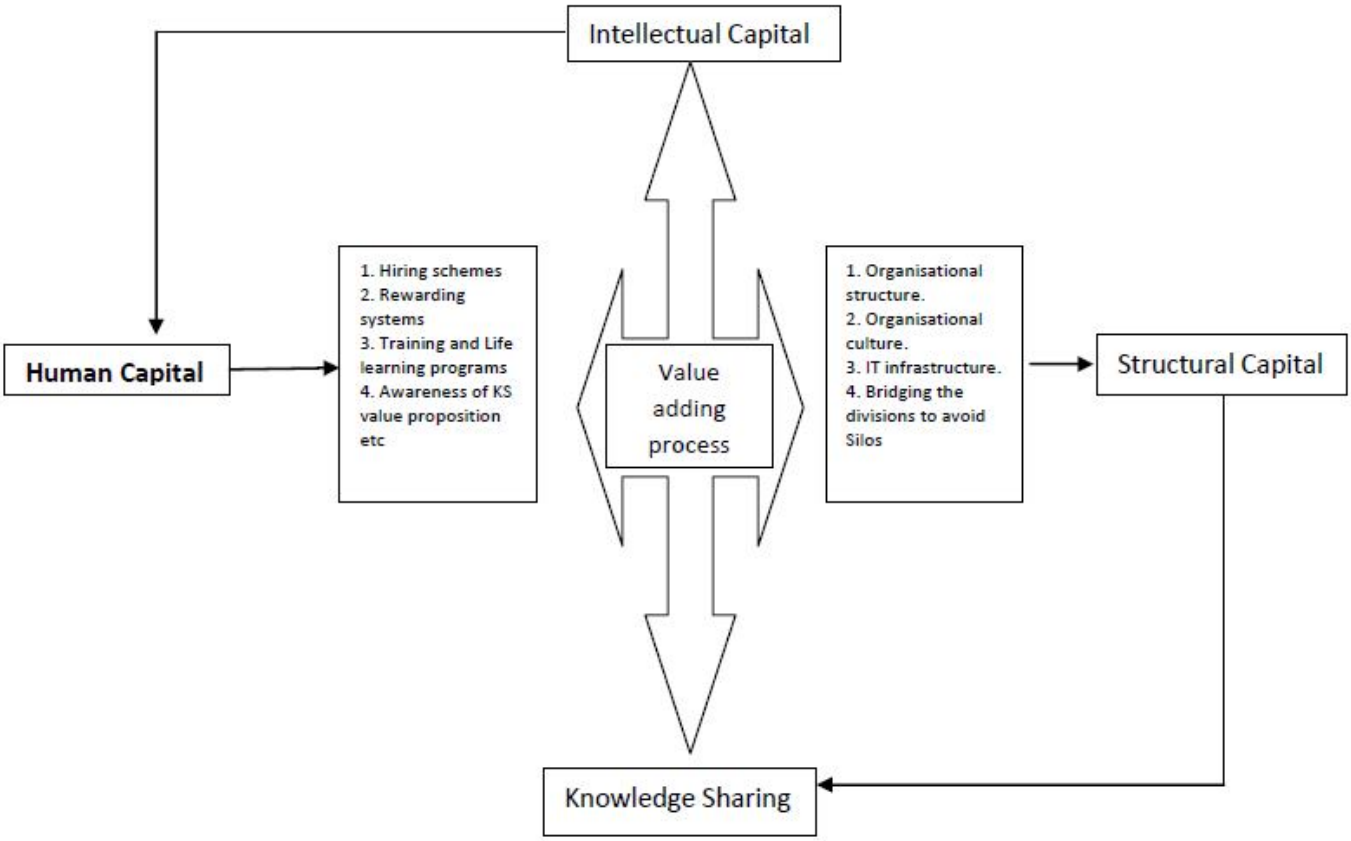


Figure-9: KS model of public university libraries based on intellectual capital (Mushi, 2009)

Mushi (2009) revealed that the relationship between intellectual capital and knowledge sharing is indeed binary. Intellectual capital may improve knowledge sharing and knowledge sharing may as well result in the formation of intellectual capital. If through sharing knowledge, staffs get to know what they did not know before, their intellectual level is improved and their performance may improve as well. However, the focus of this research is to see how human capital and structural capital may lead to better knowledge sharing. It looks at such things as motivation, incentives related to knowledge sharing, creativity, library values, competences and social skills as factors pertaining to Human Capital which may help improve knowledge sharing. It looks at such things as library structure, technological infrastructure and policies to mention but a few as part of structural capital which if they are managed better improvement in knowledge sharing may be achieved (Mushi, 2009).

2.4.7 Conceptual model of relationship among KS, organizational culture and organizational effectiveness in university libraries

The conceptual model suggested that the culture of a university library which entails the artifacts, symbol, technology, values and assumptions would determine whether the librarians would share their knowledge or not. This knowledge can either be tacit which is personal knowledge or explicit which is documented. If staff have the same value system they may share knowledge, the kind of technology that is available in the library can also determine whether knowledge would be shared. If knowledge is shared, interaction would improve and this would eventually increase the effectiveness of everyone in the library thereby affecting the overall organizational effectiveness (Onifade).

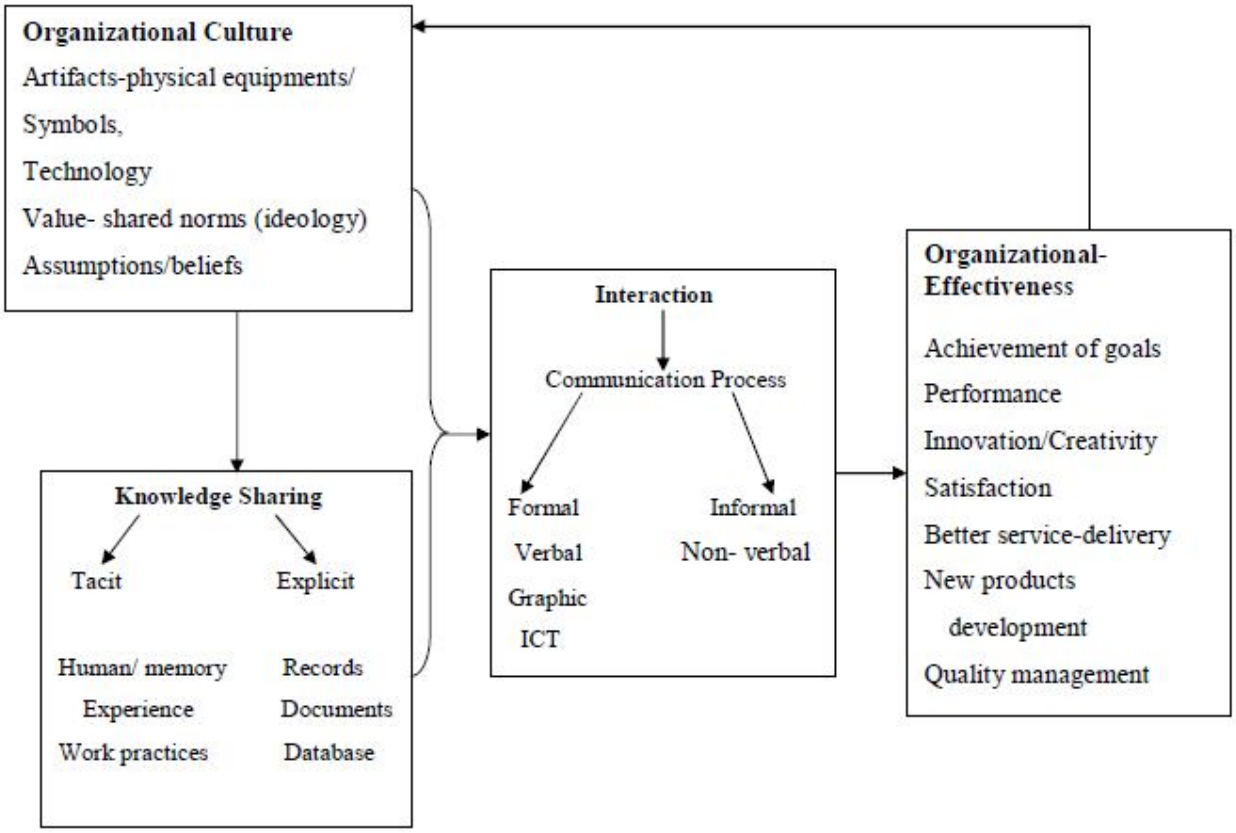


Figure-10: Relationship among KS, organizational culture and organizational effectiveness in university libraries (Adopted from Onifade)

2.4.8 Relationship between organizational characteristics and competences important for KS

Csepregi (2011) examined the relationship between organizational charactersitics (i.e. type of organization, activity of organization, and customer claim) and competences important for KS for the middle managers in the medium and large sized enterprises in Hungary. Difference is found in the methodological competences used for work method and style on the basis of organizational charactersitics primarily by customer claims fulfilled by the investigated organization, secondly by the activity of the investigated organization, and thirdly by the type of the investigated organization. Difference is also found in the social competences connected with co-operational skills on the basis of organizational characteristics by the type of the investigated organization(Csepregi, 2011).

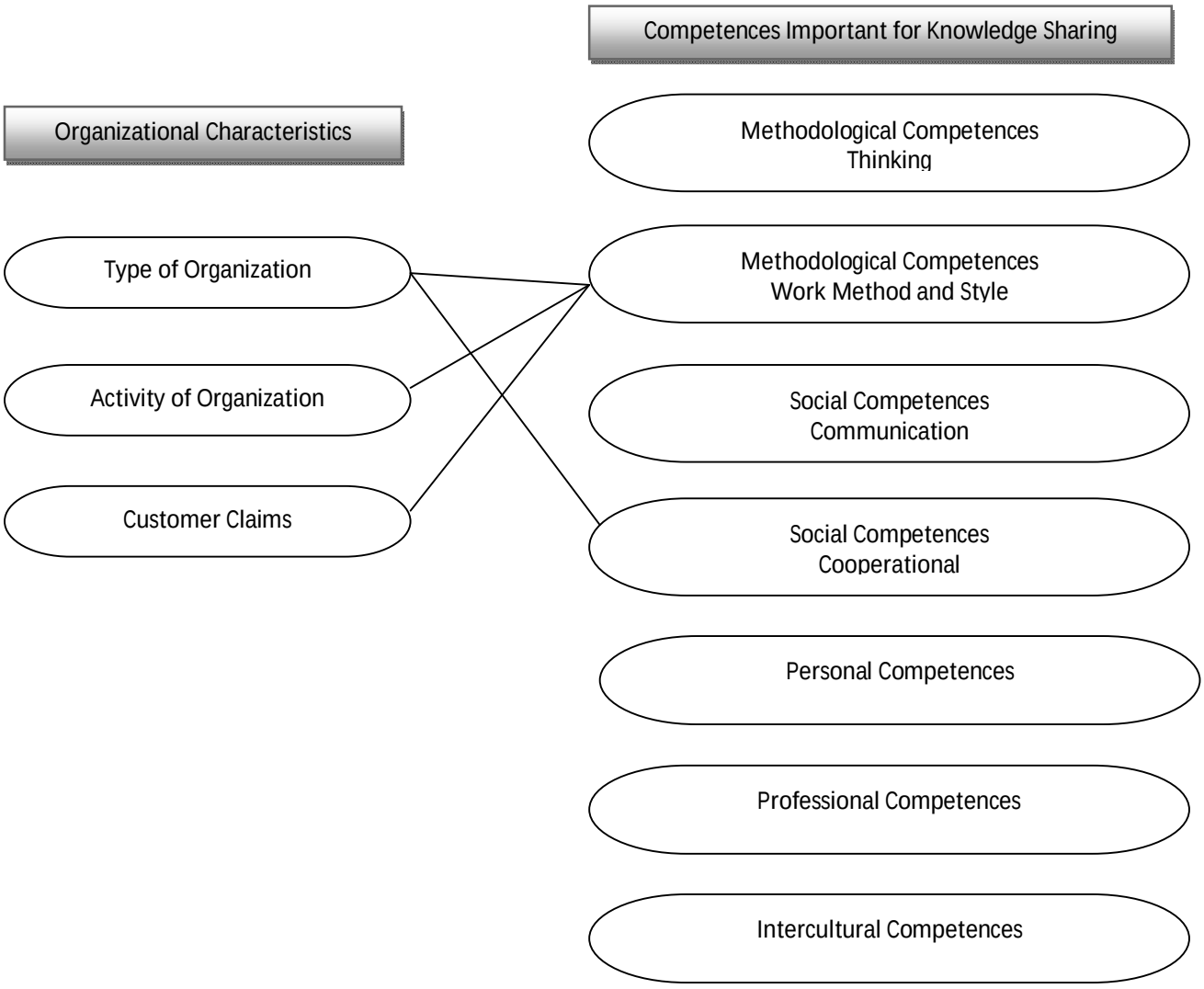


Figure-11: Relationship between organizational characteristics and competences important for KS

2.4.9 KS and KT in the Knowledge Management (KM) system building life cycle

Awad and Ghaziri (2004) showed through a figure the role of KS and KT in the KM system building life cycle. The figure indicates that after capturing knowledge it is codified for testing and deployment. Then knowledge is shared through collaborative tools, networks and intranets and is used for knowledge innovation. In this figure KT is directed towards KS. (Awad & Ghaziri, 2004)

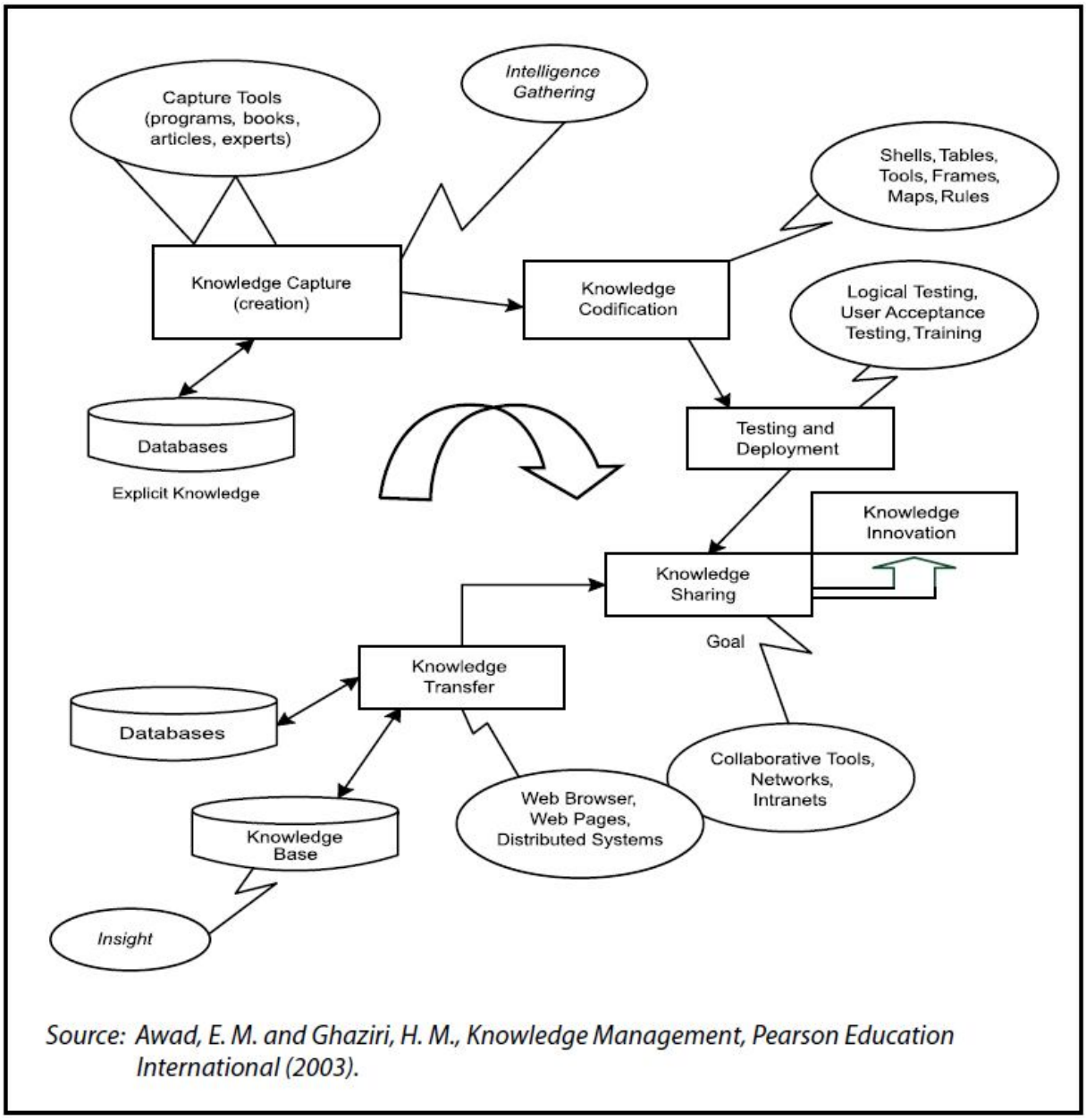


Figure-12: KS and KT in the KM System building life cycle (Adapted from; Uriarte, 2008)

2.4.10 Externalization and internalization in a simplified KS model

Hendriks (1999) described Knowledge sharing presumes a relation between at least two parties, one that possesses knowledge and the other that acquires knowledge. The first party should communicate its knowledge, consciously and willingly or not, in some form or other (either by acts, by speech, or in writing, etc.). The other party should be able to perceive these expressions of knowledge, and make sense of them (by imitating the acts, by listening, by reading the book, etc.). This process is commonly described as 'knowledge sharing' in a simplified form. Two sub-processes i.e. externalization and internalization; make up the process of knowledge sharing (Hendriks, 1999).

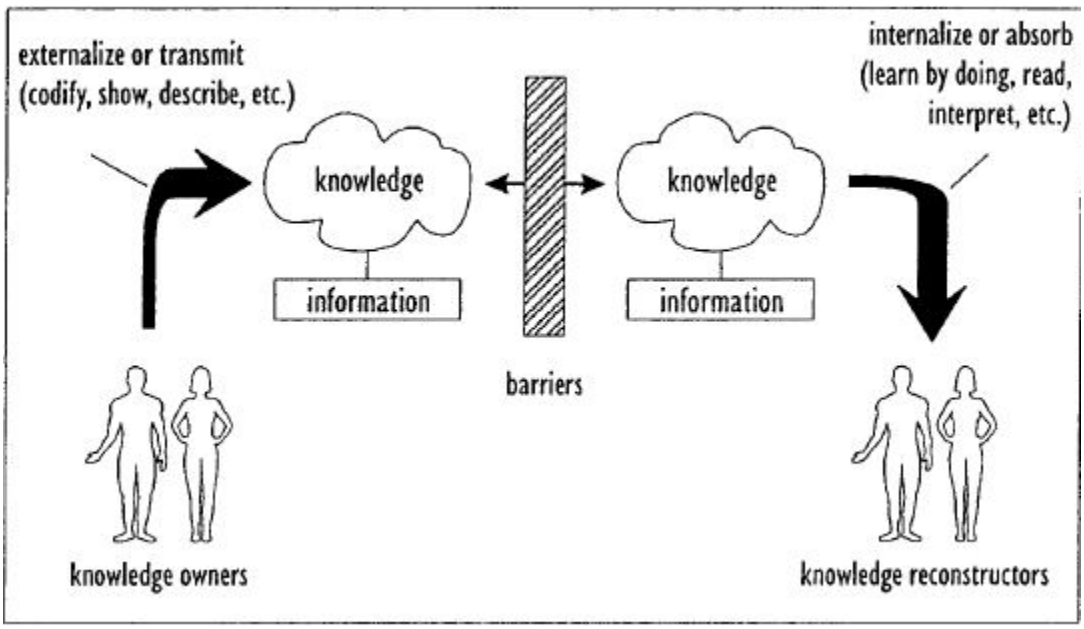


Figure-13: Externalization and Internalization in a Simplified KS Model (Hendriks, 1999)

2.4.11 Potential KS barriers facing by a software company

Kukko (2013) empirically tested some individual, organizational and technological level KS barriers in a software company and found the presence of most, but not all, of the KS barriers that the literature anticipated would affect a software company growing through acquisitions (Kukko, 2013).

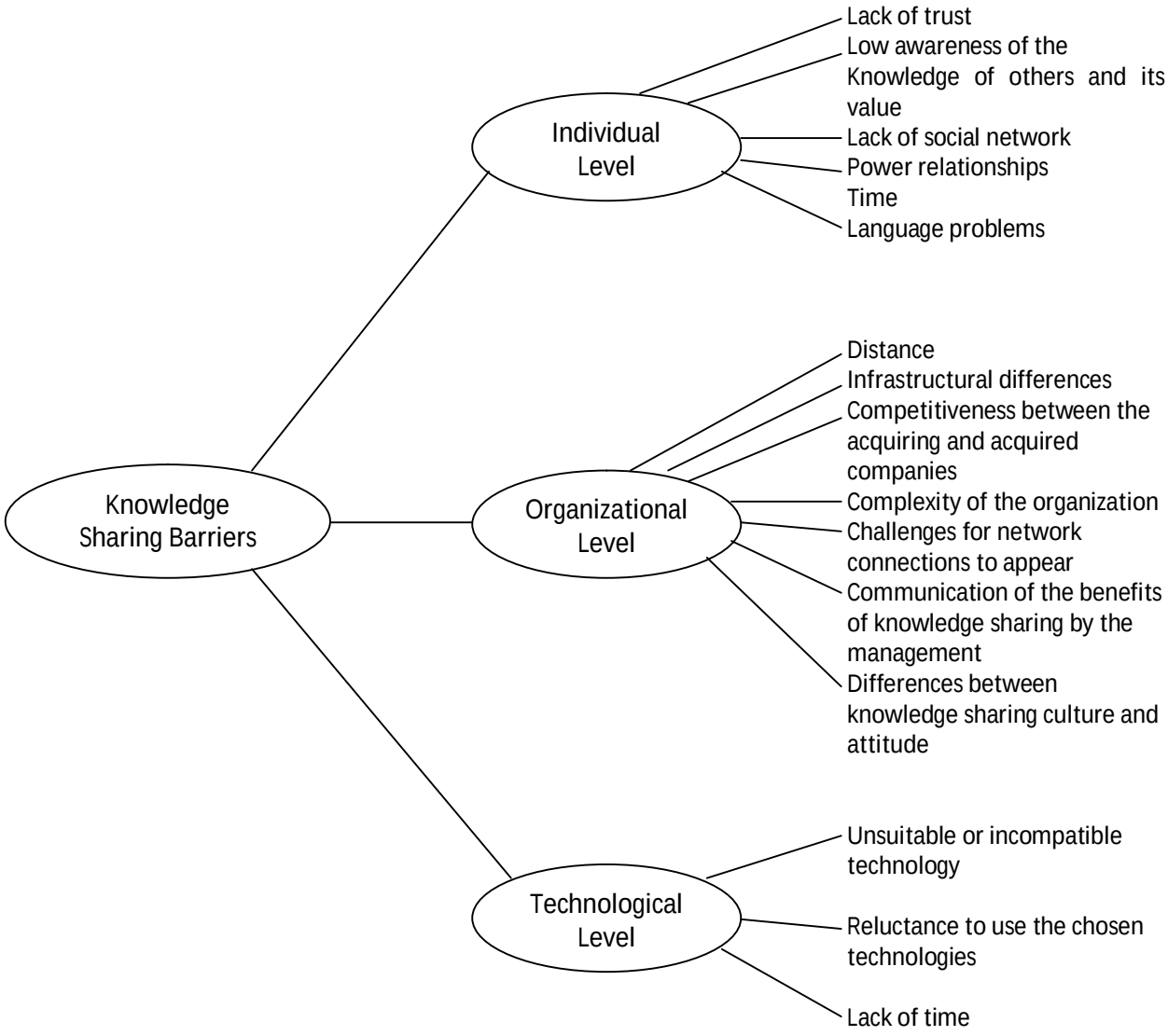


Figure-14: The potential KS barriers facing by a software company (Kukko, 2013)

2.5 Overview of the works on KS and allied areas in Bangladesh and/or by Bangladeshi authors

Though a good amount of work has been done on the application of KS and especially KM in LIS around the world, the amount is comparatively few in Bangladesh. But still some LIS academicians, professionals and students were made some effort in this area. Their attempt is briefly presented here in a tabular form.

Table-5: Overview of the works on KS and allied areas in Bangladesh and/or by Bangladeshi authors

Title	Objective	Citation
Knowledge sharing practices among doctoral students in JAIST to enhance research skills	The aim of this study is to explore the state-of-art of KS practices among the doctoral students in JAIST.	(Islam, Kunifuji, Hayama, & Miura, 2013)
Knowledge sharing behavior influences: A study of Information Science and Library Management faculties in Bangladesh	The prime focus of this study is to measure knowledge sharing behavior of Information Science and Library Management (ISLM) faculties in Bangladesh.	(Islam, Ikeda, & Islam, 2013)
Exploring the Factors Affecting Knowledge Sharing Practices in Dhaka University Library	The aim of the study is to explore the factors affecting knowledge sharing (KS) practices in Dhaka University Library (DUL).	(Islam & Khan, 2014)
Exploring the competencies of information professionals for knowledge management in the information institutions of Bangladesh	The aim of the study is to explore the views of information professionals for knowledge management (KM) in the libraries/information institutions of Bangladesh.	(Siddike & Islam, 2011)
Adopting Knowledge Management in an E-Learning System: Insights and Views of KM and EL Research Scholars	The main goal of this study is to explore the insights and views from knowledge management (KM) and E-learning (EL) research scholars.	(Islam, Kunifuji, & Miura, 2011)
Integration of knowledge management process into digital library system: A theoretical perspective	The purpose of this paper is to develop a theoretical framework of an integrated digital library (DL) system based on knowledge management (KM) process.	(Roknuzzaman, Kanai, & Umemoto, 2009)
Perceptions of Information Professionals about Knowledge Management in the Information Institutions of Bangladesh: An Exploratory Study	The main purpose of the study is to explore the perceptions of information professionals about Knowledge Management (KM) in Bangladesh.	(Siddike & Munshi, 2012)
How library practitioners view knowledge management in libraries: A qualitative study	The main purpose of this paper is to explore library practitioners' views of knowledge management (KM) and its incorporation into library practice.	(Roknuzzaman & Umemoto, 2009)
Changing Paradigms in Library Education: From Library Science to Information Science to Knowledge Science	The main objective of this paper is to explore the changes in library education in the context of the emergence of both 'information science' and 'knowledge management'.	(Roknuzzaman, 2012)
Knowledge Management's Relevance to Library and Information Science: An Interdisciplinary Approach	The study aims at exploring the relevancy of knowledge management (KM) to library and information science (LIS).	(Roknuzzaman & Umemoto, 2008)

Title	Objective	Citation
Knowledge Management Education in Library and Information Science Schools: An Exploratory Study	This study aims at exploring the current state of KM education offered by LIS schools.	(Roknuzzaman & Umemoto, 2009)
Incorporating KM education into LIS curriculum: perspectives from LIS academics	The purpose of this paper is to examine how and to what extent knowledge management (KM) has been incorporated into the library and information science (LIS) curriculum.	(Roknuzzaman & Umemoto, 2013)
Exploring LIS academics' responses to knowledge management	The purpose of this paper is to investigate how and why library and information science (LIS) academics have responded to the advent of knowledge management (KM).	(Roknuzzaman & Umemoto, 2013)
Knowledge management and the role of Librarians and Libraries in the digital age in the perspective of Bangladesh.	This paper appraised the growth of knowledge management and will compare the differences between information and knowledge as well as between information management and knowledge management.	(Mostofa, 2012)
Knowledge Management in Universities: Role of Knowledge Workers	This study aims to explore the role of knowledge workers in the universities.	(Hoq & Akter, 2012)
Skills for Digital Librarianship in the Context of Knowledge Management	The main objective of this paper is to explore the skills and competencies for digital librarianship in KM environment based on the review of relevant literature.	(Roknuzzaman & Munshi, 2012)
Knowledge Management in Bangladeshi Libraries: A Long Way to Go	This paper is an attempt to illustrate the real picture of present information and knowledge management situation by the libraries and information centers of Bangladesh.	(Hoq & Munshi, 2005)
Knowledge management implementation in a library: Mapping tools and technologies to phases of the KM cycle	The purpose of the study is to investigate the tools/technologies that would be of value to libraries as they implement knowledge management (KM) and to map these to different phases of the KM cycle.	(Agarwal & Islam, 2014)
Convergence issues of knowledge management in digital libraries: Steps towards state-of-the-art digital libraries	The purpose of this paper is to focus on the issues of a KM-based digital library system that will support the creation, organization, storage, dissemination and utilization of the institution's digital knowledge assets.	(Islam & Ikeda, 2014)

2.6 Summary

From the above review of KS models it was revealed that different authors have tried in different ways to explore the relationship of KS with knowledge capabilities, influential factors, organizational learning, KS approaches, reference service librarian, intellectual capital, organizational culture and effectiveness, KS competences, KT, KS processes, KS barriers etc. These concepts have provided the conceptual foundation for this research study. Moreover, the overview of the works on KS and allied areas in Bangladesh and/or by Bangladeshi authors have proved that there is still no attempt yet to build a model plan for KS among the LIS professionals in the university libraries of Bangladesh. Thus this research is a unique one in attempting to put forward such a model plan and contribute to some extent in filling up the acute gap of literature in the field.

Chapter Three: Overview of the Selected Public and Private University Libraries of Bangladesh

Chapter Three

Overview of the Selected Public and Private University Libraries of Bangladesh

3.1 Introduction

This chapter comprises an overview discussion of the public and private university libraries of Bangladesh that are selected as the problem area for this study. According to University Grants Commission (UGC) website there are about 111 public and private universities in Bangladesh. Among them about 12 university libraries were selected to be covered by this study.

3.2 Public university libraries

Among the 111 universities the number of public university are 34 which are situated in different areas of the country. In selecting the public university libraries it was attempted to select a set of public university library which will represent the different types of public universities. As a result the following six public university libraries were selected for this study which is situated in the Dhaka city.

1) Dhaka University (DU Central Library)
2) Bangladesh University of Engineering and Technology (BUET Central Library)
3) Bangabandhu Sheikh Mujib Medical University (BSMMU Central Library)
4) Sher-e-Bangla Agricultural University (SAU Central Library)
5) Bangladesh University of Textiles (BUTex Library)
6) Bangladesh University of Professionals (BUP Library)

3.2.1 Dhaka University Library

The Dhaka University Library started in 1921 in the premises of present Dhaka Medical College. The former Principal of the Dhaka College, F. C. Turner, was the first Librarian of the Dhaka University Library. The Library was started with 877 students, 60 teachers of 12 departments

under 3 Faculties - Arts, Science and Law. At present the library serves about 35000 individuals, comprising of faculty members, students, researchers, staffs and approval members of other academic communities. Initially, the library started with a collection of 18,000 of books received from Dhaka College and Dhaka Law College. Now, the library contains 621,058 volumes of books and bound journals; over 30,000 rare and old manuscripts and numerous microfilms, microfiches, CDs and DVDs. The collection of this library is increasing gradually because library is a growing organization.

Islam and Khan (2014) found the individual/human factors (e.g., varied information needs, mutual relationship, behavioral pattern, cooperative efforts & reliability), organizational factors (e.g., qualified professionals, user oriented approach, motivated staffs, formal and informal communication, high commitment) and technological factors (e.g., increased use of ICTs in library operations, interactive library website, access to online journals, digital institutional repository, online publication of Dhaka University Journals) affecting the KS practices in DUL (Islam & Khan, 2014). Islam and Ahmed (2011) discovered that students are overwhelmingly satisfied with the DUL OPAC. Although there are some differences in students' perceptions of and satisfaction with the university OPAC, a formal task-based usability testing and adopting a user-centered design can ensure the usability of the OPAC in the future. They also suggested some heuristic guidelines for designing interfaces for online catalogues (Islam & Ahmed, 2011). Ahmed and Shoeb (2009) found that DUL services are lagging far behind what is expected by its users (Ahmed & Shoeb, 2009). Hossain and Islam (2012) explored that "library hours" is the only service item which got the exclusive acceptance and ensured optimum satisfaction of the users (Hossain & Islam, 2012). Islam, Alam, and Sultana (2011) explored the following major problems regarding access and usage of e-journals at DUL: Lack of knowledge and awareness of e-journals among students and faculty members; lack of adequate funds allocation to subscribe e-journals; lack of knowledge about the links to e-journals; Lack of computer skills; lack of adequate computer lab facilities; and lack of training and orientation program. In order to overcome the problems, this study also suggests that DUL should increase funds allocation, the bandwidth of internet connection, the number of computers, and subscription of e-journals. DUL should establish more consortia, arrange training programs for users; appoint more

information professionals with ICT skills; and receive users' suggestions or opinions for subscribing new e-journals (Islam, Alam, & Sultana, 2011).

3.2.2 Bangladesh University of Engineering and Technology (BUET Central Library)

BUET is the oldest, renowned, prestigious and pioneer institution in the field of engineering and technology in Bangladesh. BUET started its journey from "Dacca Survey School" in 1878 subsequently it has become "Ahsanullah School of Engineering" in 1906 and the school converted into "Ahsanullah Engineering College" and the college had been upgraded into a complete university in 1962 named "East Pakistan University of Engineering and Technology". With the emergence of Bangladesh in 1971, the institution was renamed as Bangladesh University of Engineering and Technology (BUET).

From the very beginning of the university have been practicing library facilities in 1876 with the collection of only seven thousand technical books. The BUET Central Library has its own separate building approximately 20,000 square feet in space and is in close vicinity to the other academic buildings. The library hosts a vast and diverse collection of books, journals, monograms and periodicals of academic interest. It also includes a free internet browsing facility to facilitate research and academic activities of students and faculty members. The library provides online library services i.e. catalogue searching for Book/Thesis and article along with advanced searching facilities to Journal's Catalogue and e-Resources through the library website. Users can also their status by using Borrower State service of the online library of BUET.

Recently, Bangladesh University of Engineering and Technology (BUET) received a grant from the Academic Innovation Fund of Higher Education Quality Enhancement Project (HEQEP) of UGC, Bangladesh. The project, "Digitalization of Central Library of BUET," received funding for two years, from April 2012 to March 2014 (Shuva, 2012). "Digitalization of Central Library of BUET" is aimed to challenge the digital age and to enhance the teaching, learning, and research facilities offered to the undergraduate and postgraduate students, researchers, and faculty members of BUET through the Central Library by digitalization of library resources, expanding the service network, smoothing the resource sharing process, and modernizing the study environment and other services (Kabej, Habib, & Hossain, 2012).

3.2.3 Bangabandhu Sheikh Mujib Medical University (BSMMU Central Library)

Bangabandhu Sheikh Mujib Medical University (BSMMU) was established in 1998 by the Act No. 1, 1998 of the National Assembly of Bangladesh. The university has a well equipped modern academic library known as BSMMU central library situated at Block - A comprises in 4th and 5th floor. The library can accommodate over 750 users at a time in its well-furnished reading area. On an average more than 1,000 doctors/members/teachers use this library every day. At present seven officers, and 18 staffs are working in the library. BSMMU central library is open on all working days except during declared public and weekly holidays. The library has a collection of 23,860 copies of books, 5,201 volumes of bound journals, 2,012 copies of theses, 236 pieces of CDs/DVDs, 887 copies of WHO publications, 690 copies of news clippings, and 652 copies of other reports. The information services provided are bibliographic and abstracting service, current awareness service, document delivery service, ISBN and ISSN service, photocopying service, CDROM search service, and internet search service.

BSMMU central library initiated digitization project and uses DSpace to build institutional repository. While the library uses the integrated library automation system KOHA (Shuva, 2012). The Library uses Computerized Library Management System for its database management system (Chowdhury, 2012).

3.2.4 Sher-e-Bangla Agricultural University (SAU Central Library)

Sher-e-Bangla Agricultural University (SAU) is located in the heart of the capital city, Dhaka with excellent public transportation facilities to reach the university. The SAU campus stands on 86.92 acres (35.19 ha) of picturesque land covered by green plantations. The "Sher-e-Bangla Agricultural University Act 2001" was passed in the national Parliament on 09 July 2001. The foundation stone of the University was laid by the then Honorable Prime Minister Shiekh Hasina on 15 July 2001 and inaugurated the university activities through the appointment of the first Vice-Chancellor Professor Md. Shadat Ulla. The Sher-e-Bangla Agricultural University had started its formal functions on 11 September 2001 following the issuance of a notification by the Government as per requirement of the "Sher-e-Bangla Agricultural University Act 2001".

SAU Central Library presently located at the west wing of the university building. The library has a collection of around 30,000 (thirty thousand) books comprising the major subjects of

agriculture and related subjects. It also collects all the popular national journals related to agriculture and a few international journals. Like elsewhere students, teachers can borrow books from the library as well as they use reference books/journals in the library during the office hours. The library has presently 24 officers and staffs. It has been providing internet service and photocopy facilities to the users. Ex-students of this university donate books and journals to the library. New separate library building is under construction and the library will be shifted very soon. SAU Central Library includes an internet facility to facilitate research and academic activities of students and faculty members. Photocopy service available in the library on payment. Within few months the central library will be shifted to new separate library building where all modern facilities will be provided including computerized service (automation), E-journal and internet etc.

3.2.5 Bangladesh University of Textiles (BUTex Library)

Bangladesh University of Textiles is the only public university among all textile universities in Bangladesh established in order to meet the growing need for advanced Textile Engineering education in Bangladesh as well as in the world. Though the university was established on 22nd December, 2010 by an ordinance of Education Ministry, it has a long glorious history. This University has 11.67 acres land with large infrastructure including 86,800 sq. ft area for academic and administration, 15 Workshops, and 84,000 sq. ft area for laboratories. The University library has a very rich collection of about 1, 50,000 books and journals. These books and journal include both technical and non-technical books. The library is open in every working day from 9.00 AM to 2.00 PM. Library access is open to all but only teacher, student and staff of the university can lend book. The University library has subscribed to the following e-Resources i.e. ACM Digital Library, Emerald, CSIR-NISCAIR, and Bangladesh Journals Online. Teachers, Students and any officials of this university can download full research articles only within this campus network and must have to solely use for only research purpose. Any other means of use of these articles is strictly prohibited. With the assistant from HEQEP of University Grants Commission, UGC Digital Library (UDL) has subscribed the following e-books i.e. Oxford University Press, Pearson Education India's e-book, and Tata McGraw-Hill's Express Library of

three e-publishers. Users can access the full content of these e-books via online of these publishers only through inside BUTex campus network.

3.2.6 Bangladesh University of Professionals (BUP Library)

To keep pace and to be at par with the fast developing world, the national higher studies, research enabling modern knowledge and creating scope for education and studies are the obligations to be fulfilled. In order to expand and integrate the existing educational and training institutes of the armed forces, they were needed to be brought under a single umbrella or authority. Thereby, the establishment of "Bangladesh University of Professionals," (BUP) took place in that process and came in to being as 30th public university of Bangladesh on 05 June 2008. BUP is a unique public university run by the armed forces with upholding the motto "EXCELLENCE THROUGH KNOWLEDGE".

BUP Library started in 2010. The Library was started with small field. At present the library serves individuals, comprising of faculty members, students, researchers, staffs and approval members of other academic communities. Now, the library contains 2,000 volumes of books and bound journals; the library includes electronic copies of books, per year around 2,000 volumes are added in this library. CDs and DVDs of 3,000 e Articles, and 2,000 e Journals are available in the library. BUP Library circulation system is fully automated. The collection of this library is increasing gradually because library is a growing organization.

BUP library has initiated digitization project since its year of establishment. It uses customized integrated library automation system and it is a member of Bangladesh INASP-PERI Consortium (BIPC) (Shuva, 2012).

3.3 Private university libraries

At present there are about 77 private universities offering different levels of higher education throughout the whole nation. From this set of private university this study tried to select a subset that represents the different instances of the domain set. As a result the following six private university libraries were selected for this study which is also situated in the Dhaka city.

1) Independent University of Bangladesh (IUB Central Library)
2) Ahsanullah University of Science and Technology (AUST Library)
3) Bangladesh University of Health Sciences (BUHS Library)

4) BRAC University (Ayesha Abed Library)
5) University of Liberal Arts Bangladesh (ULAB Library)
6) North South University (NSU Library)

3.3.1 Independent University of Bangladesh (IUB Central Library)

Founded in 1993, Independent University, Bangladesh is one of the oldest private universities in Bangladesh, where academic excellence is a tradition, teaching a passion and lifelong learning a habit. IUB currently has more than 4000 undergraduate and graduate students and over 3560 alumni. The student population is projected to grow at 10% annually. The students of IUB experience an exciting academic life with copious opportunity to explore and nurture their innate talent. IUB has always maintained its motto of sustaining an ideal student teacher ratio of 20:1. It has close to 250 faculty members committed to deliver academic excellence and provide the students a unique learning experience. Hence the teaching approach of our world class community of faculty is distinctive.

The Library is truly the heart of the Independent University, Bangladesh (IUB). In 1993 the library launched in a room having around area of 850 square feet at House 8, Road 10, Baridhara, Dhaka and traveled to to-days permanent address at Bashundhara as IUB Central Library where the library occupies three floors for stacking reading materials, accommodating readers in reading rooms and the library personnel at work places.

The Library maintains reading rooms on every floor of the library. About five hundred users can sit together in the reading rooms of the IUB Central Library. Level 1 is especially for the reading purpose and students are allowed to enter with their own and library books there. Other unit libraries have their own reading room. Silent study, Group discussion and carrel desks are also available.

The lending procedure is automated with the Barcode Technique. An undergraduate student himself/herself may borrow three general materials for 10 days as well 15 days with five materials for the graduate students and may be renewed for further loan periods after producing those at the counter personally. Faculty members can borrow fifteen books for 45 days and may be renewed these at the counter personally. Officials may borrow library materials for 30 days and may avail of the borrowing facilities after having the membership.

IUB Library has 3 discussion rooms located on level 5 of the library. Booking is required to use these rooms.

IUB Library is the first to host online database among the private university libraries in Bangladesh. Now, the library staffs have successfully implemented latest version of KOHA LMS, and can be accessed 24x7. The link for the OPAC is in the Library Home Page. A computerized campus-wide information service has been developed for information management. The Library maintains a computerized catalogue using the Mini/Micro CDS/ISIS and the Library makes available a searching procedure for its valid users. An on-demand information retrieval service is available for all clients. In addition, the Library maintains the News Clipping covering 40 titles and New Arrivals, which publishes monthly with the list of books received in the previous months. The library also provides Indexing and Current Contents services. Current Contents publishes twice/thrice a month, which includes the copy of the content pages of the periodicals received in the last couple of weeks. Only the faculty members may get photocopies upon request from the library materials if it permitted under the national and international copyright laws, rules and regulations. To provide faster and up-to-date data the IUB Library provides Internet Searching services to its users with 1.0 GPs speed along with Wi-Fi connections.

Beside above mention services Faculty Corner, Researcher's Corner, Audio-Visual Section, Information Literacy Classroom, Reference Section, Reserve Section, Report Section, Current Journal Section, Institutional Repository, Archives and Preservation, Safe keeping are also available.

For IUB library, 'appropriate study environment' achieved the highest ranking in user's experience, while the lowest perception was shown before 'sufficient modern technological tools' (Hossain, Islam, & Saadi, 2013). Independent University, Bangladesh Library has taken an initiative to manage its intellectual output with the help of open source software: DSpace. The Library's IT personnel are working in this regard (Rahman & Mezbah-ul-Islam, 2012).

3.3.2 Ahsanullah University of Science and Technology (AUST Library)

The Ahsanullah University of Science and Technology (AUST) was founded by the Dhaka Ahsania Mission in 1995. The vision of the Ahsanullah University of Science and Technology is

that, it will be the premier centre of excellence in science, engineering and technology by creating and transferring knowledge with human touch to the young generations to come to enhance the quality of life in Bangladesh and beyond. The mission of the Ahsanullah University of Science and Technology is to develop human resources in the fields of science, engineering and technology to meet the ever changing needs of the society in the perspective of the highly complex and globalized world.

Since the AUST Library started to work in the permanent campus, it has got a new dimension to serve the readers. It has an amount of 14,000 books, 250 back volumes of journals, 250 CDs and 275 thesis papers in its collection of different types of information resources (Islam, 2013). Readers are getting a huge and wide space for study. Library has provided sufficient carrels for individual study and it can now accommodate about 200 readers in the reading room at a time. Library has also turned to Open Shelve System (OSS) that means readers now can browse books and journals directly from the shelves, can see other relevant materials at a time. Library workers are also there to help the readers.

Library has now got the facilities for the Faculties and Researchers to study in a separate corner. Library is going to establish an Internet browsing corner for research purposes. It is a matter of great pleasure to announce that AUST is now linked with Bangladesh-INASP/PERI Consortia (BIPC) under the auspices of Bangladesh Academy of Sciences (BAS) to have access to thousands of internationally reputed online journals and books with downloading facilities of full text articles. Library is the focal point of this service.

There was a long time demand of Automated Library Systems and to fulfill the demand a project for making software for this purpose has been undertaken in the mean time. After the completion of the work automated book search from the machine readable catalogue and mechanized book issue system will be available.

3.3.3 Bangladesh University of Health Sciences (BUHS Library)

Although BUHS initiated and sponsored by DAB, it had to be established under a separate nonprofit organization (Trust) as per Private University Ordinance 2010. The Board of Trustees has already nominated Prof Liaquat Ali (the Founder Director of BIHS) as the first Vice-Chancellor of the University and his appointment is now under processing of endorsement by

the Honorable Chancellor of the Universities (the Honorable President of Bangladesh). Under the Board of Trustees the University will operate as per Private University Ordinance 2010. The objective of BUHS is to develop qualified and skilled human resources in clinical, basic and allied health sciences & technology with the overall goal for improving health of our population.

The Library - the health sciences knowledge centre - is the heart of the Bangladesh University of Health Sciences (BUHS). The library has been growing constantly for serving the vibrant community of students, faculty, and staff members of the BUHS. It emphasizes services to library patrons and, at the same time, is trying to increase their self-help and self-service capacities. To meet these needs, the library provides various types of information services and facilitates and access to an extensive range of information resources—both electronically and in print. The major objectives of the library are to –

- Collect, analyze and disseminate information resources
- Keep the teachers and researchers informed of the latest developments in their fields of interest by circulating e-table of contents of relevant journals
- Provide an environment which stimulates the use of information resources and services
- Understand the information needs of library patrons and provide user-centered services to meet their needs
- Aid the teachers, scientific staff, and students in getting their desired information resources on time
- Make available bibliographies on subjects of interest to the BUHS staff members involved in research and teaching
- Ensure that the BUHS publications are recorded and copies of the publications are available in the library for future use
- Pursue quality and good professional practices in all activities

The library has begun to develop a database of library collection using the free software—Koha. It is with process of introduce an e-Library Bulletin to disseminate information on new acquisitions, relevant literature, links, conferences, and scholarships and also disseminate news. The library has been also ways to develop two more databases covering (a)

BIRDEM/BIHS/ BUHS publications and documents and (b) Health science papers and publications of Bangladesh.

3.3.4 Ayesha Abed Library (BRAC University)

The Ayesha Abed Library at BRAC University aims to become a world-class Knowledge Resource Centre and provide innovative new services and a wider collection of books and resources to the teaching, learning and research communities, using latest technological developments of the 21st century. The development, organization and maintenance of archives in multiple locations; access to world class resources; personalized assistance in the use of library and information resources; and instruction on research strategies and tools have made this one of the richest libraries in the country.

The library provides both on campus access (most e-resources provide on-campus access through IP recognition within the BRACU domain) and off campus access (most of the resources we list are available off-campus to current staff and students of the University through MyAthens account).

- Library Catalogue - Searching online catalogue to locate books, journals, repository items etc. owned by BRAC University library
- Institutional Repository - For theses, dissertation and BRACU publications.
- E-journal and Databases - The library subscribes to a number of databases which provide 24/7 access to thousands of full text journal and magazine in many subject areas including general and multidisciplinary databases.
- Mobile Interface for BRAC University Library to search library collections including online journal and databases, view and renew books etc.
- Borrowing Privileges - For BRAC University faculty, students and staff.

Ayesha Abed Library, BRAC University, one of the leading private university libraries in Bangladesh, successfully implemented an institutional repository of 1260 items using DSpace and also offers library services through mobile technology. They received funds from INASP to support the creation of an institutional repository (Shuva, 2012). Now they are trying to integrate their KOHA Integrated Library Management System with DSpace, their institutional

repository system (Zico, 2009). User's highest ranking of BRACU library service is shown as highest for 'documents are at the right place', while the lowest performance ranking is shown before 'latest information services and facilities' (Hossain, Islam, & Saadi, 2013).

3.3.5 University of Liberal Arts Bangladesh (ULAB Library)

ULAB's founder, Kazi Shahid Ahmed, believes in creating works that benefit the people of Bangladesh and are of service to the country. In this spirit, he created a place of learning where well-rounded students would be fully steeped in the values of their own heritage, yet trained to face the modern global workplace. The sponsors planned for many years, and the idea of the University was initiated at a public colloquium, in February of 2002, attended by leading academics, cultural figures, and entrepreneurs. Permission for the opening of ULAB was received from the University Grants Commission (UGC) of Bangladesh in November of 2003. ULAB was formally launched at a ceremony on October 1, 2004.

The Library is the center of the University of Liberal Arts Bangladesh (ULAB). It has been growing with the young university constantly serving the vibrant community of students and faculty members since its establishment. In 2004, the Library was launched at 116 Arjatpara, Mohakhali, Tejgaon; Dhaka. In 2006, University of Liberal Arts Bangladesh and the Central Library moved to its own campus at House 56, Road 4A, Dhanmondi; Dhaka-1209. ULAB also has a Seminar Library where students can use resources in the library only. Different types of text and reference books for the departments of Media Studies & Journalism (MSJ), Computer Science & Engineering (CSE) and Electronics and Telecommunication Engineering (ETE) are available in the Seminar Library. The Seminar library is located at Campus B, 719/A, Satmasjid Road (at Road 7/A) Dhanmondi, Dhaka-1209. The ULAB Library aims to foster dynamic and responsive service all its members, by projecting better professional practices and nurturing quality, creativity and effectiveness through its collection and services.

Textbooks are arranged based on the following Departments and/or Programs and classified according to Dewey Decimal Classification (DDC). The library reference section is rich with different types of collections i.e. encyclopedia, dictionary, thesaurus, world history & civilization, religion & theology, art & architecture, liberation war of Bangladesh, and photography. Bangladesh Business Reference Initiative (BBRI) Section is being developed with

annual reports, brochures etc. from 310 enlisted companies approved by Dhaka Stock Exchange (DSE). Rare and Exclusive collections in the Library include the following i.e. liberation war of Bangladesh, Rabindra collection, Nazrul collection, Lalon collection, religion & theology, biography of famous poets, and photography collection etc. United Nations Information Center (UNIC) in Dhaka opened an UN Reference Corner at ULAB library. The main objective of this corner is to facilitate access to UN publications to library users. Different types of local & foreign periodicals such as journals, magazines, reports, directories and newspapers are available. ULAB Library has e-resources of discipline based world renowned online journals, books and Magazines. Audio Visual materials collections are included over 600 DVDs &CDs.

The lending procedure is automated with the Barcode System. Circulations activities are operated by with own Library software. Students/users will have to return borrowed resources on time. Otherwise fine will be calculated as per Library rules. Information services are provided to the users in the form of reference service, current awareness service (CAS), and selective dissemination of information (SDI) etc. Faculty members' handouts are kept at the Circulation Section. Students can use these for study and take photocopy services. Photocopy services are available at the Pigeonhole section. Students will have to fill up a Photocopy Requisition Slip that is available at the Circulation Desk. Students can take printouts of their electronic documents by paying the following charge per page. Students/users have to deposit their bags, personal files, books and other belongings to the pigeonhole before entering into library.

ULAB Library has a course related Language Lab for enhancing English, Bengali etc. language proficiency of the students. Library has rich collections of IELTS, TOFEL, GMAT, SAT, GRE etc. in CD & DVD format. Library maintains database of library holdings. Users can easily find out books etc with the help of computerized Database in the library. Library maintains computerized catalog of library holdings. Users can easily find out information of particular books etc with the help of computerized catalog in the library.

ULAB Library, the Bangladesh Association of Librarians, Information Scientists and Documentalists (BALID) and BIIM jointly organized the first lecture session on Bibliometrics as a part of series programs on 27 April, 2013 at ULAB (Ohlmacher, 2013).

3.3.6 North South University (NSU Library)

North South University, the first private university in Bangladesh, was established by a group of philanthropists, industrialists, bureaucrats and academics. The government of Bangladesh approved the establishment of North South University in 1992 under Private University Act (PUA)-1992 (now replaced by PUA-2010). The university was formally inaugurated on 10 February, 1993 by the then Prime Minister of Bangladesh. The honorable President of the People's Republic of Bangladesh is the Chancellor of NSU.

North South University (NSU) Library grew over the years since 1992 and now has become one of the best university libraries in the country. This is the first fully automated university library in the country using Bi-lingual Library Management Software, developed by NSU Library, which supports MARC-21, web-based online lending and receiving, browsing databases of books, a-v materials, journals, newspapers and magazines, searching full-text online books and journals, creating institutional repositories, tracking circulation system, maintain RFID self check and book drop records, auto email alert services etc. Its online databases provide full access to all users, facilitates navigation and reservation of books from distant work-stations through its own website http://library.northsouth.edu. The users can also check their borrowing status, renew issued resources and can reserve three books at a time for 48 hours through the library website. This is the only university library in Bangladesh where the Library of Congress Classification System is being used to organize and arrange books, reports, journals and other resources. All students, teachers, BOT members, officers, teaching assistants, research assistants and faculty assistants are entitled to become the library member.

A total of around 49,500 books, reports and bound journals, over 40,000 online e-books, 36,000 online journals, 1,890 CD ROM books and databases, 226 DVDs and videos, 159 audio-cassettes and a good numbers of other resources of the library cover liberal arts, pure sciences, social sciences, law and commerce, particularly business, management, marketing, finance, economics, computer science and engineering, telecommunication, electrical engineering, environmental studies, English language and literature, history and culture, psychology, architecture, sociology, pharmacy, public health, biotechnology, biochemistry etc. In addition to these collections, the library subscribes print issues of 46 foreign and 19 local journals, 18

foreign and 22 local magazines, two foreign dailies and almost all leading national dailies of Bangladesh.

The NSU library is the pioneer of subscribing online journals and MyAthens in the country. It started subscription to online journals with JSTOR, IEEE, ACM Digital library and 39 titles of online journals in various disciplines for the first time in 2002. Now, the library has access to over 36,000 titles of full-text online research journals in various disciplines from 52 agencies and publishers. All registered members of NSU library get access to online journals and e-books databases from inside and outside campus through Internet. Recently the library has introduced Knimbus (federated search) facility to search all subscribed online resources and books from a single platform.

The NSU library started developing its online journals and books repositories in 2003. These repositories cover books and articles written by teachers, students and researchers of NSU and full-text articles of 160 online subscribed journals from 2002 to date. The numbers of articles and books of these repositories are increasing day by day. To explore repositories please visit http://library.northsouth.edu.

It maintains a cyber and audio-visual center equipped with 50 brand computers with Wi-Fi and broadband Internet connection. In addition to this, the library is donned with 30 computers in its various floors to use online resources for supporting courses. All students, faculty members and staff members of the university can browse, download and print materials from these computers. The audio visual unit is also equipped with TV, VCD, VCR, DVD, multi-media projector and other audio-visual equipments.

At present, the library maintains 12 different sections, namely, arts and social sciences, applied sciences and engineering, bio-medical sciences, reference, periodicals, cyber & audio-visuals, newspaper archive, study hall, faculty corner, Chinese books, acquisition & processing, and library administration to provide better services to its users.

Currently, the library provides lending, reference, readers' guidance, internet, reading, news clipping, database searching and printing, CD writing, audio-visual, current awareness, SDI and reprography services to its users. The Wi-Fi and broadband internet connection of the library building help the library users to access online resources easily.

The library arranges orientation program every semester for the new students to demonstrate how to use the university library systems and services effectively. The library also offers a 14-week training program titled 'Certificate Course in Digital & Online Librarianship' for those who are interested to know how to use the Internet resources in higher education and research, and how to design and maintain website, and set up online digital libraries. The faculty members and students of NSU may also enroll in this training course.

Regarding individual service items, it is observed that the best experience of NSU library users was found for ‘adequate space for study and learning’, while the lowest experience was shown before ‘users can complain and suggest easily’ (Hossain, Islam, & Saadi, 2013).

3.4 Summary

This chapter provided an overview of the selected public and private university libraries of Bangladesh. Effort has also been made to review the literatures that have been covered different aspects of those university libraries and the findings were reported while discussing about the university libraries. There was hardly any study that focuses on the KS among the LIS professionals of these university libraries which rationalize the attempt of this study.

Chapter Four:
Research Methodology

Chapter Four

Research Methodology

4.1 Introduction

This chapter discusses the overall design of the research study along with the methods adopted to conduct the different portions of the study. In conducting this study, it was tried to follow the steps in research process described by Krishan Kumar (1999) based on the chapter 2 of the text-book, entitled 'Research Process in Education' by David J. Fox (1969). The research design of the study is shown here by means of a diagram.

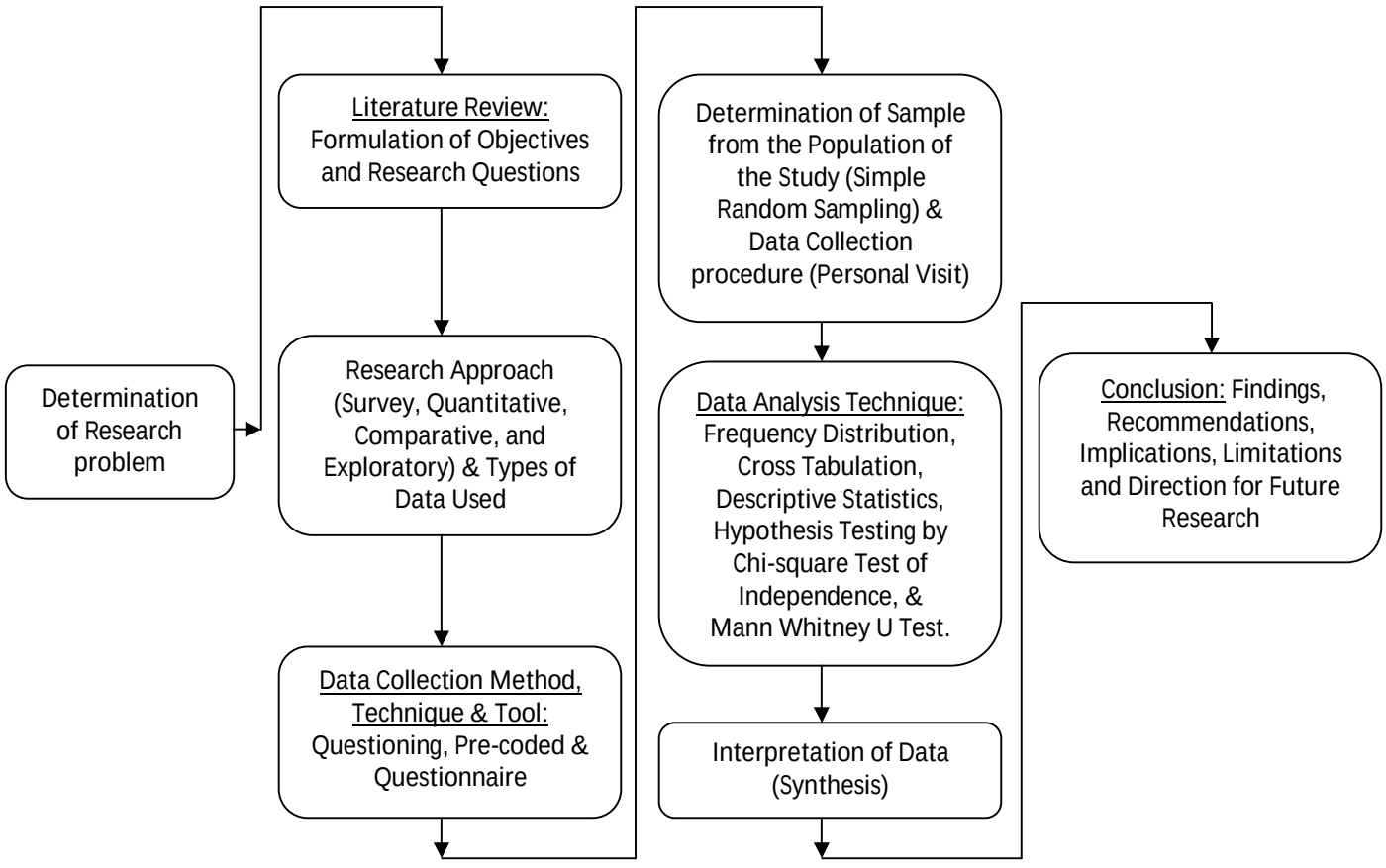


Figure-15: Research design of the study

4.2 Determination of the research problem

Knowledge sharing is probably the most crucial element of knowledge management (Uriarte, 2008). Sharing pertinent knowledge is a key and vital part of the knowledge management system and process. Sharing of knowledge may be sharing of `explicit knowledge'---that which is written down or encoded in some fashion vs. sharing of `tacit knowledge'---that which exists in the minds of individuals. With the help of information technology sharing of knowledge has been made possible at different levels and locations. Knowledge sharing is very important for library managers in strategic planning and this attitude has to be nurtured within and between libraries (Kumaresan, 2010). Therfore the problem area for this research study was determined as "Building a Model Plan for Knowledge Sharing among the LIS Professionals in the Selected Public and Private University Libraries of Bangladesh: A Study".

4.3 Thorough review of relevant literature

The literature review accomplishes several purposes. It shares with the reader the results of other studies that are closely related to the one being undertaken. It relates a study to the larger, ongoing dialogue in the literature, filling in gaps, and extending prior studies (Creswell, 2009). The aim is to acquire thorough knowledge of the problem area so that it is possible to gather the knowledge required for the next steps in the research process (Kumar, 1999). The core literature in the problem area has been studied together with the literature on the allied areas to avoid duplication of research. The review of relevant literature helped to set up the objectives and formulate the research questions for this study. The review has also given an indication of the data gathering methods, techniques and instruments as well as statistical tools for data analysis and approaches of interpretation based on the previous research studies. The end product was a summary of results of previous research which has been presented in chapter two under the heading 'Literature Review'.

4.4.1 Selection of survey approach in terms of time dimension

In the selection of the research approach, one should ask the question, as to where lies the answer to the problem being pursued, in terms of time dimension? There are three possibilities as given here:

- The answer may lie in the past.

- The answer may lie in the present.
- The answer may lie in the future.

Corresponding to the above three possibilities, we may identify the following three research approaches:

- Historical Approach (or Historical Research)
- Survey Approach (or Survey Research)
- Experimental Approach (or Experimental Research)

These approaches are briefly described here.

Historical Research: Any research which makes use of observations based on past events is known as research in historical approach (Gupta, 2005). If the answer to the problem lies in the past, then historical research should be adopted. Here, current conditions and problems should be studied in the light of the past (Kumar, 1999).

Survey Research: The term survey is used for the technique of investigation by a direct observation of a phenomenon or systematic gathering of data from population by applying personal contact and interviews when adequate information about a certain problem is not available in records, files and other sources (Gupta, 2005). If the answer to the problem lies in the present, then survey research should be adopted. Here, current conditions are studied to throw light on the current problems. This approach is used to achieve better understanding of the current problems by gathering data more adequately and fully about the present conditions (Kumar, 1999).

Experimental Research: The essence of an experiment may be described as observing the effect on a dependent variable of the manipulation of an independent variable (Gupta, 2005). If the answer to the problem lies in the future, then experimental research should be adopted. If something new should be done or changes should be adopted in the present conditions, then it would be useful in predicting as to what will happen in future. This approach is experimental because it seeks to establish on experimental (trial) basis a new situation. Experimental research aims to study such a new situation under controlled conditions, to reach at more generalized predictions (Kumar, 1999).

On the basis of the above discussion it was decided to adopt 'survey approach' for this research study. Since the answer to the problem lies in the present, such a decision was made.

4.4.2 Selection of quantitative approach in terms of types of data used

Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. It involves the generation of data in quantitative form which can be subjected to rigorous quantitative analysis in a formal and rigid fashion (Kothari, 2004). Quantitative data analysis is a powerful research form, emanating in part from the positivist tradition. It is often associated with large-scale research, but can also serve smaller scale investigations, with case studies, action research, correlational research and experiments (Cohen, Manion, & Morrison, 2007).

This study intended to collect primary data from the sample and then analyze and interpret the collected data to get real insight about the concerning phenomena. Therefore adoption of quantitative approach is amenable to the study.

4.4.3 Selection of comparative approach in terms of intent dimension

In the selection of research approach, we can ask the question, as to what we intend to do with the completed research. There are three possibilities as given below:

- Description
- Comparison
- Evaluation

The above possibilities are concerned with to describe, to compare and to evaluate. Corresponding to the above three possibilities, we may identify the following three research approaches:

- Descriptive Research
- Comparative Research
- Evaluative Research

These approaches are briefly described here.

Descriptive Research: It is concerned essentially with description of "a limited set of conditions in terms of measures as applied to the constituent elements of these conditions" (Fox, 1969). It is meant only to describe. Thus no judgment is involved.

Comparative Research: It is concerned with obtaining information about more than one set of conditions or group of subjects and to compare the multiple sets of data on the basis of laid down criteria. Here comparative judgment is applied, to obtain judgment regarding difference or no difference or of larger or smaller size, etc. (Kumar, 1999)

Evaluative Research: An evaluation is always on the basis of a criterion or standard laid down for the purpose. It involves evaluative judgment, indicating good or bad, successful or unsuccessful, effective or not effective (Kumar, 1999).

Since the study intended to compare the perception of the LIS professionals of the selected public university libraries with the selected private university libraries to propose a model plan for KS which may be applicable in both type of university libraries, the comparative approach was selected.

4.4.4 Selection of exploratory approach in terms of output dimension

Exploratory research is undertaken when few or no previous studies exist. The aim is to look for patterns, hypotheses or ideas that can be tested and will form the basis for further research (Neville, 2007). Exploratory research studies are also termed as formulative research studies. The main purpose of such studies is that of formulating a problem for more precise investigation or of developing the working hypotheses from an operational point of view. The major emphasis in such studies is on the discovery of ideas and insights. The objective of exploratory research is the development of hypotheses rather than their testing, whereas formalized research studies are those with substantial structure and with specific hypotheses to be tested (Kothari, 2004).

This research was an exploratory research in that sense that it proposed a model plan for KS among the LIS professionals in the selected public and private university libraries of Bangladesh but the model plan was not justified rather it just discovered the idea which can be justified by further research.

4.5 Types of data used in the study

Data can be obtained from three important sources, namely: (i) secondary source, (ii) internal records, and (iii) primary source. Depending on the source, we can have either secondary data or internal data or primary data. These three types of data are briefly described here.

Secondary Data: When an investigator uses the data which has already been collected by others, such data are called secondary data. Secondary data can be obtained from journals, reports, government publications, publications of research organizations, trade and professional bodies, etc.

Internal Data: Internal data refer to the measurements that are the by-product of routine business record keeping like accounting, finance, production, personnel, quality control, sales, R & D, etc.

Primary Data: Primary data are measurements observed and recorded as part of an original study. When the data required for a particular study can be found neither in the internal records of the enterprise, nor in published sources, it may become necessary to collect original data, i. e. to conduct first hand investigation (Gupta & Gupta, 2008).

The study used secondary and primary data. The secondary data was collected from journal articles, research reports, books, websites, etc. and the primary data was collected through field survey.

4.6.1 Data collection methods

There are two basic methods of obtaining primary data, namely: (1) questioning, and (2) observation (Gupta & Gupta, 2008). Kumar (1999) in his book 'Research Methods in Library and Information Science' pointed out three data gathering methods as (a) observation, (b) measurement and (c) questioning. These methods are briefly described here.

Observation: It is the process of acquiring data, using sense organs. It has three components consisting of sensation, attention, and perception. In sensation, we use sensory organs (like eyes, ears, nose, etc.). Attention is the ability to concentrate on subject matter under study. Perception enables one to recognize facts, using experience, introspection and sensations (Kumar, 1999).

Measurement: A researcher applies some kind of device to the respondent. The act of measuring is called measurement. Measurement is a game; a researcher plays with objects and numerals. The game is based on rules laid down for the purpose (Kumar, 1999).

Questioning: In questioning, a researcher poses a verbal question(s) or series of questions for the respondent. It may take the form of a questionnaire or a schedule. Both are similar but

differ in certain respects. A questionnaire is usually sent to the respondents by mail but a schedule is used directly in an interview (Kumar, 1999).

It was decided to adopt questioning method for this study; because it seems to be easy, cheaper and time saving for collecting data from the respondents (Reddy, 1987; Kumar, 1999).

4.6.2 Data collection technique

Within each method of data gathering, there are various techniques. Choice of a technique depends upon various factors such as cost, time, needs of research, investigators familiarity and research skills etc.

A questionnaire can be either structured or unstructured. Structure refers to the degree of standardization imposed on the questionnaire. A highly structured questionnaire is one in which the questions to be asked and the response permitted are completely predetermined. A highly unstructured questionnaire is one in which the questions to be asked are only loosely predetermined, and the respondent is free to respond in his/her own words and in any way he/she sees fit (Gupta & Gupta, 2008). The questions whose answers are precoded in the questionnaire are called precoded. The questions to which a respondent is free to give any response are called open ended questions (Kumar, 1999).

It was decided to adopt pre-coded technique to generate the questions in designing the data collection tool.

4.6.3 Designing the data collection tool

Depending upon the kind of data to be gathered, one should select an instrument for the purpose, provided the one exists (Kumar, 1999). Questionnaires are often used in surveys as the primary data collection instruments (Busha & Harter, 1980). A questionnaire is a form containing a series of questions and providing space for their replies to be filled in by respondent himself (Reddy, 1987). The success of the questionnaire method of collecting information depends largely on the proper designing of the questionnaire (Gupta & Gupta, 2008). The language of the questionnaire should be clear and straightforward. Units of questions should be precisely stated or defined in order to ensure proper orientation of respondent. Long questions ahould be avoided. The questions should be so sequenced that the respondent is motivated and answer all questions. Complex questions that require the

respondent to go through several steps of reasoning before answering are undesirable and as such should be avoided (Raj, 1984).

The questionnaire for this study was designed to collect primary data about the concepts of KS from the target sample. The questionnaire was designed on the basis of the review of literature to meet the research objectives and find the answers to the research questions. It was tried to present the cocepts of KS in simple and easily understandable form so that the respondents answer all the questions. The questionnaire consists of 21 questions which were segmented into five sections. The questions are pre-coded in nature. Most of the questions can hold multiple answer. The breakdown of the questionnaire is showed here:

Section-A: This section contains seven questions to extract the respondents demographic information such as Type of University Library they are working in, their Gender, Age Group, Highest Academic Degree, Experience, ICT Skill, and the Name of their University Library.

Section-B: This section contains two questions to acquire the respondents' perception about the concept of knowledge and KS.

Section-C: This section consists of three questions to obtain the respondents' perception about the prerequisites for KS such as concept of intellectual capital (IC), factors influencing KS and skills needed for KS.

Section-D: This section possesses five questions to attain the respondents' perception about the facilitators to KS such as KS process, KS methods, KS techniques, KS tools and barriers to KS.

Section-E: This section holds four questions to gain the respondents' perception about the consequences of KS such as influences of KS on learning, feedback, and knowledge transfer after KS and benefits of learning by KS.

4.7.1 Population of the study

In simple language a population or universe can be defined as any collection of persons or objects or events in which one is interested (Gupta, 2005). Population is the complete set of items which are of interest in any particular situation (Gupta & Gupta, 2008). A population means only the people or documents etc. who are proposed to be covered under the scheme of study. Population can have sub-populations as well e. g. it can be male population or female population, literate or illiterate or rich or poor population and so on. Each sub-population is

mutually exclusive segment or section (Raj, 1984). In a statistical investigation the interest usually lies in the assessment of the general magnitude and the study of variation with respect to one or more characteristics relating to individuals belonging to a group. This group of individuals under study is called population or universe. Thus in statistics, population is an aggregate of objects, animate or inanimate, under study (Gupta & Kapoor, 1994).

Basically there are two types of university libraries in Bangladesh. The UGC (University Grants Commission) website suggests that there are 111 university libraries in the country. Among them the number of public university library is 34 and the total number of private university library is 77. These university libraries can also be categorized as general universities, technological universities, agricultural universities and medical universities. It was attempted to randomly select six public and six private universities to cover the four categories of university. The title of the study suggests that the LIS professionals of these selected university libraries were the population of this study. The total number of LIS professionals of these university libraries was about 405 which constitute the population of the study.

4.7.2 Sample of the study

By sample we mean the aggregate of objects, persons or elements, selected from the universe. It is a portion or a sub-part of the total population (Gupta, 2005). A finite subset of statistical individuals in a population is called a sample and the number of individuals in a sample is called the sample size (Gupta & Kapoor, 1994). Today it is being increasingly felt that social researchers have neither time, nor money nor energy nor resources to study the entire population which is connected or proposed to be covered in a study. In other words census method of study is proving more and more costly and time consuming. Accordingly it is felt that a representative sample should be picked up and conclusions drawn should be supposed to represent the whole population (Raj, 1984).

By random sampling is correctly meant the arranging of conditions in such a manner that every item of the whole universe from which we are to select the sample shall have the same chance of being selected as any other item (Gupta, 2005). Random selection is often sufficiently secured by the process of spreading out a consignment of goods etc. and marking one here and another there, avoiding the first, the last and the most obvious ones and testing the objects

marked (Bowley, 1923). Simple random sampling refers to the sampling technique in which each and every item of the population is given an equal chance of being included in the sample. The selection is thus free from personal bias because the investigator does not exercise his discretion of preference in the choice of items (Gupta & Gupta, 2008).

On the basis of the above discussion it was decided to draw the sample for this study by following 'simple random sampling technique'. As a result the sample size for this study was 65 (16%) out of 405 LIS professionals from the 12 university libraries of Bangladesh. The sample size comprises of two independent samples i.e. 35 from the six public university libraries and 30 from the six private university libraries. About 30 responses were received from the public university libraries and 29 responses were received from the private university libraries. The total number of the responses received was 59 (90.77% of the sample size) which is around 14.57 percent of the total population.

4.8 Data collection procedure

After designing the questionnaire and selecting the 12 university libraries, each and every university library was visited personally for the sake of data collection. An application was written for seeking permission of the chief of the selected university libraries to collect data from the LIS professionals of the respective university libraries and recommendation was taken from the supervisor. When visiting each university library the application was submitted to the concerned person and their approval was taken. Then the questionnaire was distributed randomly. An amount of 65 questionnaires were distributed to the LIS professionals in 12 university libraries. In some university libraries the data collection was completed within a working day but it took several working days in some university libraries to collect the filled questionnaire. Thus the data collection process was completed within the third week of July which was started on the last week of May, 2014.

4.9. Data Analysis Techniques

It was decided to use different statistical tools for analyzing the data. As a result the SPSS 20 (Statistical Package for Social Sciences) software was used for data analysis. Before analyzing data the variables were defined in a dataset using the software on the basis of the questionnaire. After all the variables of the questionnaire have been defined in a dataset, the

data was inputted for the 59 filled questionnaires which have been collected during the survey. After the data has been inputted, the questionnaire was studied on the basis of the research objectives and research questions to determine the possible statistical tools that can be used to analyze the data. Suggestions were taken from the supervisor and other experienced faculty members of the department and then the following statistical tools were chosen for the analysis of data.

4.9.1 Frequency distribution

The Section-A of the questionnaire contains seven questions about the respondents profile which were analyzed by using frequency distribution tables. In the frequency distribution process we get the output in the form of a frequency distribution table. A set of classes together with the frequencies of occurrence of values in each class in a given set of data, presented in a tabular form, is referred to as a frequency distribution (Islam, 2004). The results of the frequency distribution were presented by graphically in chapter 5. Frequency distribution table was presented for only 'Name of the University Library' variable. Frequency distribution was carried out for the following variables:

- Type of University Library
- Gender
- Age Group
- Highest Academic Degree
- Experience
- ICT Skill
- Name of the University Library

4.9.2 Cross tabulation

We can study the relationship between two or more categorical variables that have a small number of possible categories by using cross tabulation. A cross tabulation shows the number of cases that have particular combinations of values for two or more variables. The number of cases in each cell of a cross tabulation can be expressed as the percentage of all cases in that

row (the row percentage) or the percentage of all cases in that column (the column percentage) (Department of Statistics, Biostatistics & Informatics; University of Dhaka, 2013).

This technique was carried out to study the relationship between the type of university library professionals and their perception about the following variables:

- Concept of Knowledge
- Concept of KS
- Concept of Intellectual Capital (IC)
- Factors Influencing KS
- KS Skills
- KS Process
- KS Methods
- KS Techniques
- KS Tools
- Barriers to KS
- Benefits of Learning by KS

4.9.3 Chi-square test of independence

This test is used when you wish to explore the relationship between two categorical variables. Each of these variables can have two or more categories (Pallant, 2005). The chi-square ($\chi 2$) test is used to compare *proportions* between two or more independent groups or investigate if there is any association between two *nominal*-scale variables. The data can be presented as a contingency table with one of the variables as rows and the other as columns in the table. If the sample size is less than 20 in a 2×2 table then the Fisher's exact test should be used (McCrum-Gardner, 2008).

One of the most frequent uses of $\chi 2$ is for testing the null hypothesis that two criteria of classification are independent. They are independent if the distribution of one criterion in no way depends on the distribution of the other criterion. If they are not independent, there is an association between the two criteria. In the test of independence, the population and sample are classified according to some attributes. The test will indicate only, whether or not any dependency relationship exists between the attributes. It will not indicate the degree of

association or the direction of the dependency. To conduct the test, a sample is drawn from the population of interest and the observed frequencies are cross classified according to the two criteria. The cross-classification can be conveniently displayed by means of a table called a contingency table (Gupta & Gupta, 2008).

4.9.3.1 Conditions for the application of χ2 test

The following five basic conditions must be met in order for chi-square analysis to be applied (Gupta & Gupta, 2008):

1. The experimental data (sample observation) must be independent of each other.
2. The sample data must be drawn at random from the target population.
3. The data should be expressed in original units for convenience of comparison and not in percentage or ratio form.
4. The sample should contain at least 50 observations.
5. There should not be less than 5 observations in any one cell (each data entry is known as a cell).

4.9.3.2 Application of chi-square test for nominal scale of measurement

In the questionnaire that is used as the data collection tool for this study the first question is about the type of university library the respondents working in, which denotes two independent samples covered in this study. Again most of the questions used in Section C and D of the questionnaire denote nominal scale of measurement. Nominal scale of measurement refers to "categories but no order such as sex (male/female), marital status (single/married/divorced/widowed), location of lesion (tongue, lip, floor of mouth, palate and so on)" (McCrum-Gardner, 2008). In order to test null hypothesis for nominal scale of measurement one should use chi-square test (McCrum-Gardner, 2008).

Based on the above discussion chi-square test was performed in the following cases in this study:

1. Chi-square Test of Independence between the types of university library professionals and their perception about IC.
2. Chi-square Test of Independence between the types of university library professionals and their perception about the factors influencing KS.

3. Chi-square Test of Independence between the types of university library professionals and their perception about the KS skills.
4. Chi-square Test of Independence between the types of university library professionals and their perception about the KS process.
5. Chi-square Test of Independence between the types of university library professionals and their perception about the KS methods.
6. Chi-square Test of Independence between the types of university library professionals and their perception about the KS techniques.
7. Chi-square Test of Independence between the types of university library professionals and their perception about the KS tools.
8. Chi-square Test of Independence between the types of university library professionals and their perception about the barriers to KS.

4.9.3.3 Formulation of null hypothesis for chi-square test

A hypothesis can be considered a tentative generalization about the problem under investigation. It is an assumption of proposition whose tenability is to be tested on the basis of the compatibility of its implications with empirical evidence and with previous knowledge (Mouly, 1964). It is a proposition which can be put to a test to determine its validity. It may seem contrary to, or in accord with commonsense (Raj, 1984).

The null hypothesis is hypothesis of no difference (Tripathi, 2005). Null hypothesis in its simplest form means that there is no difference between two populations in respect of some property and that the difference, if any, is only accidental and unimportant. A null hypothesis asserts that results founds in research do not differ significantly from the expected results on a probability basis (Raj, 1984). Null hypothesis is a statement, which tells us that no difference exists between the parameter and the statistic being compared to it (Islam, 2004).

The null hypothesis for the chi-square test can be formulated differently based on the objective of the research study. Some examples were studied from some textbooks on research methodology and mentioned here with their references as follows:

- The preference for living accommodations is the same for graduates as it is for undergraduates (Kumar, 1997).

- There is no association between the educational attainment of the employees and their job performance (Islam, 2004).
- There is no difference so far as shops run by men and women in towns and villages (Kothari, 2004).
- The nature of the area is independent of the voting preference in the election (Gupta & Kapoor, 1994).

Based on the above discussion the null hypothesis was formulated for the chi-square test on the basis of the objectives and research questions of the study.

4.9.3.4 Statistics used in interpreting the results of chi-square test

The chi-square test was conducted by using the 'SPSS 20' software. The software produced a contingency table showing the observed and expected frequencies for the categorical variables. Then another table was produced with several statistics from which the following statistics were considered for this study:

Pearson Chi-Square Value: This is the actual value of chi-square ($\chi 2$).

Degree of Freedom: The degree of freedom is the number of scores we need to know before we can calculate the rest (Gorard, 2001). Degree of freedom is the number of observations that are free to vary after certain restrictions have been imposed on the data. The number of degrees of freedom for all cell frequencies is $(c - 1) * (r - 1)$ where, c refers to columns and r refers to rows (Gupta & Gupta, 2008).

Probability value/ *p* value [Asymp. Sig. (2-sided)]: The *p*-value is compared to the significance level α, and on this basis, the null hypothesis is either accepted or rejected. If the *p*-value is less than a pre-assigned significance level α, the null hypothesis is rejected and we can report that the results are statistically significant at level α. If *p*-value is greater than or equal to the significance level, the null hypothesis is not rejected.

The decision rules, which most researchers follow in stating their results, are as follows:

- If *p*-value is less than 0.01, the results are regarded as **highly significant**.
- If *p*-value is between 0.01 and 0.05, the results are regarded as **statistically significant.**
- If *p*-value is between 0.05 and 0.10, the results are regarded as **only tending toward statistical significant.**

- If *p*-value is greater than 0.10, the results are regarded as **not statistically significant** (Islam, 2004)**.**

Based on the above discussion the pre-assigned significance level was considered as α=0.05 and compared with the *p*-value produced as a result of conducting the required chi-square test to take decision about the null hypotheses.

4.9.3.5 Fisher's exact test/ Exact sig. (2-sided)

In order to conduct chi-square test the lowest expected frequency in any cell should be 5 or more. If we have a 2 by 2 table that violates this assumption we should consider using Fisher's Exact Probability Test, instead also provided as part of the output from chi-square (Pallant, 2005). Since the expected frequencies in some of the cell violate this assumption hence we also took the *p*-value of the Fisher's Exact Probability Test.

4.9.4 Descriptive Statistics

Descriptive statistics do exactly what they say: they describe and present data, for example, in terms of summary frequencies. This will include the mean; the standard deviation and the minimum and maximum scores, etc. (Cohen, Manion, & Morrison, 2007). This technique was used for the analysis of the three ordinal scales of measurement items in 'Section-E: Consequences of KS' of the questionnaire. The measures considered under the descriptive statistics for this study are as follows:

Minimum: The lowest item of the scale selected by any respondent.

Maximum: The highest item of the scale selected by any respondent.

Mean: Its value is obtained by adding together all the observations and by dividing this total by the number of observations (Gupta & Gupta, 2008). If the value of mean is more or equal than the value of any item of the scale, it was interpreted that the respondents perceived that item with that degree of agreement.

Standard Deviation: It is a measure of how much "spread" or "variability" is present in the sample. If all the numbers in the sample are very close to each other, the standard deviation is close to zero. If the numbers are well dispersed, the standard deviation will tend to be large (Gupta & Gupta, 2008).

Descriptive statistics was used for the following items:

- Influence of KS on learning
- Feedback
- Knowledge Transfer after KS

4.9.5 Mann Whitney U Test

The non-parametric equivalents of the t-test are the Mann-Whitney U test for two independent samples and the Wilcoxon test for two related samples, both for use with one categorical variable and a minimum of one ordinal variable. These enable us to see, for example, whether there are differences between males and females on a rating scale (Cohen, Manion, & Morrison, 2007). The Mann-Whitney test is based on ranks, 'comparing the number of times a score from one of the samples is ranked higher than a score from the other sample' (Bryman & Cramer, 1990). Unfortunately the Mann-Whitney test does not enable the researcher to identify clearly where the differences lie between the two groups (Cohen, Manion, & Morrison, 2007).

4.9.5.1 Application of Mann Whitney U test for the ordinal scale of measurement

In Section E of the questionnaire there are three items that represents the consequences of KS. These items denote ordinal scale of measurement. Ordinal scale of measurement refers to ordered categories such as pain (mild/moderate/severe), Likert scale (strongly disagree/disagree/neutral/agree/strongly disagree), stage of tumor (grades I–IV), visual analogue scale (VAS) (McCrum-Gardner, 2008). This study attempted to test whether there is any difference between the perception of the LIS professionals from the selected public and private university libraries about the consequences of KS. In order to test null hypothesis for ordinal scale of measurement one should use Mann Whitney U test (McCrum-Gardner, 2008).

4.9.5.2 Formulation of null hypothesis for Mann Whitney U test

Based on the above discussion the researcher formulated the null hypothesis for Mann Whitney U Test to see **whether there is any difference in the perception of the LIS professionals from public and private university libraries about the consequences of KS.**

4.9.5.3 Statistics Used in interpreting the results of Mann Whitney U test

The *p*-value is mainly considered for the Mann Whitney U Test to reject or accept the null hypothesis against the pre-assigned significance level, $\alpha=0.05$ based on the decision rules mentioned under the statistics used in interpreting the results of chi-square test.

4.10 Interpretation of data

After collecting and analyzing the data, the researcher has to accomplish the task of drawing inferences followed by report writing. This has to be done very carefully, otherwise misleading conclusions may be drawn and the whole purpose of doing research may get vitiated. Interpretation refers to the task of drawing inferences from the collected facts after an analytical and/or experimental study. Interpretation is essential for the simple reason that the usefulness and utility of research findings lie in proper interpretation. It is being considered a basic component of research process. It is only through interpretation that the researcher can expose relations and processes that underlie his findings. In case of hypotheses testing studies, if hypotheses are tested and upheld several times, the researcher may arrive at generalizations. But in case the researcher had no hypothesis to start with, he would try to explain his findings on the basis of some theory (Kothari, 2004). In interpreting the data one should point out how consistent or inconsistent your findings are with those of related studies and with the demands and expectations of the theory one have reviewed in the beginning of the report. In this manner, one should tie his/her study into the network of existing scientific information and make his/her contribution to the advancement of knowledge (Gupta, 2005). This study attempted to interpret the analyzed data and synthesize the results obtained with the previous studies on the related topics.

4.10.1 Synthesis

The task of interpretation has two major aspects viz., (i) the effort to establish continuity in research through linking the results of a given study with those of another; and (ii) the establishment of some explanatory concepts (Kothari, 2004). The first aspect refers to the process of synthesis. Once the data have been gathered and subjected to external criticism for authenticity and to internal criticism for accuracy, the researcher is next confronted with the task of piecing together an account of the events embraced by the research problem. This stage

is known as the process of synthesis. It is probably the most difficult phase in the project and calls for considerable imagination and resourcefulness. The resulting pattern is then applied to the testing of the hypothesis (Cohen, Manion, & Morrison, 2007). Research syntheses attempt to integrate empirical research for the purpose of creating generalizations. Also, research syntheses almost always pay attention to relevant theories, critically analyze the research they cover, try to resolve conflicts in the literature, and attempt to identify central issues for future research (Cooper & Hedges). It involves the quantification and synthesis of findings from separate studies on some common measure, usually an aggregate of effect size estimates, together with an analysis of the relationship between effect size and other features of the studies being synthesized (Cohen, Manion, & Morrison, 2007).

The art of synthesis is considered to be the strongest point for any study which enables the research study to prove its uniqueness and amalgamate the results obtained with the previous studies of similar type to create new knowledge. This particular study is characterized with this feature.

4.11 Summary

This chapter enumerated the research design of the study by highlighting on the determination of the problem area, thorough review of literature, selection of research approach, types of data used, data collection methods, techniques and tools, population and sample of the study, data collection procedure, data analysis techniques and interpretation of data. Each of these processes was described on the basis of the existing theoretical methods and rationale for adopting any particular method especially for this study.

Chapter Five:
Data Analysis and Interpretation

Chapter Five

Data Analysis and Interpretation

5.1 Introduction

This chapter encompasses the analysis of the primary data obtained through questionnaire survey and their interpretations. The questionnaire used for this study segmented into five sections to extract the perceptions of the LIS professionals from the selected public and private university libraries of Bangladesh. Based on the responses received and the types of variables used in the questionnaire different statistical tools were applied to analyze the data. After analyzing the data the results were interpreted by synthesizing with the previous studies.

5.2 Profile of the respondents

The questionnaire used for collecting data constitutes a section entitled 'Respondents Profile'. This section urges the respondents to provide data about the Type of University Library they are working in, their Gender, Age Group, Highest Academic Degree, Experience, ICT Skill, and the Name of their University Library. The collected data for Section-A (Respondents Profile) were analyzed using the frequency distribution table and the results are graphically presented here.

5.2.1 Distribution of the respondents over different types of university library

This study was carried out in some selected public and private university libraries of Bangladesh. Figure-16 shows that among the 59 respondents about 30 (50.8%) respondents were from the public university libraries while 29 (49.2%) respondents came from the private university libraries. The study tried to keep balance in taking sample from the selected public and private university libraries in order to compare their perceptions.

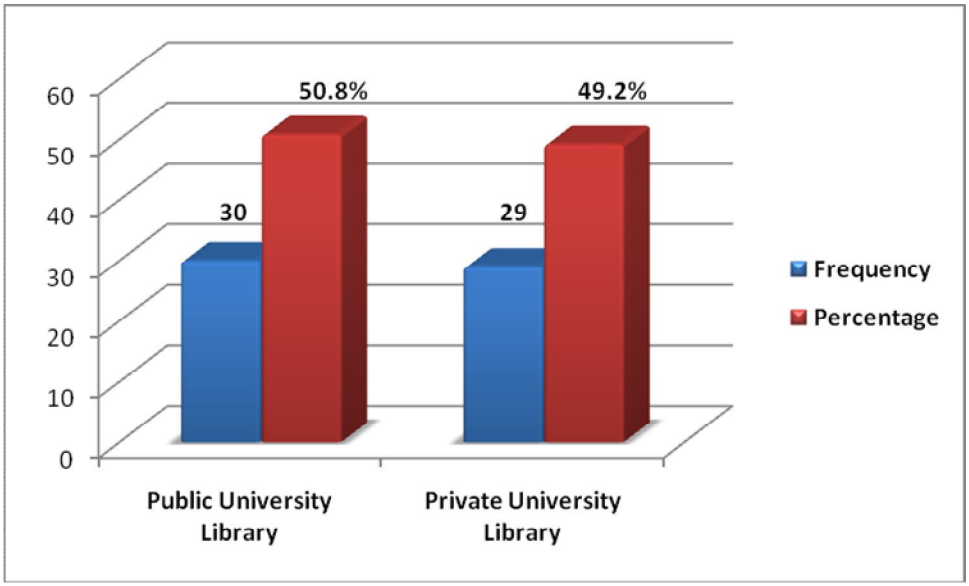


Figure-16: Distribution of the respondents over different types of university library

5.2.2 Gender of the respondents

Figure-17 reveals that the total number of male respondents is 40 (67.8%), which is over twice of the total number of female respondents that is 19 (32.2%), from the selected public and private university libraries of Bangladesh.

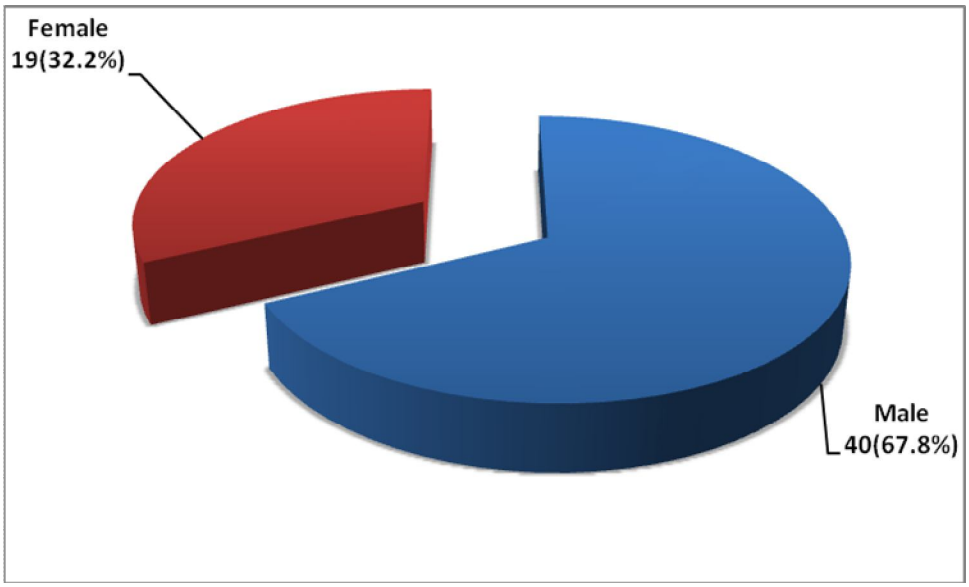


Figure-17: Gender of the respondents

5.2.3 Age group of the respondents

Figure-18 discloses that the highest number of the respondents that is 16 (27.1%) falls into the age group below 30, followed by the second highest respondents that is 15 (25.4%) were from the age group 31-35 years, while about 6 (10.2%), 9 (15.3%), and 13 (22.0%) respondents were respectively from the 36-40 years, 41-45 years, and 46 and above, age groups.

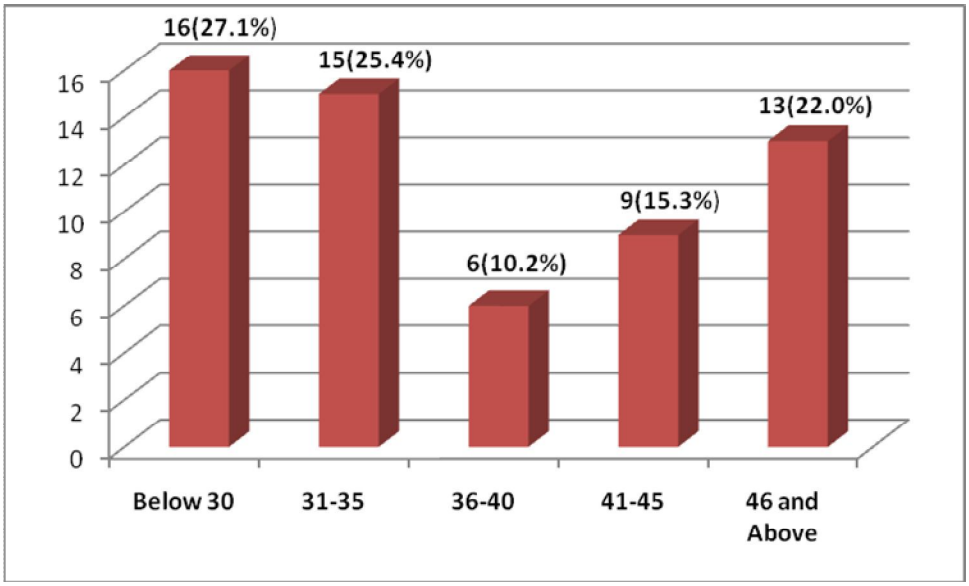


Figure-18: Age group of the respondents

5.2.4 Highest academic degree of the respondents

Figure-19 represents that most of the respondents, that is 52 (88.1%) have M. A. (Master of Arts) or equivalent degree as their highest academic degree. On the other hand, 3 (5.1%) respondents have M. Phil. (Master of Philosophy) and 2 (3.4%) respondents have Ph. D. (Doctor of Philosophy) as their highest academic degree while 1 (1.7%) respondent each has B. A. (Bachelor of Arts) and PGD (Post Graduate Diploma) as their highest academic degree.

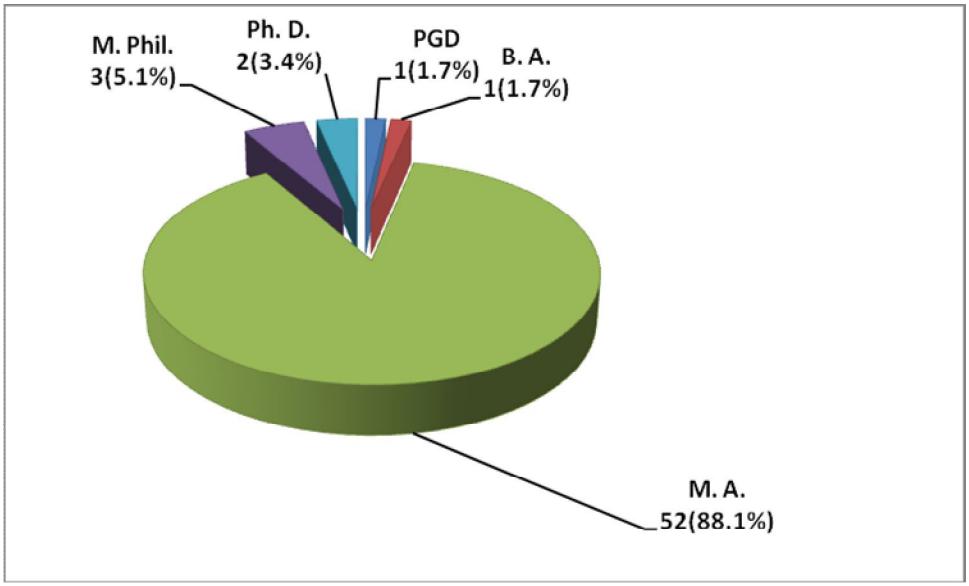


Figure-19: Highest academic degree of the respondents

5.2.5 Distribution of the respondents over the selected public and private university libraries

Table-6 entails that the highest number of respondents that is 17 (28.8%), came from the DU Central Library while the second highest that is 6 (10.2%) respondents each, came from Ayesha Abed Library (BRACU), ULAB library and NSU library respectively. The third highest number of respondents that is 5 (8.5%), came from IUB Central library and the fourth highest that is 4 (6.8%) respondents came from BUET Central library. An amount of 3 (5.1%) respondents came from SAU Central library, BUP library, AUST library and BUHS library each. Besides these the lowest respondent that is 1 (1.7%) came from BUTex library and the second lowest that is 2 (3.4%) respondents came from BSMMU Central Library.

Table-6: Distribution of the respondents over the selected public and private university libraries

Name of University Library	Frequency	Percentage
Dhaka University (DU Central Library)	17	28.8%
Bangladesh University of Engineering and Technology (BUET Central Library)	4	6.8%
Bangabandhu Sheikh Mujib Medical University (BSMMU Central Library)	2	3.4%
Sher-e-Bangla Agricultural University (SAU Central Library)	3	5.1%
Bangladesh University of Textiles (BUTex Library)	1	1.7%
Bangladesh University of Professionals (BUP Library)	3	5.1%
Independent University of Bangladesh (IUB Central Library)	5	8.5%
Ahsanullah University of Science and Technology (AUST Library)	3	5.1%
Bangladesh University of Health Sciences (BUHS Library)	3	5.1%
BRAC University (Ayesha Abed Library)	6	10.2%
University of Liberal Arts Bangladesh (ULAB Library)	6	10.2%
North South University (NSU Library)	6	10.2%
Total	59	100.0%

5.2.6 Experience of the respondents

Responses were received from five categories of LIS professionals regarding their experience in the profession. Figure-20 focuses that majority of the respondents that is 19 (32.3%) have less than five years of experience while 14 (23.7%) respondents have 6-10 years of experience and 11 (18.6%) respondents have more than 20 years of experience. However 10 (16.9%) respondents were found having 16-20 years of experience and only 5 (8.5%) were found having 11-15 years of experience.

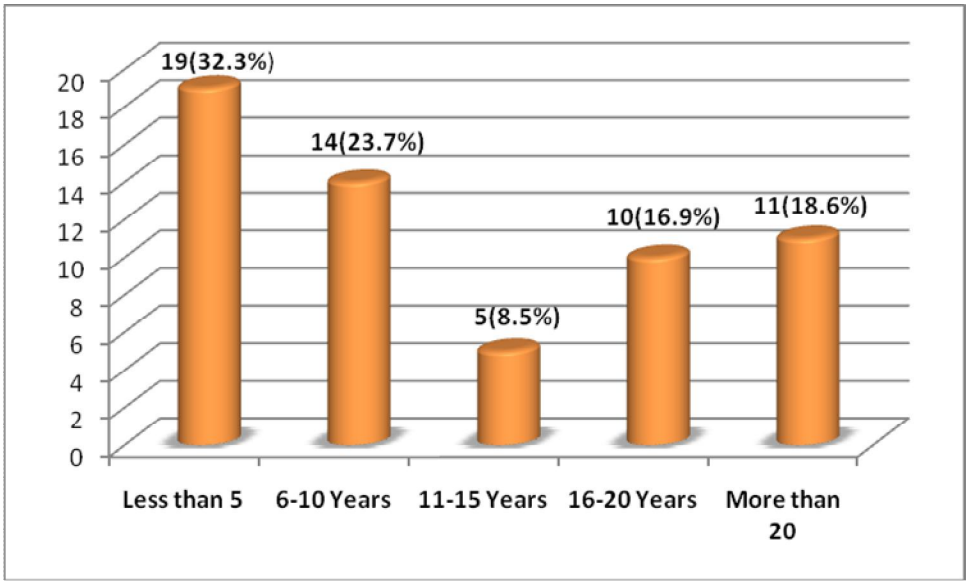


Figure-20: Experience of the respondents

5.2.7 ICT skill of the respondents

Respondents were requested to express their perception about their ICT skill based on seven categories and as a result they expressed their perception within five categories while the remaining two categories were not selected by any respondent. Figure-21 draws that 31 (52.5%) LIS professionals said that their ICT skill is good with the highest number of response, meanwhile the second highest response rate is 14 (23.7%) with very good ICT skill and the third highest rate is 10 (16.9%) with average ICT skill. Moreover, about 2 (3.4%) professionals think that their ICT skill is extremely good in contrast only 1 (1.7%) professional think that his/her ICT skill is poor.

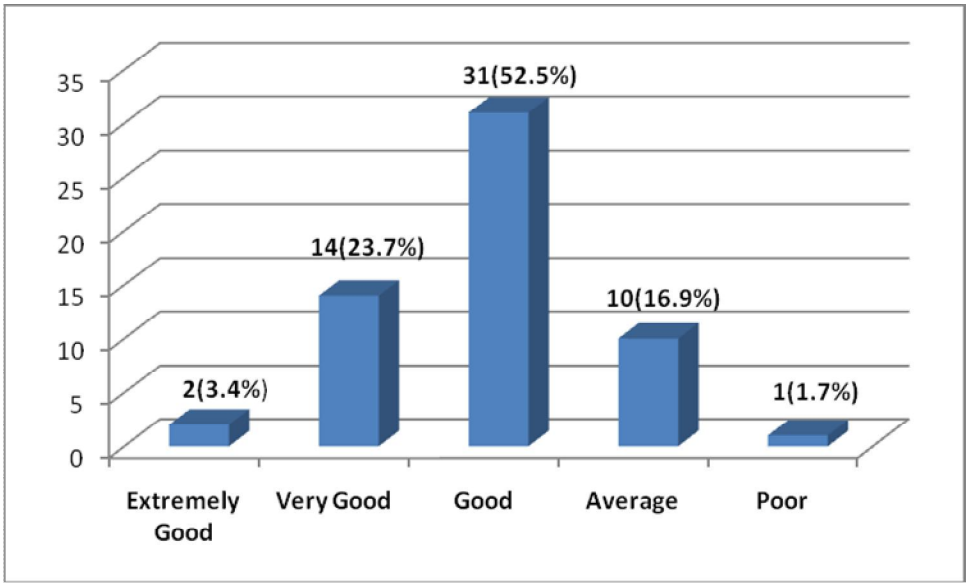


Figure-21: ICT skill of the respondents

5.3 Concept of knowledge and KS

In Section-B of the questionnaire, respondents were asked to express their perception about the Concept of Knowledge and Concept of KS. Based on the responses received, cross tabulation were applied to compare how the LIS professionals from the selected public and private university libraries of Bangladesh perceive about the concept of knowledge and concept of KS.

5.3.1 Concept of knowledge

Knowledge exists in the human brain in the form of stored or expressed neuronal patterns that may be activated and reflected upon through conscious thought (Bennet & Bennet, 2008). Knowledge is the capacity (potential or actual) to take effective action in varied and uncertain situations (Bennet & Bennet, 2004). Bartol and Srivastava (2002) consider knowledge a broad concept which includes information, ideas and expertise relevant for tasks performed by individuals, teams, work units and the organization as a whole (Bartol & Srivastava, 2002). According to Drucker (1989), knowledge is information that changes something or somebody - either by becoming grounds for action, or by making an individual (or an institution) capable of different or more effective action (Drucker, 1989).

Respondents were requested to express their perception about the following three concepts of knowledge and their comparison is presented here in a tabulated form.

Table-7: Cross Tabulation between type of university library professionals and their concept of knowledge

Concept of Knowledge	Type of university library	Agree	Disagree	Total
		Frequency(percentage)	Frequency(percentage)	Frequency(percentage)
Knowing about something	Public	22 (73.3%)	8 (26.7%)	30 (100.0%)
	Private	28 (96.6%)	1 (3.4%)	29 (100.0%)
Knowing how to do something	Public	19 (63.3%)	11 (36.7%)	30 (100.0%)
	Private	26 (89.7%)	3 (10.3%)	29 (100.0%)
Knowing how to solve a problem	Public	24 (80.0%)	6 (20.0%)	30 (100.0%)
	Private	27 (93.1%)	2 (6.9%)	29 (100.0%)

5.3.1.1 Knowing about something

Table-7 represents that among the 30 public university LIS professionals, about 22 (73.3%) agreed with this concept in comparison to 28 (96.6%) professionals of private university libraries who agreed with the same concept. In contrast, 8 (26.7%) public university LIS professionals along with 1 (3.4%) private university LIS professionals disagreed with that concept. So these figures proved that most of the LIS professionals from both public and private university libraries agreed with this concept.

5.3.1.2 Knowing how to do something

Table-7 shows that 19 (63.3%) public university LIS professionals agreed with this concept while 26 (89.7%) professionals from private university libraries agreed with the identical concept. In contrast, 11 (36.7%) public university LIS professionals along with 3 (10.3%) private university LIS professionals disagreed with this concept. It can be concluded that majority of the LIS professionals from both public and private university libraries agreed with this concept.

5.3.1.3 Knowing how to solve a problem

Table-7 reveals that an amount of 24 (80.0%) respondents from public university libraries agreed with this concept, meanwhile 27 (93.1%) respondents from private university libraries agreed with the same concept. In contrast, 6 (20.0%) public university LIS professionals along with 2 (6.9%) private university LIS professionals disagreed with the identical concept. So it can be claimed that majority of the LIS professionals from both public and private university libraries agreed with this concept.

5.3.2 Concept of KS

Knowledge sharing practices coordinate organizational knowledge bases with knowledge workers and vice versa (Nonaka & Konno, 1998). Knowledge sharing takes place when organizational members share organization-related information, ideas, suggestions and expertise with each other (Bartol & Srivastava, 2002). Knowledge sharing can define as a social interaction culture, involving the exchange of employee knowledge, experiences, and skills through the whole department or organization. Knowledge sharing comprises a set of shared understandings related to providing employees access to relevant information and building and using knowledge networks within organizations (Hogel, Parboteeah, & L.Munson, 2003). KS can thus be seen as a social interaction culture in which employees exchange work-related experiences, skills, and know-how with colleagues (Lin, 2007). From an individual perspective, KS involves listening and talking to others, providing them with task information and know-how which may help them do something better, solve problems more quickly and, at the same time, learn from their experience and develop new ideas (Cummings, 2004; Reid, 2003).

Respondents were requested to express their perception about the following three concepts of KS and their comparison is presented here in a tabulated form.

Table-8: Cross Tabulation between type of university library professionals and their concept of KS

Concept of KS	Type of university library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Communication of knowledge	Public	22 (73.3%)	8 (26.7%)	30 (100.0%)
	Private	22 (75.9%)	7 (24.1%)	29 (100.0%)
Exchange of knowledge	Public	25 (83.3%)	5 (16.7%)	30 (100.0%)
	Private	23 (79.3%)	6 (20.7%)	29 (100.0%)
Transmission and absorption of knowledge	Public	18 (60.0%)	12 (40.0%)	30 (100.0%)
	Private	24 (82.8%)	5 (17.2%)	29 (100.0%)

5.3.2.1 Communication of knowledge

Table-8 represents that among the 30 public university LIS professionals, about 22 (73.3%) agreed with this concept in comparison to 22 (75.9%) professionals of private university libraries who agreed with the same concept. In contrast, 8 (26.7%) public university LIS professionals along with 7 (24.1%) private university LIS professionals disagreed with that concept. So it can be inferred that most of the LIS professionals from both public and private university libraries agreed with this concept.

5.3.2.2 Exchange of knowledge

Table-8 shows that 25 (83.3%) public university LIS professionals agreed with this concept while 23 (79.3%) professionals from private university libraries agreed with the identical concept. In contrast, 5 (16.7%) public university LIS professionals along with 6 (20.7%) private university LIS professionals disagreed with this concept. It can be concluded that majority of the LIS professionals from both public and private university libraries agreed with this concept.

5.3.2.3 Transmission and absorption of knowledge

Table-8 reveals that an amount of 18 (60.0%) respondents from public university libraries agreed with this concept, meanwhile 24 (82.8%) respondents from private university libraries agreed with the same concept. In contrast, 12 (40.0%) public university LIS professionals along with 5 (17.2%) private university LIS professionals disagreed with the identical concept. So it

can be claimed that majority of the LIS professionals from both public and private university libraries agreed with this concept.

5.4 Prerequisites for KS

In Section-C of the questionnaire, respondents were asked to express their perception about the prerequisites for KS, such as intellectual capital (IC), factors influencing KS, and KS skills. Based on the responses received, cross tabulation were applied to compare how the LIS professionals from the selected public and private university libraries of Bangladesh perceive about the prerequisites for KS. Chi-square test of independence was also performed to test whether the type of university library professionals and their perception about the prerequisites for KS are independent or not.

5.4.1 Concept of intellectual capital (IC)

Intellectual capital has always been present in libraries and the majority of library professionals always were and still are, one way or another, aware of the significance of library's intellectual capital. In fact, it seems that a library culture for intellectual capital utilization and/or creation was diachronically present (Kostagiolas, 2012). Library's human capital, structural capital, and relational capital enhances the university's intellectual capital and thus constitutes a part of the university's intellectual capital (Iivonen & Huotari, 2007). While indicating the intangible assets for academic libraries and information services, Kostagiolas and Asonitis (2009) mentioned three intellectual capital categories as human capital, structural capital and relational capital along with their examples (Kostagiolas & Asonitis, 2009). Human capital (training and learning, motivation, interest in participation) and organizational capital (relation between strategy and knowledge, formalization and centralization, partnership-oriented organizational culture) has an impact on knowledge sharing in the organization (Mehrvarz & Pilevari, 2012). Ruta and Macchitella (2008) highlight that specific aspects of IC, namely social and organizational capital, affect both the quantity and the quality of the knowledge being shared (Ruta & Macchitella, 2008). Widen-Wuff and Suomi (2003) found that the concepts of human and intellectual capital are basic requisites for effective knowledge sharing (Widen-Wulff & Suomi, 2003).

In Section-C of the questionnaire, respondents were requested to express their perception about the following four concepts of IC and their comparison is presented here in a tabulated form.

Table-9: Cross Tabulation between type of university library professionals and their concept of IC

Intellectual Capital (IC)	Type of university library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Knowledge of the LIS professionals	Public	22 (73.3%)	8 (26.7%)	30 (100.0%)
	Private	25 (86.2%)	4 (13.8%)	29 (100.0%)
Knowledge about the library systems and processes	Public	20 (66.7%)	10 (33.3%)	30 (100.0%)
	Private	21 (72.4%)	8 (27.6%)	29 (100.0%)
Knowledge about the library users	Public	18 (60.0%)	12 (40.0%)	30 (100.0%)
	Private	21 (72.4%)	8 (27.6%)	29 (100.0%)
Knowledge gained through relationship	Public	21 (70.0%)	9 (30.0%)	30 (100.0%)
	Private	21 (72.4%)	8 (27.6%)	29 (100.0%)

5.4.1.1 Knowledge of the LIS professionals

Table-9 represents that 22 (73.3%) LIS professionals from the selected public university libraries agreed with this concept along with 25 (86.2%) professionals from selected private university libraries who agreed similarly. In contrast, 8 (26.7%) LIS professionals from public and 4 (13.8%) LIS professionals from private university libraries disagreed with the same item. So it can be concluded that most of the LIS professionals from both public and private university libraries agreed with this item.

5.4.1.2 Knowledge about the library systems and processes

Table-9 shows that 20 (66.7%) respondents from the selected public university libraries agreed with this item in comparison to 21 (72.4%) respondents from the selected private university libraries who agreed correspondingly. In contrast, 10 (33.3%) respondents from the public and 8 (27.6%) respondents from private university libraries disagreed with this concept.

Consequently it can be demarcated that most of the respondents from the two types of university libraries agreed with this concept.

5.4.1.3 Knowledge about the library users

Table-9 displays that about 18 (60.0%) LIS professionals from the public university libraries agreed with this concept while 21 (72.4%) LIS professionals from the private university libraries agreed likewise. In contrast, 12 (40.0%) respondents from public and 8 (27.6%) respondents from private university libraries disagreed with this concept. Regarding these statistics it can be decided that the majority of the professionals from the two types of sample agreed with this concept.

5.4.1.4 Knowledge gained through relationship

Table-9 describes that an amount of 21 (70%) respondents from the public university libraries agreed with this concept, meanwhile an amount of 21 (72.4%) respondents from the private universities agreed alike. In comparison to that, 9 (30.0%) respondents from the public and 8 (27.6%) respondents from the private university libraries disagreed correspondingly. Concerning this statistics it can be opined that the most of the respondents from the two different types of library agreed with this concept.

5.4.1.5 Chi-square Test of Independence between the types of university library professionals and their perception about IC

The purpose is to test whether the types of university library professionals and their perception about IC are independent or not. The null hypothesis is formulated as follows:

H_o: The perception of the LIS professionals from the selected public and private university libraries is same about IC.

Table-10 shows that the p value for the entire four concepts are greater than 0.05. So the null hypothesis is accepted. It means that the perception of the LIS professionals from the selected public and private university libraries about IC is same. According to table-9, it can be said that the LIS professionals from the selected public and private university libraries were equally agreed about the concepts of IC. So it can be claimed that the type of university library professionals and their perception about IC are independent.

Table-10: Chi-square Test of Independence between the types of university library professionals and their perception about IC

Intellectual Capital (IC)	Pearson Chi-square Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Decision (H_o)
Knowledge of the LIS professionals	1.508	1	0.219	0.333	Accepted
Knowledge about the library systems and processes	0.230	1	0.632	0.779	Accepted
Knowledge about the library users	1.014	1	0.314	0.412	Accepted
Knowledge gained through relationship	0.042	1	0.838	1.000	Accepted

Note: Significant * at $p<0.05$

5.4.2 Factors influencing KS

Trust, communication, information systems, rewards and organization structure are positively related to knowledge sharing in organizations (Al-Alawi, Al-Marzooqi, & Mohammed, 2007). Trust, motivation, effective communication, shared mindsets, leadership and training are critical for effective knowledge sharing in providing floating support in sheltered housing for the elderly (Egbu, Wood, & Egbu, 2010). Wang and Noe (2010) developed a framework for understanding knowledge sharing research. The framework identifies five areas of emphasis of knowledge sharing research: organizational context, interpersonal and team characteristics, cultural characteristics, individual characteristics, and motivational factors (Wang & Noe, 2010). Personality is the most significant predictor of knowledge sharing quality followed by trust and awareness (Ismail & Yusof, 2010).

In Section-C of the questionnaire the LIS professionals from the selected public and private university libraries of Bangladesh were requested to express their perception about the factors influencing KS among them in the university libraries. There was a provision of multiple responses for the item. On the basis of the responses received, cross tabulation technique were applied to draw the status of the perception of the LIS professionals from the different type of university libraries about the factors influencing KS.

Table-11: Cross Tabulation between type of university library professionals and their perception about the factors influencing KS

Factors influencing KS	Type of university library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Education and experience	Public	27 (90.0%)	3 (10.0%)	30 (100%)
	Private	23 (79.3%)	6 (20.7%)	29 (100%)
Trust	Public	21 (70.0%)	9 (30.0%)	30 (100.0%)
	Private	17 (58.6%)	12 (41.4%)	29 (100.0%)
Collaboration	Public	23 (76.7%)	7 (23.3%)	30 (100.0%)
	Private	19 (65.5%)	10 (34.5%)	29 (100.0%)
Empowerment	Public	22 (73.3%)	8 (26.7%)	30 (100.0%)
	Private	15 (51.7%)	14 (48.3%)	29 (100.0%)
Team work	Public	25 (83.3%)	5 (16.7%)	30 (100.0%)
	Private	23 (79.3%)	6 (20.7%)	29 (100.0%)
Good leadership	Public	23 (76.7%)	7 (23.3%)	30 (100%)
	Private	21 (72.4%)	8 (27.6%)	29 (100.0%)
Rewards and incentives	Public	20 (66.7%)	10 (33.3%)	30 (100.0%)
	Private	16 (55.2%)	13 (44.8%)	29 (100.0%)
Availability of useful and current technology	Public	26 (86.7%)	4 (13.3%)	30 (100.0%)
	Private	23 (79.3%)	6 (20.7%)	29 (100.0%)
Easy communication	Public	26 (86.7%)	4 (13.3%)	30 (100.0%)
	Private	21 (72.4%)	8 (27.6%)	29 (100.0%)

5.4.2.1 Education and experience

Table-11 shows that 27 (90.0%) LIS professionals from the selected public university libraries agreed with this factor while 23 (79.3%) LIS professionals from the selected private university libraries agreed similarly. On the contrary, 3 (10.0%) LIS professionals from public and 6 (20.7%) professionals from private university libraries disagreed with this factor. So it can be said that the majority of the LIS professionals from both public and private university libraries agreed with this factor.

5.4.2.2 Trust

From table-11, it can be said that 21 (70.0%) respondents from public and 17 (58.6%) respondents from private university libraries agreed with this factor. In comparison to that, 9 (30.0%) respondents from the public and 12 (41.4%) respondents from private university libraries disagreed with this factor. So it can be inferred that majority of the respondents from the two different type of university libraries agreed with this factor.

5.4.2.3 Collaboration

Table-11 reveals that 23 (76.7%) professionals from the selected public university libraries agreed with this factor in comparison to 19 (65.5%) professionals of selected private university libraries who agreed with the same factor. On the other hand, 7 (23.3%) public university library professionals in accordance with 10 (34.5%) private university library professionals disagreed with this factor. Regarding these, it can be concluded that the majority of the respondents from the two independent types of samples agreed with this factor.

5.4.2.4 Empowerment

Table-11 discloses that about 22 (73.3%) respondents from the public university libraries agreed with this factor in accordance with 15 (51.7%) respondents from the private university libraries agreed with the same factor. In contrast, 8 (26.7%) respondents from the public university libraries in correspondence with 14 (48.3%) respondents from the private university libraries disagreed with this factor. Concerning these, it can be decided that majority of the respondents from both public and private university libraries agreed with this factor.

5.4.2.5 Team work

Table-11 displays that an amount of 25 (83.3%) LIS professionals from the public university libraries agreed with this factor while 23 (79.3%) LIS professionals from the private university libraries agreed correspondingly. In contrast, 5 (16.7%) LIS professionals from public and 6 (20.7%) LIS professionals from private university libraries disagreed with this factor. So it can be concluded that the most of the LIS professionals from both type of university libraries agreed with this factor.

5.4.2.6 Good leadership

Table-11 represents that, 23 (76.7%) professionals from the public university libraries agreed with this factor along with 21 (72.4%) professionals from the private university libraries who agreed similarly. Meanwhile, 7 (23.3%) professionals from the public and 8 (27.6%) professionals from the private university libraries disagreed with this factor. So it can be claimed that most of the professionals from the both types of sample agreed with this factor.

5.4.2.7 Rewards and incentives

Table-11 denotes that 20 (66.7%) LIS professionals from the public university libraries agreed with this factor in comparison to 16 (55.2%), LIS professionals from the private university libraries who agreed with the same factor. In contrast, 10 (33.3%) LIS professionals from public and 13 (44.8%) LIS professionals from private university libraries disagreed with this factor. So it can be stated that the majority of the LIS professionals from both public and private university libraries agreed with this factor.

5.4.2.8 Availability of useful and current technology

Table-11 refers that about 26 (86.7%) respondents from the public university libraries and 23 (79.3%) respondents from the private university libraries agreed with this factor. In the mean time, about 4 (13.3%) respondents from the public and 6 (20.7%) respondents from the private university libraries disagreed with this factor. So it can be declared that most of the respondents from the two independent samples agreed with this factor.

5.4.2.9 Easy communication

Table-11 expresses that about 26 (86.7%) respondents from the public university libraries agreed with this factor while 21 (72.4%) respondents from the private university libraries agreed correspondingly. On the other hand, 4 (13.3%) respondents from the public university libraries and 8 (27.6%) respondents from the private university libraries disagreed with this factor. So it can be inferred that most of the respondents from both types of university libraries agreed with this factor.

5.4.2.10 Chi-square Test of Independence between the types of university library professionals and their perception about the factors influencing KS

The purpose is to test whether the types of university library professionals and their perception about the factors influencing KS are independent or not. The null hypothesis is formulated as follows:

H_o: The perception of the LIS professionals from the selected public and private university libraries is same about the factors influencing KS.

Table-12 shows that the p value for the factors influencing KS are greater than 0.05. So the null hypothesis is accepted. It means that the perception of the LIS professionals from the selected public and private university libraries about the factors influencing KS is same. According to table-11, it can be said that the LIS professionals from the selected public and private university libraries were equally agreed about the factors influencing KS. So it can be claimed that the type of university library professionals and their perception about the factors influencing KS are independent.

In order to conduct chi-square test the lowest expected frequency in any cell should be 5 or more. If we have a 2 by 2 table that violates this assumption we should consider using Fisher's Exact Probability Test, instead also provided as part of the output from chi-square (Pallant, 2005). Since the expected frequencies in some of the cell violate this assumption hence we also took the p value of the Fisher's Exact Probability Test which also tells us to accept the null hypothesis.

Table-12: Chi-square Test of Independence between the types of university library professionals and their perception about the factors influencing KS

Factors influencing KS	Pearson Chi-square Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Decision (H_o)
Education and experience	1.303	1	0.254	0.299	Accepted
Trust	0.833	1	0.361	0.422	Accepted
Collaboration	0.894	1	0.344	0.399	Accepted
Empowerment	2.945	1	0.086	0.110	Accepted
Team work	0.157	1	0.692	0.748	Accepted
Good leadership	0.141	1	0.708	0.771	Accepted
Rewards and incentives	0.819	1	0.365	0.430	Accepted
Availability of useful and current technology	0.567	1	0.451	0.506	Accepted
Easy communication	1.849	1	0.174	0.209	Accepted

Note: Significant * at $p<0.05$

5.4.3 KS skills

The competences found important for KS by middle managers who worked at medium- and large-sized enterprises in Hungary can be characterized by the following competence groups: methodological competences needed for thinking, methodological competences used for work method and style, social competences connected with communication skills, social competences connected with co-operational skills, professional competences, personal competences as well as other characteristics and competences (Csepregi, 2011). Siddike and Islam (2011) carried out a survey to identify core competencies needed for information professionals to involve in KM in the libraries/information institutions of Bangladesh. Most of the respondents believe that competencies including those in communication, facilitation, coaching, mentoring, networking, negotiating, consensus building and team working are essential for KM in the libraries of Bangladesh (Siddike & Islam, 2011).

In Section-C of the questionnaire the LIS professionals from the selected public and private university libraries of Bangladesh were requested to express their perception about the skills needed for KS among them in the university libraries. There was a provision of multiple responses for the item. On the basis of the responses received, cross tabulation technique were

applied to draw the status of the perception of the LIS professionals from the different type of university libraries about the skills needed for KS.

Table-13: Cross Tabulation between type of university library professionals and their perception about the KS skills

KS skills	Type of university library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Communication skills	Public	27 (90.0%)	3 (10.0%)	30 (100.0%)
	Private	29 (100.0%)	0 (0.0%)	29 (100.0%)
Team working skills	Public	23 (76.7%)	7 (23.3%)	30 (100.0%)
	Private	24 (82.8%)	5 (17.2%)	29 (100.0%)
Negotiating skills	Public	18 (60.0%)	12 (40.0%)	30 (100.0%)
	Private	21 (72.4%)	8 (27.6%)	29 (100.0%)
Leadership skills	Public	18 (60.0%)	12 (40.0%)	30 (100.0%)
	Private	20 (69.0%)	9 (31.0%)	29 (100.0%)
Networking skills	Public	24 (80.0%)	6 (20.0%)	30 (100.0%)
	Private	24 (82.8%)	5 (17.2%)	29 (100.0%)
ICT skills	Public	24 (80.0%)	6 (20.0%)	30 (100.0%)
	Private	23 (79.3%)	6 (20.7%)	29 (100.0%)
Management skills	Public	23 (76.7%)	7 (23.3%)	30 (100.0%)
	Private	19 (65.5%)	10 (34.5%)	29 (100.0%)

5.4.3.1 Communication skills

Table-13 shows that about 27 (90.0%) LIS professionals from the public university libraries agreed about this skill while 29 (100.0%) professionals from the private university libraries agreed similarly. In contrast, 3 (10.0%) professionals from the public university libraries disagreed with this skill while none of the professionals from the private university libraries disagreed with this skill. These statistics proves that almost all the professionals from both the public and private university libraries agreed that communication skill is needed for KS.

5.4.3.2 Team working skills

Table-13 represents that about 23 (76.7%) respondents from the public university libraries in comparison to 24 (82.8%) respondents from the private university libraries agreed with this skill. In contrast, 7 (23.3%) respondents from public and 5 (17.2%) respondents from the private university libraries disagreed with this skill. So it can be concluded that the most of the respondents agreed about the necessity of team working skills for KS.

5.4.3.3 Negotiating skills

Table-13 denotes that an amount of 18 (60.0%) LIS professionals from public along with 21 (72.4%) professionals from private university libraries agreed with this skill. The table also indicates that about 12 (40.0%) LIS professionals from public in accordance with 8 (27.6%) professionals from private university libraries disagreed with this skill. As a result it can be inferred that majority of the LIS professionals from the two different types of libraries agreed about this skill.

5.4.3.4 Leadership skills

Table-13 refers that about 18 (60.0%) respondents from the public university libraries and 20 (69.0%) respondents from the private university libraries agreed about this skill. On the other hand, about 12 (40.0%) respondents from public and 9 (31.0%) respondents from private university libraries disagreed about this skill. So it can be generalized that majority of the respondents agreed that leadership skill is needed for KS.

5.4.3.5 Networking skills

Table-13 displays that from the public university libraries about 24 (80.0%) respondents and from private university libraries about 24 (82.8%) respondents agreed about this skill. While 6 (20.0%) respondents from private and 5 (17.2%) respondents from public university libraries disagreed with this skill. So it can be inferred that most of the respondents from both the university libraries agreed with networking skills.

5.4.3.6 ICT skills

Table-13 discloses that an amount of 24 (80.0%) professionals from the public university libraries agreed with this skill while 23 (79.3%) professionals from the private university libraries agreed similarly. In contrast, 6 (20.0%) public library professionals along with 6 (20.7%) professionals from private university libraries disagreed with this item. These statistics highlights that most of the LIS professionals from the two different samples agreed that ICT skill is very important for KS.

5.4.3.7 Management skills

Table-13 delineates that about 23 (76.7%) respondents from the public university libraries in correspondence with 19 (65.5%) respondents from the private university libraries agreed with this skill. Inversely about 7 (23.3%) respondents from the public as well as 10 (34.5%) respondents from the private university libraries disagreed with this skill. So it can be interpreted that majority of the respondents agreed with management skill as an important skill for KS.

5.4.3.8 Chi-square Test of Independence between the types of university library professionals and their perception about the KS skills

The purpose is to test whether the types of university library professionals and their perception about the KS skills are independent or not. The null hypothesis is formulated as follows:

H_o: The perception of the LIS professionals from the selected public and private university libraries is same about the KS skills.

Table-14 shows that the p value for the KS skills are greater than 0.05. So the null hypothesis is accepted. It means that the perception of the LIS professionals from the selected public and private university libraries about the KS skills is same. According to table-13, it can be said that the LIS professionals from the selected public and private university libraries were equally agreed about the skills needed for KS. So it can be claimed that the type of university library professionals and their perception about the KS skills are independent.

Table-14: Chi-square Test of Independence between the types of university library professionals and their perception about the KS skills

KS skills	Pearson Chi-square Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Decision (H_o)
Communication skills	3.055	1	0.080	0.237	Accepted
Team working skills	0.338	1	0.561	0.748	Accepted
Negotiating skills	1.014	1	0.314	0.412	Accepted
Leadership skills	0.517	1	0.472	0.589	Accepted
Networking skills	0.074	1	0.786	1.000	Accepted
ICT skills	0.004	1	0.948	1.000	Accepted
Management skills	0.894	1	0.344	0.399	Accepted

Note: Significant * at $p<0.05$

5.5 Facilitators and barriers to KS

In Section-D of the questionnaire, respondents were asked to express their perception about the facilitators and barriers to KS, such as KS process, KS methods, KS techniques, KS tools and barriers to KS. Based on the responses received, cross tabulation were applied to compare how the LIS professionals from the selected public and private university libraries of Bangladesh perceive about the facilitators and barriers to KS. Chi-square test of independence was also performed to test whether the types of university library professionals and their perception about the facilitators and barriers to KS are independent or not.

5.5.1 KS process

A rather obsolete, but still accepted version of a knowledge sharing process was described by Hendriks (1999). The model shows, on the one side, the *knowledge owners* and, on the other side, the *knowledge re-constructors,* also known from literature as *sender* and *receiver*. Within the process there are two sub-processes (1) externalization, and (2) internalization (Hendriks, 1999). Huysman and Wit (2002) described in their book "Knowledge Sharing in Practice" how different processes of knowledge sharing come together to a knowledge sharing cycle. The cycle consists of three process steps: internalization (knowledge acquisition), externalization (knowledge exchange), and objectification (knowledge transfer) (Huysman & Wit, 2002). The SECI model introduced four modes of knowledge conversion process as socialization (from tacit to tacit), externalization (from tacit to explicit), combination (from explicit to explicit) and internalization (from explicit to tacit) (Nonaka & Takeuchi, 1995).

In Section-D of the questionnaire the LIS professionals from the selected public and private university libraries of Bangladesh were requested to express their perception about the KS process in the university libraries. There was a provision of multiple responses for the item. On the basis of the responses received, cross tabulation technique were applied to draw the status of the perception of the LIS professionals from the different type of university libraries about KS process.

Table-15: Cross Tabulation between type of university library professionals and their perception about the KS process

KS process	Type of university library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Knowledge is shared directly among LIS professionals	Public	7 (23.3%)	23 (76.7%)	30 (100.0%)
	Private	9 (31.0%)	20 (69.0%)	29 (100.0%)
Knowledge is shared from LIS professionals to any medium	Public	11 (36.7%)	19 (63.3%)	30 (100.0%)
	Private	10 (34.5%)	19 (65.5%)	29 (100.0%)
Knowledge is shared through one medium to another medium	Public	11 (36.7%)	19 (63.3%)	30 (100.0%)
	Private	20 (69.0%)	9 (31.0%)	29 (100.0%)
Knowledge is shared from any medium to LIS professionals	Public	15 (50.0%)	15 (50.0%)	30 (100.0%)
	Private	12 (41.4%)	17 (58.6%)	29 (100.0%)

5.5.1.1 Knowledge is shared directly among LIS professionals

Table-15 shows that about 7 (23.3%) LIS professionals from the public university libraries agreed with this process in accordance with 9 (31.0%) professionals from the private university libraries. On the other hand, about 23 (76.7%) LIS professionals from the public university libraries in correspondence with 20 (69.0%) professionals from the private university libraries disagreed with this process. So it can be claimed that most of the LIS professionals from both the public and private university libraries disagreed with this process.

5.5.1.2 Knowledge is shared from LIS professionals to any medium

Table-15 represents that an amount of 11 (36.7%) respondents from the public university libraries and 10 (34.5%) respondents from the private university libraries agreed with this process. In the meantime 19 (63.3%) professionals from public along with 19 (65.5%) professionals from the private university libraries disagreed with this process. So it can be generalized that majority of the respondents from both type of university libraries disagreed with this process.

5.5.1.3 Knowledge is shared through one medium to another medium

Table-15 denotes that among the 30 professionals from the public university libraries about 11 (36.7%) respondents along with 20 (69.0%) respondents from the private university libraries agreed with this process. However, 19 (63.3%) respondents from public and 9 (31.0%) respondents from the private university libraries disagreed with this process. These figures illustrates that majority of the LIS professionals from the public university libraries disagreed with this process while majority of the LIS professionals from the private university libraries agreed with this process.

5.5.1.4 Knowledge is shared from any medium to LIS professionals

Table-15 reveals that 15 (50.0%) professionals from the public university libraries and 12 (41.4%) professionals from the private university libraries agreed with this process. In the mean time, about 15 (50.0%) professionals from public and 17 (58.6%) professionals from the private university libraries disagreed with this process. So it can be concluded that the respondents from the public university libraries equally agreed and disagreed with this process while the majority of the respondents from the private university libraries disagreed with this process.

5.5.1.5 Chi-square Test of Independence between the types of university library professionals and their perception about the KS process

The purpose is to test whether the types of university library professionals and their perception about the KS process are independent or not. The null hypothesis is formulated as follows:

H_o: The perception of the LIS professionals from the selected public and private university libraries is same about the KS process.

Table-16 shows that the p value for the KS processes is greater than 0.05, except the third KS process. So the null hypothesis is accepted for all the KS processes, except the third process. The null hypothesis is rejected for the third KS process. It means that the perception of the LIS professionals from the selected public and private university libraries about the KS process is same, except the third KS process. According to the table-15, it can be claimed that the LIS professionals from the selected public and private university libraries equally disagreed about the first two KS processes while the respondents from the public university libraries equally agreed and disagreed about the fourth process but the respondents from the private university libraries mostly disagreed with this process. On the other hand, the LIS professionals from the public and private university libraries did not agreed and disagreed equally about the third KS process. So it can be claimed that the type of university library professionals and their perception about the KS process are independent for the first two and last process but not for the third process.

Table-16: Chi-square Test of Independence between the types of university library professionals and their perception about the KS process

KS process	Pearson Chi-square Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Decision (H_o)
Knowledge is shared directly among LIS professionals	0.442	1	0.506	0.567	Accepted
Knowledge is shared from LIS professionals to any medium	0.031	1	0.861	1.000	Accepted
Knowledge is shared from one medium to another medium	6.169	1	0.013*	0.019*	Rejected
Knowledge is shared from any medium to LIS professionals	0.442	1	0.506	0.604	Accepted

Note: Significant* at $p<0.05$

5.5.2 KS methods

Young (2010) explained non IT KM methods and tools as brainstorming, peer assist, after action review, storytelling, communities of practice, learning reviews, learning and idea capture, knowledge cafe, taxonomy, collaborative physical workspace, etc. (Young, 2010). Canadian International Development Agency (2003) presents a selection of easy ways to help people, have better access to the knowledge they need to do their work, by introducing different KS

methods as peer assist, after action review, storytelling, mentoring, and coaching (Canadian International Development Agency, 2003). Leask, Lee, Milner, Norton, and Rathod (2008) outlined communities of practice(CoP), peer assist, knowledge cafe, knowledge marketplace etc. for connecting people to people to get the knowledge we need to help us (Leask, Lee, Milner, Norton, & Rathod, 2008).

In Section-D of the questionnaire the LIS professionals from the selected public and private university libraries of Bangladesh were requested to express their perception about the KS methods in the university libraries. There was a provision of multiple responses for the item. On the basis of the responses received, cross tabulation technique were applied to draw the status of the perception of the LIS professionals from the different type of university libraries about KS methods.

5.5.2.1 Assistance from the subject expert

Table-17 shows that from the 30 respondents about 21 (70.0%) professionals from the public university libraries along with 23 (79.3%) professionals from the private university libraries agreed with this method. In contrast, about 9 (30.0%) professionals from public and 6 (20.7%) professionals from the private university libraries disagreed with this method. So it can be inferred that most of the professionals from both types of university libraries agreed with this method.

5.5.2.2 Learning lesson by solving problems

Table-17 represents that an amount of 24 (80.0%) employees from the public university libraries in accordance with 21 (72.4%) employees from the private university libraries agreed with this method. On the contrary, 6 (20.0%) employees from public and 8 (27.6%) employees from private university libraries disagreed with this method. So it can be summed up that most of the employees from both public and private university libraries agreed with this method.

5.5.2.3 Telling stories about experiences

Table-17 reveals that, 19 (63.3%) respondents from the public and 19 (65.5%) respondents from the private university libraries similarly agreed with this method. In comparison to that, 11 (36.7%) respondents from the public in correspondence with 10 (34.5%) respondents from the

private university libraries disagreed with this method. So it can be generalized that majority of the respondents from the two independent samples agreed with this method.

Table-17: Cross Tabulation between type of university library professionals and their perception about the KS methods

KS methods	Type of university library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Assistance from the subject expert	Public	21 (70.0%)	9 (30.0%)	30 (100.0%)
	Private	23 (79.3%)	6 (20.7%)	29 (100.0%)
Learning lesson by solving problems	Public	24 (80.0%)	6 (20.0%)	30 (100.0%)
	Private	21 (72.4%)	8 (27.6%)	29 (100.0%)
Telling stories about experiences	Public	19 (63.3%)	11 (36.7%)	30 (100.0%)
	Private	19 (65.5%)	10 (34.5%)	29 (100.0%)
Sharing experiences with juniors	Public	18 (60.0%)	12 (40.0%)	30 (100.0%)
	Private	20 (69.0%)	9 (31.0%)	29 (100.0%)
Guiding employees to learn new skills	Public	21 (70.0%)	9 (30.0%)	30 (100.0%)
	Private	23 (79.3%)	6 (20.7%)	29 (100.0%)
Forming groups among the peoples of same interest	Public	20 (66.7%)	10 (33.3%)	30 (100.0%)
	Private	23 (79.3%)	6 (20.7%)	29 (100.0%)

5.5.2.4 Sharing experiences with juniors

Table-17 denotes that among the 30 respondents about 18 (60.0%) respondents from the public university libraries and 20 (69.0%) respondents from the private university libraries agreed correspondingly with this method. In the same time, about 12 (40.0%) respondents from the public and 9 (31.0%) respondents from the private university libraries disagreed with this method. So it can be claimed that majority of the respondents from the two different types of university libraries agreed with this method.

5.5.2.5 Guiding employees to learn new skills

Table-17 demarcates that an amount of 21 (70.0%) LIS professionals from the public university libraries in accordance with 23 (79.3%) professionals from the private university libraries agreed with this method. In contrast, 9 (30.0%) LIS professionals from the public and 6(20.7%) professionals from the private university libraries disagreed with this method. These statistics tells us that the most of the LIS professionals from both the public and private university libraries agreed with this method.

5.5.2.6 Forming groups among the peoples of same interest

Table-17 discloses that about 20 (66.7%) respondents from the public university libraries along with 23 (79.3%) respondents from the private university libraries agreed with this method. Meanwhile, about 10 (33.3%) respondents from public and 6 (20.7%) respondents from private university libraries disagreed with this method. So it can be decided that the majority of the respondents from both the public and private university libraries agreed with this method.

5.5.2.7 Chi-square Test of Independence between the types of university library professionals and their perception about the KS methods

The purpose is to test whether the types of university library professionals and their perception about the KS methods are independent or not. The null hypothesis is formulated as follows:

H_o: The perception of the LIS professionals from the selected public and private university libraries is same about the KS methods.

Table-18 shows that the p value for the KS methods are greater than 0.05. So the null hypothesis is accepted. It means that the perception of the LIS professionals from the selected public and private university libraries about the KS methods is same. According to table-17, it can be said that the LIS professionals from the selected public and private university libraries were equally agreed about the methods for KS. So it can be claimed that the type of university library professionals and their perception about the KS methods are independent.

Table-18: Chi-square Test of Independence between the types of university library professionals and their Perception about the KS Methods

KS methods	Pearson Chi-square Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Decision (H_o)
Assistance from the subject expert	0.674	1	0.412	0.552	Accepted
Learning lesson by solving problems	0.469	1	0.493	0.552	Accepted
Telling stories about experiences	0.031	1	0.861	1.000	Accepted
Sharing experiences with juniors	0.517	1	0.472	0.589	Accepted
Guiding employees to learn new skills	0.674	1	0.412	0.552	Accepted
Forming groups among the people of same interest	1.193	1	0.275	0.382	Accepted

Note: Significant* at $p<0.05$

5.5.3 KS techniques

Canadian International Development Agency (2003) presents a selection of easy ways to help people, have better access to the knowledge they need to do their work, by introducing different KS meetings as forums and meeting, workshops, training, seminars, knowledge fairs, etc. (Canadian International Development Agency, 2003). Bartholomew (2005) discussed various tools and techniques as foresight and hindsight, wikis, communities of practice, mentoring, workspace design, yellow pages, and codifying knowledge regarding KS (Bartholomew, 2005). Egbu, et al., (2003) interpreted different techniques for KM as brainstorming, communities of practice, face to face interactions, recruitment and training (Egbu, et al., 2003).

In Section-D of the questionnaire the LIS professionals from the selected public and private university libraries of Bangladesh were requested to express their perception about the KS techniques in the university libraries. There was a provision of multiple responses for the item. On the basis of the responses received, cross tabulation technique were applied to draw the status of the perception of the LIS professionals from the different type of university libraries about KS techniques.

Table-19: Cross Tabulation between type of university library professionals and their perception about the KS techniques

KS Techniques	Type of University Library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Meetings	Public	22 (73.3%)	8 (26.7%)	30 (100.0%)
	Private	25 (86.2%)	4 (13.8%)	29 (100.0%)
Workshops	Public	25 (83.3%)	5 (16.7%)	30 (100.0%)
	Private	26 (89.7%)	3 (10.3%)	29 (100.0%)
Training sessions	Public	26 (86.7%)	4 (13.3%)	30 (100.0%)
	Private	26 (89.7%)	3 (10.3%)	29 (100.0%)
Seminars	Public	26 (86.7%)	4 (13.3%)	30 (100.0%)
	Private	27 (93.1%)	2 (6.9%)	29 (100.0%)
Knowledge fairs	Public	22 (73.3%)	8 (26.7%)	30 (100.0%)
	Private	24 (82.8%)	5 (17.2%)	29 (100.0%)

5.5.3.1 Meetings

Table-19 represents that about 22 (73.3%) LIS professionals from the selected public university libraries along with 25 (86.2%) professionals from the selected private university libraries agreed with this technique. On the other hand, 8 (26.7%) LIS professionals from the public as well as 4 (13.8%) professionals from the private university libraries disagreed with this technique. So it can be concluded that most of the LIS professionals from both public and private university libraries agreed with this technique.

5.5.3.2 Workshops

Table-19 displays that, 25 (83.3%) respondents from the public university libraries together with 26 (89.7%) respondents from the private university libraries agreed with this technique. In the same time 5 (16.7%) respondents from the public and 3 (10.3%) respondents from the private university libraries disagreed with this technique. So it can be claimed that most of the respondents from the two different types of university libraries agreed with this technique.

5.5.3.3 Training sessions

Table-19 denotes that an amount of 26 (86.7%) employees from the public university libraries in accordance with 26 (89.7%) employees from the private university libraries agreed with this technique. In contrast, 4 (13.3%) employees from the public university libraries together with 3 (10.3%) employees from the private university libraries disagreed with this technique. These figures tell us that most of the employees agreed with this technique.

5.5.3.4 Seminars

Table-19 refers that, 26 (86.7%) respondents from the public university libraries and 27 (93.1%) respondents from the private university libraries agreed correspondingly with this technique. While 4 (13.3%) respondents from the public university libraries along with 2 (6.9%) respondents from the private university libraries disagreed with this technique. So it can be interpreted that most of the respondents from both type of university libraries agreed with this technique.

5.5.3.5 Knowledge fairs

Table-19 delineates that about 22 (73.3%) professionals from the public university libraries and 24 (82.8%) professionals from the private university libraries agreed with this technique. In contrast, 8 (26.7%) professionals from the public and 5 (17.2%) professionals from the private university libraries disagreed with this technique. So it can be decided that majority of the professionals from the two different types of university libraries agreed with this technique.

5.5.3.6 Chi-square Test of Independence between the types of university library professionals and their perception about the KS techniques

The purpose is to test whether the types of university library professionals and their perception about the KS techniques are independent or not. The null hypothesis is formulated as follows:

H_o: The perception of the LIS professionals from the selected public and private university libraries is same about the KS techniques.

Table-20 shows that the p value for the KS techniques are greater than 0.05. So the null hypothesis is accepted. It means that the perception of the LIS professionals from the selected public and private university libraries about the KS techniques is same. According to table-19, it can be said that the LIS professionals from the selected public and private university libraries

were equally agreed about the techniques of KS. So it can be claimed that the type of university library professionals and their perception about the KS techniques are independent.

Table-20: Chi-square Test of Independence between the types of university library professionals and their perception about the KS techniques

KS techniques	Pearson Chi-square Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Decision (H_o)
Meetings	1.508	1	0.219	0.333	Accepted
Workshops	0.503	1	0.478	0.706	Accepted
Training sessions	0.126	1	0.723	1.000	Accepted
Seminars	0.669	1	0.413	0.671	Accepted
Knowledge fairs	0.763	1	0.383	0.532	Accepted

Note: Significant* at $p<0.05$

5.5.4 KS tools

Ghani (2009) discussed about evolution of IT tools in KM, web 2.0, and KM technologies and thus provided a framework for characterizing the various tools and techniques available to knowledge management practitioners i.e. blog, wiki, video conferencing, chat rooms, portals, groupware, e-mail, teleconference, collaboration tools, search engines, etc. (Ghani, 2009). Al-Ghassani, Robinson, Carrillo, and Anumba (2002) mentioned the tools for KM as data and text mining, groupware, intranet/extranets, knowledge bases, taxonomies, and ontologies (Al-Ghassani, Robinson, Carrillo, & Anumba, 2002). Balubaid (2013) examined the use of web 2.0 technology i.e. facebook, twitter, google plus, and youtube to enhance KS in an academic department (Balubaid, 2013).

In Section-D of the questionnaire the LIS professionals from the selected public and private university libraries of Bangladesh were requested to express their perception about the KS tools in the university libraries. There was a provision of multiple responses for the item. On the basis of the responses received, cross tabulation technique were applied to draw the status of the perception of the LIS professionals from the different type of university libraries about KS tools.

5.5.4.1 Internet/ Intranet/ Extranet

Table-21 shows that about 29 (96.7%) LIS professionals from the public university libraries along with 28 (96.6%) professionals from the private university libraries agreed with these tools. In contrast, 1 (3.3%) and 1 (3.4%) professionals from public and private universities disagreed with these tools. So it can be said that almost all the professionals from both the public and private university libraries agreed with these tools.

5.5.4.2 E-mail/ Group mail

Table-21 represents that an amount of 29 (96.7%) respondents from the public university libraries in accordance with 29 (100.0%) respondents from the private university libraries agreed with these tools. In the same time only 1 (3.3%) respondent from the public university libraries disagreed with these tools. As a result it can be claimed that almost all the respondents from both types of university libraries agreed with this tools.

5.5.4.3 Tele conferencing/ Video conferencing/ Video sharing

Table-21 reveals that, 25 (83.3%) employees from the public university libraries and 27 (93.1%) employees from the private university libraries agreed with these tools. In comparison to that, 5 (16.7%) employees from the public and 2 (6.9%) employees from the private university libraries disagreed with these tools. From the above statistics it can be concluded that majority of the employees from the two independent samples agreed about these tools.

5.5.4.4 Blogs/ Facebook/ You Tube/ Twitter

Table-21 refers that, 26 (86.7%) respondents from the public university libraries together with 27 (93.1%) respondents from the private university libraries agreed with these tools. On the other hand, 4 (13.3%) respondents from the public along with 2 (6.9%) respondents from the private university libraries disagreed with these tools. On the basis of these statistics it can be generalized that majority of the respondents agreed with these tools.

Table-21: Cross Tabulation between type of university library professionals and their perception about the KS tools

KS tools	Type of university library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Internet/ Intranet/ Extranet	Public	29 (96.7%)	1 (3.3%)	30 (100.0%)
	Private	28 (96.6%)	1 (3.4%)	29 (100.0%)
E-mail/ Group mail	Public	29 (96.7%)	1 (3.3%)	30 (100.0%)
	Private	29 (100.0%)	0 (0.0%)	29 (100.0%)
Tele conferencing/ Video conferencing/ Video sharing	Public	25 (83.3%)	5 (16.7%)	30 (100.0%)
	Private	27 (93.1%)	2 (6.9%)	29 (100.0%)
Blogs/ Facebook/ You Tube/ Twitter	Public	26 (86.7%)	4 (13.3%)	30 (100.0%)
	Private	27 (93.1%)	2 (6.9%)	29 (100.0%)
Wikis/ Online discussion forums/ Groupware	Public	25 (83.3%)	5 (16.7%)	30 (100.0%)
	Private	27 (93.1%)	2 (6.9%)	29 (100.0%)
Web portals	Public	26 (86.7%)	4 (13.3%)	30 (100.0%)
	Private	25 (86.2%)	4 (13.8%)	29 (100.0%)
Electronic databases	Public	29 (96.7%)	1 (3.3%)	30 (100.0%)
	Private	27 (93.1%)	2 (6.9%)	29 (100.0%)
Online knowledge directories	Public	25 (83.3%)	5 (16.7%)	30 (100.0%)
	Private	26 (89.7%)	3 (10.3%)	29 (100.0%)
Website	Public	28 (93.3%)	2 (6.7%)	30 (100.0%)
	Private	27 (93.1%)	2 (6.9%)	29 (100.0%)
Instant messaging/ Online chatting	Public	23 (76.7%)	7 (23.3%)	30 (100.0%)
	Private	26 (89.7%)	3 (10.3%)	29 (100.0%)

5.5.4.5 Wikis/ Online discussion forums/ Groupware

Table-21 delineates that about 25 (83.3%) respondents from the public university libraries and 27 (93.1%) respondents from the private university libraries agreed with these tools. In the meantime, 5 (16.7%) and 2 (6.9%) respondents from the private university libraries disagreed with these tools. So it can be described that the majority of the respondents from both public and private university libraries agreed with these tools.

5.5.4.6 Web portals

Table-21 displays that, 26 (86.7%) professionals from the public university libraries together with 25 (86.2%) professionals from the private university libraries agreed with this tools. While, 4 (13.3%) professionals from public and 4 (13.8%) professionals from the private university libraries disagreed with this tool. On the basis of these figures it can be concluded that majority of the professionals from the both types of university libraries agreed with this tool.

5.5.4.7 Electronic databases

Table-21 describes that an amount of 29 (96.7%) respondents from the public university libraries and 27 (93.1%) respondents from the private university libraries agreed with this tool. In the meantime about 1 (3.3%) respondent from public and 2 (6.9%) respondents from the private university libraries disagreed with this tool. So it can be claimed that almost all the respondents from both the public and private university libraries agreed with this tool.

5.5.4.8 Online knowledge directories

Table-21 displays that about 25 (83.3%) LIS professionals from the public university libraries together with 26 (89.7%) professionals from the private university libraries agreed with this tool. On the contrary, 5 (16.7%) LIS professionals from the public and 3 (10.3%) professionals from the private university libraries disagreed with this tool. So it can be interpreted that majority of the LIS professionals from both types of libraries agreed with this tool.

5.5.4.9 Website

Table-21 discloses that an amount of 28 (93.3%) employees from the public university libraries along with 27 (93.1%) employees from the private university libraries agreed with this tool. In contrast, 2 (6.7%) employees from public and 2 (6.9%) employees from private university libraries disagreed with this tool. These figures tell us that most of the LIS professionals from the two independent samples agreed with this tool.

5.5.4.10 Instant messaging/ Online chatting

Table-21 describes that, 23 (76.7%) respondents from the public university libraries and 26 (89.7%) respondents from the private university libraries agreed with these tools. While, 7 (23.3%) respondents from public together with 3 (10.3%) respondents from private university libraries disagreed with these tools. So it can be concluded that majority of the respondents from both types of university libraries agreed with these tools.

5.5.4.11 Chi-square Test of Independence between the types of university library professionals and their perception about the KS tools

The purpose is to test whether the types of university library professionals and their perception about the KS tools are independent or not. The null hypothesis is formulated as follows:

H_o: The perception of the LIS professionals from the selected public and private university libraries is same about the KS tools.

Table-22 shows that the p value for the KS tools are greater than 0.05. So the null hypothesis is accepted. It means that the perception of the LIS professionals from the selected public and private university libraries about the KS tools is same. According to table-21, it can be said that the LIS professionals from the selected public and private university libraries were equally agreed about the tools for KS. So it can be claimed that the type of university library professionals and their perception about the KS tools are independent.

Table-22: Chi-square Test of Independence between the types of university library professionals and their perception about the KS tools

KS tools	Pearson Chi-square Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Decision (H_o)
Internet/ Intranet/ Extranet	0.001	1	0.981	1.000	Accepted
E-mail/ Group mail	0.983	1	0.321	1.000	Accepted
Tele conferencing/ Video conferencing/ Video sharing	1.346	1	0.246	0.424	Accepted
Blogs/ Facebook/ You Tube/ Twitter	0.669	1	0.413	0.671	Accepted
Wikis/ Online discussion forums/ Groupware	1.346	1	0.246	0.424	Accepted
Web portals	0.003	1	0.959	1.000	Accepted
Electronic databases	0.388	1	0.533	0.612	Accepted
Online Knowledge Directories	0.503	1	0.478	0.706	Accepted
Website	0.001	1	0.972	1.000	Accepted
Instant messaging/ Online chatting	1.767	1	0.184	0.299	Accepted

Note: Significant* at $p<0.05$

5.5.5 Barriers to KS

The barriers to knowledge sharing can be categorized at three levels: the individual, organizational, and technological levels (Kukko, 2013). At an individual or employee level, knowledge -sharing barriers are often related to factors such as lacking communication skills and social networks, differences in national culture, overemphasis of position statuses, and a lack of time and trust. At an organizational level, barriers tend to be linked to, for instance, the economic viability, lack of infrastructure and resources, the accessibility of formal and informal meeting spaces, and the physical environment. At a technology level, barriers seem to correlate with factors such as the unwillingness to use applications due to a mismatch with need requirements, unrealistic expectations of IS/IT systems, and difficulties in building, integrating and modifying technology-based systems (Riege, 2005). Santos, Soares, and Carvalho (2012) identified the following barriers to KS in complex project management i.e. codification process, inadequate information technology, lack of initiative and strategy by the workers, lack of time and resources, learning curve of information systems, competitive environment, lack of trust, unawareness of other people‘s work (Santos, Soares, & Carvalho, 2012).

In Section-D of the questionnaire the LIS professionals from the selected public and private university libraries of Bangladesh were requested to express their perception about the barriers to KS in the university libraries. There was a provision of multiple responses for the item. On the basis of the responses received, cross tabulation technique were applied to draw the status of the perception of the LIS professionals from the different type of university libraries about the barriers to KS.

5.5.5.1 Lack of trust

Table-23 shows that about 20 (66.7%) respondents from the public university libraries and about 23 (79.3%) respondents from the private university libraries agreed with this barrier. In contrast, about 10 (33.3%) respondents from the public and 6 (20.7%) respondents from private university libraries disagreed with this barrier. So it can be decided that most of the respondents from both the public and private university libraries agreed with this barrier.

5.5.5.2 Lack of collaboration

Table-23 denotes that an amount of 21 (70.0%) professionals from the public university libraries along with 21 (72.4%) professionals from the private university libraries agreed with this barrier. On the other hand, 9 (30.0%) professionals from public university libraries in accordance with 8 (27.6%) professionals from private university libraries disagreed with this barrier. So it can be explained that majority of the professionals from both types of university libraries agreed with this barrier.

5.5.5.3 Lack of job security/ job satisfaction

Table-23 represents that, 21 (70.0%) respondents from the public university libraries together with 20 (69.0%) respondents from the private university libraries agreed with this barrier. In the mean time, 9 (30.0%) respondents from public in correspondence with 9 (31.0%) respondents from the private university libraries disagreed with this barrier. On the basis of these figures it can be told that majority of the respondents from the two different types of libraries agreed with this barrier.

Table-23: Cross Tabulation between type of university library professionals and their perception about the KS barriers

Barriers to KS	Type of university library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Lack of trust	Public	20 (66.7%)	10 (33.3%)	30 (100.0%)
	Private	23 (79.3%)	6 (20.7%)	29 (100.0%)
Lack of collaboration	Public	21 (70.0%)	9 (30.0%)	30 (100.0%)
	Private	21 (72.4%)	8 (27.6%)	29 (100.0%)
Lack of job security/job satisfaction	Public	21 (70.0%)	9 (30.0%)	30 (100.0%)
	Private	20 (69.0%)	9 (31.0%)	29 (100.0%)
Lack of technological support	Public	25 (83.3%)	5 (16.7%)	30 (100.0%)
	Private	26 (89.7%)	3 (10.3%)	29 (100.0%)
Lack of rewards and incentives	Public	19 (63.3%)	11 (36.7%)	30 (100.0%)
	Private	20 (69.0%)	9 (31.0%)	29 (100.0%)
Poor leadership	Public	21 (70.0%)	9 (30.0%)	30 (100.0%)
	Private	23 (79.3%)	6 (20.7%)	29 (100.0%)
Lack of support from top management	Public	26 (86.7%)	4 (13.3%)	30 (100.0%)
	Private	22 (75.9%)	7 (24.1%)	29 (100.0%)
Lack of encouragement for creativity and innovation	Public	20 (66.7%)	10 (33.3%)	30 (100.0%)
	Private	23 (79.3%)	6 (20.7%)	29 (100.0%)
Lack of empowerment for decision making	Public	21 (70.0%)	9 (30.0%)	30 (100.0%)
	Private	20 (69.0%)	9 (31.0%)	29 (100.0%)
Lack of awareness	Public	22 (73.3%)	8 (26.7%)	30 (100.0%)
	Private	24 (82.8%)	5 (17.2%)	29 (100.0%)

Barriers to KS	Type of University Library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Lack of training	Public	21 (70.0%)	9 (30.0%)	30 (100.0%)
	Private	24 (82.8%)	5 (17.2%)	29 (100.0%)
Fear of loss of power	Public	19 (63.3%)	11 (36.7%)	30 (100.0%)
	Private	21 (72.4%)	8 (27.6%)	29 (100.0%)
Lack of network and communication	Public	25 (83.3%)	5 (16.7%)	30 (100.0%)
	Private	25 (86.2%)	4 (13.8%)	29 (100.0%)
Lack of skills	Public	23 (76.7%)	7 (23.3%)	30 (100.0%)
	Private	25 (86.2%)	4 (13.8%)	29 (100.0%)

5.5.5.4 Lack of technological support

Table-23 reveals that, 25 (83.3%) employees from the public university libraries and 26 (89.7%) employees from the private university libraries agreed with this barrier. In the same time, 5 (16.7%) employees from public and 3 (10.3%) employees from private university libraries disagreed with this barrier. So it can be inferred that most of the employees from the two independent samples agreed with this barrier.

5.5.5.5 Lack of rewards and incentives

Table-23 delineates that, 19 (63.3%) respondents from the public university libraries and 20 (69.0%) respondents from the private university libraries agreed with this barrier. On the other hand, 11 (36.7%) respondents from public and 9 (31.0%) respondents from the private university libraries disagreed with this barrier. So it can be claimed that majority of the respondents from both public and private university libraries agreed with this barrier.

5.5.5.6 Poor leadership

Table-23 displays that, 21 (70.0%) LIS professionals from public university libraries and 23 (79.3%) professionals from private university libraries agreed with this barrier. In comparison to that, about 9 (30.0%) LIS professionals from public in correspondence with 6 (20.7%) professionals from private university libraries disagreed with this barrier. So it can be said that

majority of the LIS professionals from both public and private university libraries agreed with this barrier.

5.5.5.7 Lack of support from top management

Table-23 describes that, 26 (86.7%) respondents think that lack of support from top management is a barrier for KS while 22 (75.9%) respondents from private university libraries think similarly. On the contrary, 4 (13.3%) respondents from public along with 7 (24.1%) respondents from private university libraries think differently. So it can be interpreted that majority of the respondents from both types of university libraries agreed with this barrier.

5.5.5.8 Lack of encouragement for creativity and innovation

Table-23 reveals that about 20 (66.7%) respondents from the selected public university libraries along with 23 (79.3%) respondents from the private university libraries agreed with this barrier. In contrast, 10 (33.3%) respondents from the public and 6 (20.7%) respondents from private university libraries disagreed with this barrier. So it can be generalized that majority of the respondents from both public and private university libraries agreed with this barrier.

5.5.5.9 Lack of empowerment for decision making

Table-23 discloses that about 21 (70.0%) employees from the public university libraries in accordance with 20 (69.0%) employees from the private university libraries agreed with this barrier. While, 9 (30.0%) from public and 9 (31.0%) from private university libraries disagreed with this barrier. So it can be claimed that majority of the respondents from two different types of libraries agreed with this barrier.

5.5.5.10 Lack of awareness

Table-23 marks out that, 22 (73.3%) LIS professionals from the public university libraries agreed with this barrier while 24 (82.8%) professionals from the private university libraries agreed similarly. On the other hand, 8 (26.7%) LIS professionals from public and 5 (17.2%) professionals from the private university libraries disagreed with this barrier. Consequently it can be said that majority of the LIS professionals from the two different types of samples agreed with this barrier.

5.5.5.11 Lack of training

Table-23 refers that an amount of 21 (70.0%) employees from the private university libraries and 24 (82.8%) employees from private university libraries agreed with this barrier. On the contrary, 9 (30.0%) employees from public and 5 (17.2%) employees from private university libraries disagreed with this barrier. As a result it can be inferred that majority of the employees from both the public and private university libraries agreed with this barrier.

5.5.5.12 Fear of loss of power

Table-23 reveals that, 19 (63.3%) respondents from the public university libraries along with 21 (72.4%) respondents from the private university libraries agreed with this barrier. In comparison to that, 11 (36.7%) respondents from public and 8 (27.6%) respondents from the private university libraries disagreed with this barrier. These statistics proves that majority of the respondents from both types of university libraries agreed with this barrier.

5.5.5.13 Lack of network and communication

Table-23 delineates that about 25 (83.3%) LIS professionals from the public university libraries and 25 (86.2%) professionals from the private university libraries agreed with this barrier. In contrast, 5 (16.7%) LIS professionals from the public and 4 (13.8%) professionals from the private university libraries disagreed with this barrier. So it can be said that most of the LIS professionals from both public and private university libraries agreed with this barrier.

5.5.5.14 Lack of skills

Table-23 traces out that, 23 (76.7%) respondents from the public university libraries together with 25 (86.2%) respondents from the private university libraries agreed with this barrier. On the other hand, 7 (23.3%) respondents from public and 4 (13.8%) respondents from the private university libraries disagreed with this barrier. So it can be concluded that most of the respondents from the selected public and private university libraries agreed with this barrier.

5.5.5.15 Chi-square Test of Independence between the types of university library professionals and their perception about the barriers to KS

The purpose is to test whether the types of university library professionals and their perception about the barriers to KS are independent or not. The null hypothesis is formulated as follows:

H_o: The perception of the LIS professionals from the selected public and private university libraries is same about the barriers to KS.

Table-24 shows that the p value for the barriers to KS are greater than 0.05. So the null hypothesis is accepted. It means that the perception of the LIS professionals from the selected public and private university libraries about the barriers to KS is same. According to table-23, it can be said that the LIS professionals from the selected public and private university libraries were equally agreed about the barriers to KS. So it can be claimed that the type of university library professionals and their perception about the barriers to KS are independent.

Table-24: Chi-square Test of Independence between the types of university library professionals and their perception about the barriers to KS

Barriers to KS	Pearson Chi-square Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Decision (H_o)
Lack of trust	1.193	1	0.275	0.382	Accepted
Lack of collaboration	0.042	1	0.838	1.000	Accepted
Lack of job security/job satisfaction	0.007	1	0.931	1.000	Accepted
Lack of technological support	0.503	1	0.478	0.706	Accepted
Lack of rewards and incentives	0.209	1	0.648	0.785	Accepted
Poor leadership	0.674	1	0.412	0.552	Accepted
Lack of support from top management	1.135	1	0.287	0.333	Accepted
Lack of encouragement for creativity and innovation	1.193	1	0.275	0.382	Accepted
Lack of empowerment for decision making	0.007	1	0.931	1.000	Accepted
Lack of awareness	0.763	1	0.383	0.532	Accepted
Lack of training	1.326	1	0.249	0.360	Accepted
Fear of loss of power	0.557	1	0.456	0.580	Accepted
Lack of network and communication	0.094	1	0.759	1.000	Accepted
Lack of skills	0.885	1	0.347	0.506	Accepted

Note: Significant* at $p<0.05$

5.6 Consequences of KS

Much of contemporary writings on knowledge sharing have mistakenly anticipated knowledge sharing to be a linear process where knowledge flows from a sender to a receiver. The SRMC model focuses the discussions of knowledge sharing processes to problems related to either giving away knowledge, or receiving knowledge. Knowledge sharing is at one and the same time about giving and receiving. Therefore rather than viewing knowledge sharing as a flow, the process must be viewed as an exchange balancing the giving and receiving. Knowledge sharing is, hence, the process of exchanging knowledge for an obligation to reciprocate something such as knowledge, monetary rewards or gratitude (Christensen, 2005). Quinn, Anderson, and Finkelstein (1996) state, "as one shares knowledge with other units, not only do those units gain information [...]; they share it with others and feedback questions, amplifications, and modifications that add further value for the original sender, creating exponential total growth" (Quinn, Anderson, & Finkelstein, 1996).

Better and purposeful sharing of useful knowledge translates into accelerated individual and organizational learning and innovation (Riege, 2005). The process of effective organizational learning, by way of sharing information and knowledge among organizational members, enables individuals and organizations to reflect on the consequences of their behaviors and actions, to obtain insights from an environment where they operate, to understand the environment, and hence to interpret the meaning and react to it in more accurate approaches (Jones, Herschel, & Moesel, 2003).

According to Uzzi (1997) strong ties involve a relationship that supports the transfer and sharing of knowledge (Uzzi, 1997). Knowledge sharing primarily concerned with the individual's view while knowledge transfer concentrates more on the organizational view (Schwartz, 2007). To facilitate knowledge transfer process, it is important to foster knowledge-sharing attitude through providing greater opportunities for deeper involvement of users in the system (PHAM, 2008).

In Section-E of the questionnaire, respondents were asked to express their perception about the consequences of KS, such as influence of KS on learning, feedback, knowledge transfer after KS and benefits of learning by KS. Based on the responses received, descriptive statistics were

applied to discover how the LIS professionals from the selected public and private university libraries of Bangladesh perceive about the consequences of KS. Mann-Whitney U test were applied to test whether there is any difference between the perception of the LIS professionals from the selected public and private university libraries about the consequences of KS.

5.6.1.1 Descriptive Statistics of LIS professionals' perception about consequences of KS

Table-26 discloses that respondents agree about the consequences of KS with a high mean score of 6.36, 6.24 and 6.24 respectively for influence of KS on learning of LIS professionals, feedback and transferring knowledge for further use after KS.

Table-25: Descriptive Statistics of LIS professionals' perception about consequences of KS

Consequences of KS	N	Minimum	Maximum	Mean	Std. Deviation
Influence of KS on learning of LIS professionals	59	4	7	6.36	.689
Feedback	59	4	7	6.24	.727
Transferring knowledge after KS	59	2	7	6.24	.858
Valid N (list wise)	59				

Notes: Scale (1= Strongly Disagree, 2= Disagree, 3= Somewhat Disagree, 4= Average, 5= Somewhat Agree, 6= Agree, and 7= Strongly Agree.)

5.6.1.2 Mann-Whitney U Test for testing the difference between the perceptions of LIS professionals in the public and private universities about the consequences of KS

The purpose is to test whether there is any difference between the perception of the LIS professionals from the selected public and private university libraries about the consequences of KS. The null hypothesis is formulated as follows:

H_0: There is no difference between the perceptions of LIS professionals in the public and private universities about the consequences of KS.

Table-26 shows that the p value for the entire item of consequences of KS is much greater than 0.05. Therefore the null hypothesis can not be rejected. So it can be said that there is no statistically significant difference between the perceptions of LIS professionals in the public and private universities about the consequences of KS.

Table-26: Mann-Whitney U Test for testing the difference between the perceptions of LIS professionals in the public and private universities about the consequences of KS

Consequences of KS	Type of university library	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Influence of KS on learning of LIS professionals	Public	30	31.57	947.00	388.000	823.000	- 0.805	0.421
	Private	29	28.38	823.00				
Feedback	Public	30	28.10	843.00	378.000	843.000	- 0.964	0.335
	Private	29	31.97	927.00				
Transferring knowledge after KS	Public	30	28.35	850.50	385.500	850.500	- 0.826	0.409
	Private	29	31.71	919.50				

Notes: * Significant at $p<0.05$

5.6.2 Benefits of Learning by KS

After the sharing and learning process takes place, individual values, beliefs and absorptive ability will influence the interpretation of information. This determines whether that information and knowledge is useful and valuable after the process of interpretation (Davenport & Prusak, 2000; Seng, Zannes, & Pace, 2002). Organizational learning is described as the way the organizations build, supplement and organize knowledge and routines around their business activities and business cultures, as well as the way they adopt and develop organizational efficiency by improving the use of broad skills of their workforces (Fiol & Lyles, 1985). Learning provides the skills, insights and competence to perform well at work. It enables people to adopt and grow in their workplace becoming better problem solvers, more creative and innovative thinkers, more confident and proficient workers (Kumaraswamy & Chitale, 2012).

In Section-E of the questionnaire the LIS professionals from the selected public and private university libraries of Bangladesh were requested to express their perception about the benefits of learning by KS in the university libraries. There was a provision of multiple responses for the item. On the basis of the responses received, cross tabulation technique were applied to draw the status of the perception of the LIS professionals from the different types of university libraries about benefits of learning by KS.

Table-27: Cross Tabulation between type of university library professionals and their perception about the benefits of learning by KS

Benefits of learning by KS	Type of university library	Agree	Disagree	Total
		Frequency (percentage)	Frequency (percentage)	Frequency (percentage)
Enhancing skills of employees	Public	20 (66.7%)	10 (33.3%)	30 (100.0%)
	Private	17 (58.6%)	12 (41.4%)	29 (100.0%)
Enhancing team working skills	Public	21 (70.0%)	9 (30.0%)	30 (100.0%)
	Private	16 (55.2%)	13 (44.8%)	29 (100.0%)
Enhancing performance of the organization	Public	23 (76.7%)	7 (23.3%)	30 (100.0%)
	Private	21 (72.4%)	8 (27.6%)	29 (100.0%)
Gaining user satisfaction	Public	20 (66.7%)	10 (33.3%)	30 (100.0%)
	Private	14 (48.3%)	15 (51.7%)	29 (100.0%)
Career development	Public	18 (60.0%)	12 (40.0%)	30 (100.0%)
	Private	10 (34.5%)	19 (65.5%)	29 (100.0%)

5.6.2.1 Enhancing skills of employees

Table-27 shows that about 20 (66.7%) LIS professionals from the public university libraries along with 17 (58.6%) professionals from the private university libraries agreed with this benefit. On the other hand about 10 (33.3%) LIS professionals from the public and 12 (41.4%) professionals from the private university libraries disagreed with this benefit. So it can be concluded that majority of the LIS professionals from both public and private university libraries agreed with this benefit.

5.6.2.2 Enhancing team working skills

Table-27 represents that about 21 (70.0%) professionals from the public university libraries and 16 (55.2%) professionals from the private university libraries agreed with this benefit. In contrast, 9 (30.0%) professionals from public together with 13 (44.8%) professionals from private university libraries disagreed with this benefit. So it can be inferred that majority of the LIS professionals from two different types of libraries agreed with this benefit.

5.6.2.3 Enhancing performance of the organization

Table-27 denotes that about 23 (76.7%) respondents from the public university libraries and 21 (72.4%) respondents from the private university libraries agreed with this benefit. While about 7 (23.3%) respondents from public and 8 (27.6%) respondents from private university libraries disagreed with this benefit. Consequently it can be decided that majority of the respondents from both types of university libraries agreed with this benefit.

5.6.2.4 Gaining user satisfaction

Table-27 reveals that 20 (66.7%) LIS professionals from the public along with 14 (48.3%) professionals from the private university libraries agreed with this benefit. In comparison to that, 10 (33.3%) LIS professionals from the public and 15 (51.7%) professionals from the private university libraries disagreed with this benefit. From these statistics it can be said that while the majority of the LIS professionals from the public universities agreed with this benefit, the professionals of the private university libraries almost equally agreed and disagreed with this benefit.

5.6.2.5 Career development

Table-27 displays that, 18 (60.0%) employees from the public university libraries together with 10 (34.5%) employees from the private university libraries agreed with this benefit. On the other hand, 12 (40.0%) employees from the public and 19 (65.5%) employees from the private university libraries disagreed with this benefit. So it can be concluded that majority of the employees from the public university libraries agreed with this benefit but most of the employees from the private university libraries disagreed with this benefit.

5.7 Summary

This chapter comprises the results of the frequency distribution for the data obtained about the respondents profile and their interpretation through graphical presentation. It also included the results of the cross tabulation of respondents' concept about knowledge and KS and their interpretation. The results and interpretation of the cross tabulation and chi-square test of respondents' perception about the prerequisites for KS were also reported. It also addressed the results and interpretation of the cross tabulation and chi-square test of respondents' view about the facilitators and barriers to KS. Presentation of the results and interpretation of the descriptive statistics and Mann Whitney U test of respondents' opinion about the consequences of KS was outlined. Finally the chapter ended up with the presentation of the results of the cross tabulation of respondents' idea about the benefits of learning by KS.

Chapter Six: Proposed Model Plan for KS among the LIS Professionals in the Selected Public and Private University Libraries of Bangladesh

Chapter Six

Proposed Model Plan for KS among the LIS professionals in the Selected Public and Private University Libraries of Bangladesh

6.1. Introduction

This chapter discusses the proposed conceptual model plan for KS among the LIS professionals in the selected public and private university libraries of Bangladesh. The discussion includes the background, objective, scope, diagrammatic representation of the model plan, description of the model plan, implication in the university libraries of Bangladesh and limitations.

6.2.1 Background

All research has an underlying model of the phenomena it investigates, be it tacitly assumed or explicit. Such models, called conceptual frameworks (Engelbart, 1962) or conceptual models, easily become topics of discussion and debate when a research area is in transition. A concept is a word or phrase that symbolizes several interrelated ideas, while a model has been described as an intellectual construct in artifact that provides an abstract, highly formalized, often visual, yet simplified representation of a phenomenon and its interactions (Coffey & Atkinson, 1996; Despres & Chauvel, 2000). Typically, a model only includes those variables that are sufficient to represent the phenomena in question (Graham, 2006). According to Jarvelin and Wilson (2003) a conceptual model provides a working strategy, a scheme containing general, major concepts and their interrelations. It orients research towards specific sets of research questions. A conceptual model cannot be assessed directly empirically, because it forms the basis of formulating empirically testable research questions and hypotheses. It can only be assessed in terms of its instrumental and heuristic value. Typically, this happens by assessing the research strategies and programmes (and results) it creates (Järvelin & Wilson, 2003). According to Engelbart (1962), developing conceptual models means specifying the following: essential objects or components of the system to be studied; the relationships of the objects that are recognized; what kinds of changes in the objects or their relationships affect

the functioning of the system - and in what ways; and promising or fruitful goals and methods of research.

A conceptual framework for practical knowledge sharing among individuals within organizations has been presented and explained as a cyclic process that is constituted by four stages: initiation, experimentation, reflection and assurance (Tunsi, Guzman, & Shacklock, 2012). A model of knowledge sharing between individuals in organizations presents the four factors and illustrates the relationship between them. The model indicates that the first three factors—nature of knowledge, motivation to share, and opportunities to share—are embedded within the culture of the work environment, be it the culture of the organization or the subculture within the specific work area (Ipe, 2003). A conceptual model for knowledge sharing having three attributes as human capital, organizational capital and information and communications technology was designed based on a case study at Tehran Municipality ICT organization (Mehrvarz & Pilevari, 2012).

6.2.2 Objective

The objective of the proposed model plan is to demonstrate the concept of KS among the LIS professionals in the selected public and private university libraries of Bangladesh. In accomplishing this objective the relevant literature on the topic was reviewed and then a mental model of the proposed model plan was set up. Then a questionnaire was designed based on the literature reviewed and the mental model to conduct a survey. Six public and six private university libraries were selected and personally visited to collect primary data. After collecting data, the responses received from the LIS professionals of the selected university libraries were analyzed and interpreted and on the basis of the results obtained, the model plan for KS among the LIS professionals in the selected public and private university libraries was proposed.

6.2.3 Scope

The study proposed the conceptual model plan for KS among the LIS professionals in some selected public and private university libraries of Bangladesh. Thus the user category of the selected university libraries was not considered while building the model plan. According to UGC website there are mainly two types of universities in Bangladesh as public and private. This

study was conducted based on the data collected from six public and six private university libraries of Bangladesh. As a result the proposed model plan can be applicable for both public and private university libraries of Bangladesh. The study categorizes the universities of Bangladesh as general universities, technological universities, agricultural universities and medical universities. While selecting the university libraries, it was highly tried to select a university library from each category so that it can draw the attention of the other similar type of university libraries to think about the KS practices among the LIS professionals in their premises.

6.3 Diagrammatic representation of the model plan

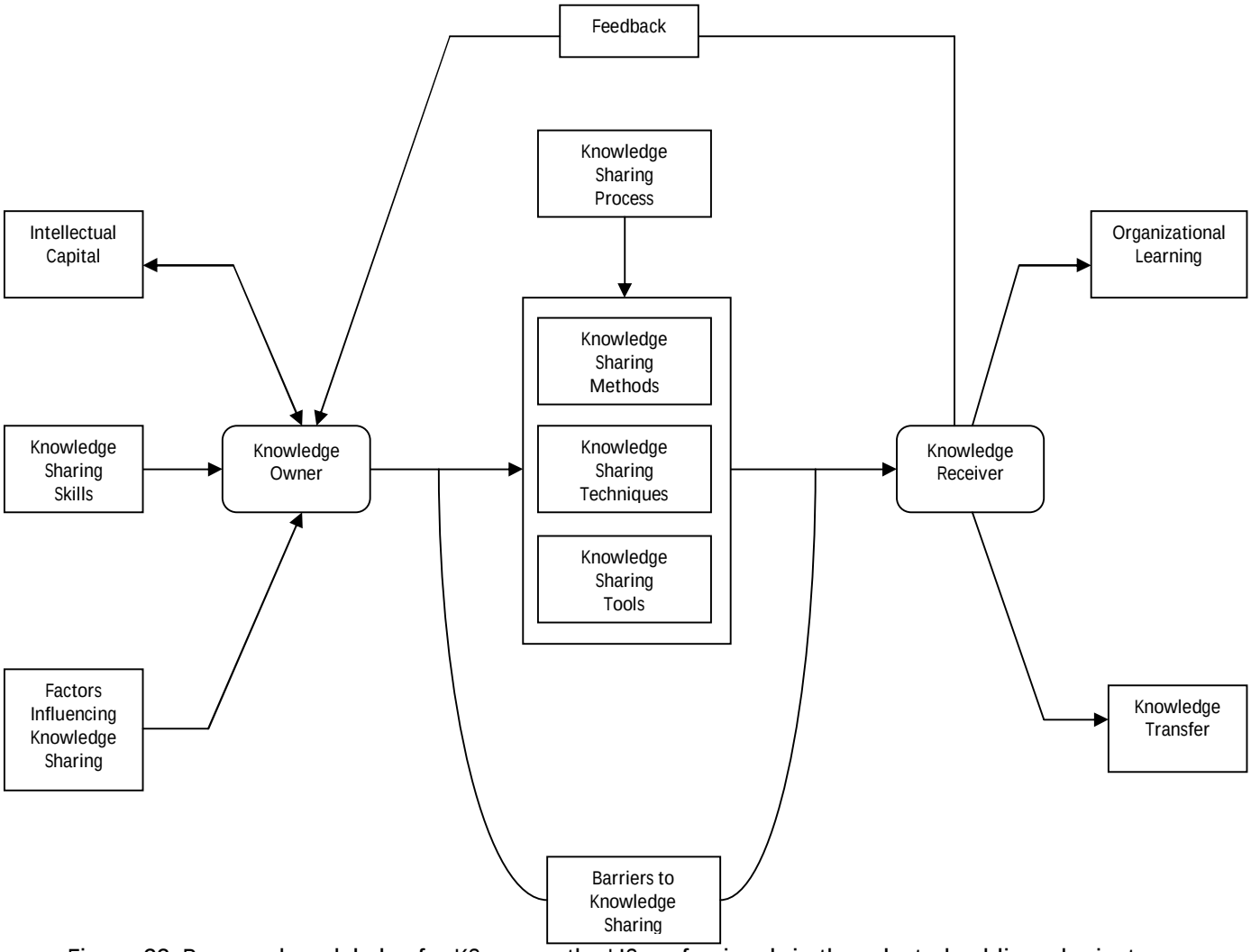


Figure-22: Proposed model plan for KS among the LIS professionals in the selected public and private university libraries of Bangladesh

Figure-22 represents the model plan for KS among the LIS professionals in the selected public and private university libraries of Bangladesh. The proposed model plan can be segmented into three parts as follows:

a. Prerequisites for KS
b. Facilitators and barriers to KS, and
c. Consequences of KS

These three segments contain distinct components which comprises several attributes that characterizes those components. The components of these three segments are illustrated here.

a. Prerequisites for KS

- Intellectual Capital (IC)
- Factors Influencing KS
- Skills Needed for KS

b. Facilitators and Barriers to KS

- KS Process
- KS Methods
- KS Techniques
- KS Tools
- Barriers to KS

c. Consequences of KS

- Organizational Learning
- Feedback
- Knowledge Transfer

6.4 Description of the model plan

Figure-22 shows that knowledge is shared between the knowledge owner and knowledge receiver. The LIS professionals can act as both a knowledge owner and a knowledge receiver based on their need for knowledge at different times. The knowledge owner is the knowledge holder who shares knowledge with the knowledge receiver when he/she asks him/her for the knowledge required. The knowledge receiver is the knowledge seeker who has need for knowledge which compels him/her to ask the knowledge owner for sharing knowledge. In this process of KS, some components act as the prerequisites for KS, some components acts as the facilitators and barriers to KS, and some components acts as the consequences of KS.

Intellectual capital is considered as the knowledge assets of the LIS professionals which will make them sharing knowledge with others. There exist some factors in the university libraries which are responsible for influencing KS. While sharing knowledge, LIS professionals needed to be equipped with some skills devoted to KS.

After meeting those preconditions the LIS professionals will be committed to KS by using some methods, techniques and tools based on their suitability to meet the purpose. In this course, some KS processes will take place within those methods, techniques and tools used for sharing knowledge. Just like the noise in the communication process there will be some barriers to KS which may hamper the overall KS process.

Once knowledge is shared by overcoming the possible threats then it will result into individual learning which will pave the way for organizational learning and thus ends up with competitive advantages for the university libraries. The knowledge receiver should give feedback in anticipation of demand or changing role which will enrich the knowledge of the knowledge owner. The shared knowledge can be further transferred to another department, another library or another organization where implementation of best practices takes place with highest dignity.

These components are described here based on the findings of previous studies and the outcome of the present study.

a. Prerequisites for KS

As mentioned earlier the prerequisites for KS are intellectual capital (IC), factors influencing KS and skills needed for KS. These prerequisites are characterized by some distinct attributes which are described here on the basis of the findings of previous studies and the outcome of the present study.

Intellectual Capital (IC)

In the proposed model plan IC was introduced as a prerequisite for KS. Nahapiet and Ghoshal (1998) use the term "intellectual capital" to refer to the knowledge and knowing capability of a social collective (Nahapiet & Ghoshal, 1998). In the model plan IC is used to represent the knowledge assets of the LIS professionals in the university libraries that can be shared with others. Knowledge sharing is important in utilizing knowledge to develop IC (Hsu & Sabherwal, 2012). The model also shows that by sharing knowledge the LIS professionals can increase their knowledge and thus develop the IC of the university library.

The present study found the following attributes that characterizes IC as a prerequisite for KS.

(i) **Knowledge of the LIS professionals:** Human capital is the knowledge, the experiences, the competencies and the creativity the staff of a firm or an organization has (Edvinsson & Malone, 1997). So it can be said that this attribute represents the human capital of the selected university libraries. The results showed that the LIS professionals from both the public and private university libraries equally agreed with this attribute of IC.

(ii) **Knowledge about the library systems and processes:** Structural Capital is the hardware, software, databases, organizational structure, patents, trademarks, and everything else of organizational capability that supports those employees' productivity - in other words, everything that gets left behind at the office when employees go home (Bontis, 2000). So it can be said that this attribute represents the structural capital of the selected university libraries. The LIS professionals from both the public and private university libraries equally agreed with this attribute of IC.

(iii) **Knowledge about the users:** Customer capital, sometimes called relational or reputational capital, is the tacit and explicit knowledge developed about an organization's customer relationships, products and services, marketing channels and market intelligence (O'Sullivan,

2010). So it can be said that this attribute represents the customer capital of the selected university libraries. The LIS professionals from both the public and private university libraries equally agreed with this attribute of IC.

(iv) **Knowledge gained through relationship:** Relational capital is the value raised through relationships that a firm or organization deploys with its external environment (i.e., providers, customers, potential customers, users, sellers, other firms and organizations) (Grasenick & Low, 2004). So it can be said that this attribute represents the relational capital of the selected university libraries. The LIS professionals from both the public and private university libraries equally agreed with this attribute of IC.

Factors influencing KS

According to Gupta and Govindarajan (2000), organizational culture involves six major categories: information systems, people, process, leadership, reward system and organization structure. Each of these categories includes factors that descend from it (Gupta & Govindarajan, 2000). Al-Alawi, Al-Marzooqi, and Mohammed (2007) examined the factors that received strong emphasis from the literature in influencing the success of knowledge sharing (Al-Alawi, Al-Marzooqi, & Mohammed, 2007).

This study discovered the following factors that are influencing KS in the selected university libraries of Bangladesh.

(i) **Education and experience:** Employees with a higher level of education and longer work experience are more likely to share their expertise and have positive attitudes toward sharing (Constant, Kiesler, & Sproull, 1994). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(ii) **Trust:** Pan and Scarbrough (1998) assert that environment of trust is a prerequisite to knowledge sharing (Pan & Scarbrough, 1998). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(iii) **Collaboration:** The only way to enable sharing of knowledge is by bringing people together through collaboration. Therefore developing individual and team competency through collaboration is the key to effective knowledge sharing (Kumaraswamy & Chitale, 2012). The LIS

professionals from both the public and private university libraries equally agreed with this factor.

(iv) **Empowerment:** Through empowerment, employers can value their employees' expertise and help them communicate their knowledge by creating ways to capture, organize and share knowledge (Martinez, 1998). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(v) **Team work:** A study found that team work enhances knowledge sharing in the public and private sector organizations of Bahrain (Al-Alawi, Al-Marzooqi, & Mohammed, 2007). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(vi) **Good leadership:** Srivastava, Bartol, and Locke (2006) studied management teams in hotel properties. They found that empowering leadership fostered knowledge sharing among team members (Srivastava, Bartol, & Locke, 2006). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(vii) **Rewards and incentives:** Incentives including recognition and rewards have been recommended as interventions to facilitate knowledge sharing and help build a supportive culture (Nelson, Sabatier, & Nelson, 2006). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(viii) **Availability of useful and current technology:** Interestingly, Bordia, Irmer, & Abusah (2006) found a positive influence of benefits on knowledge sharing only for technology-aided sharing but not in a face-to-face context (Bordia, Irmer, & Abusah, 2006). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(ix) **Easy communication:** Human resource practices including fairness in decision-making and open communication likely promote an organizational culture that supports knowledge sharing (Cabrera & Cabrera, 2005). The LIS professionals from both the public and private university libraries equally agreed with this factor.

KS skills

According to Khoo (2005), traditional skills of LIS professionals are still in demand, but these skills have to be expanded to handle new digital formats and the online (especially internet) environment to use new metadata schemes and cataloguing of digital and internet resources (Khoo, 2005). Bishop (2001) points out that managing knowledge in academic libraries require a mix of technical, organizational and interpersonal skills (Bishop, 2001). In making knowledge more accessible, it is useful to have knowledge of the organization, user service orientation and training skills (Koina, 2003).

This study explored the following skills that are required by the LIS professionals for sharing knowledge.

(i) **Communication skills:** Communication skills are required for the sharing and transfer of knowledge (Ajiferuke, 2003). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(ii) **Team working skills:** Husain and Nazim (2013) mentioned that team working skills are required by LIS professionals to involve in KM practice (Husain & Nazim, 2013). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(iii) **Negotiating skills:** Siddike and Islam (2011) found negotiating skill is needed for information professionals to involve in KM in the libraries/information institutions of Bangladesh (Siddike & Islam, 2011). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(iv) **Leadership skills:** Mahmood (2003) has identified leadership skills from academic librarians of Pakistan to involve in KM practices (Mahmood, 2003). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(v**)** **Networking skills:** Husain and Nazim (2013) mentioned networking skills under the broader category of people-centred skills to be required by LIS professionals. The LIS professionals from both the public and private university libraries equally agreed with this factor.

(vi) **ICT skills:** To help LIS professionals to be involved more successfully in KM activities and to maximize their prospects for success in what is a very competitive field, the acquisition of a

number of additional competencies in the field of ICT could be considered (Nazim & Mukherjee, 2013). The LIS professionals from both the public and private university libraries equally agreed with this factor.

(vii) **Management skills:** Todd and Southon (2001) identified management skills are required for KM practice through the viewpoint of LIS professionals in Australia (Todd & Southon, 2001). The LIS professionals from both the public and private university libraries equally agreed with this factor.

b. Facilitators and barriers to KS

The model depicts the components i.e. KS process, KS methods, KS techniques, and KS tools that are responsible for facilitating KS among the LIS professionals in the selected university libraries of Bangladesh. However, it also visualizes the component i.e. barriers to KS that inhibits the sharing of knowledge among the LIS professionals. The distinctive attributes of these components are described here on the basis of the findings of previous studies and the outcome of the present study.

KS process

Knowledge sharing process comprises of two central processes as 'knowledge donating' (communicating to others what one's personal intellectual capital is) and 'knowledge collecting' (consulting colleagues in order to get them to share their intellectual capital) (Hoff & Ridder, 2004). The latest version of a knowledge sharing process was, for example, described by Fan and Wu (2011). One part of the framework is the social capital which is distinguished into three dimensions: structure capital, relationship capital and cognitive capital. The structural dimension is the connection between people and therefore enables them to share knowledge. The relationship dimension triggers the interactions of participants in the network, like trust or norms. The cognitive capital is the medium for the communication among members, things like shared language or self-efficacy (Fan & Wu, 2011).

This study examined the following KS processes that may take place while sharing knowledge among the LIS professionals.

(i) **Knowledge is shared directly between two LIS professionals:** Socialization (tacit-to-tacit) consists of sharing knowledge in face-to-face, natural, and typically social interactions (Dalkir,

2005). The LIS professionals from both the public and private university libraries equally disagreed with this process of KS in their libraries.

(ii) **Knowledge is shared from LIS professionals to any medium**: Knowledge sharing presumes an act of 'externalization' by those that have knowledge. This externalization can take many forms, including performing actions based on this knowledge, explaining it in a lecture or codifying it in an intelligent knowledge system (Hendriks, 1999). The LIS professionals from both the public and private university libraries equally disagreed with this process of KS in their libraries.

(iii) **Knowledge is shared through one medium to another medium:** The combination phase is structured by three processes: (1) capturing and integrating new knowledge (collecting e.g. public data from inside and outside the company and combining them), (2) disseminating explicit knowledge (transferring the knowledge by using presentations or meetings and spreading it to the members of the organization), and (3) editing or processing (making the knowledge more usable) (Nonaka & Konno, 1998). The LIS professionals from the public and private university libraries did not equally agreed with this process of KS in their libraries. In fact the LIS professionals from the private university libraries were more likely to agree with this KS process.

(iv) **Knowledge is shared from any medium to LIS professionals:** Knowledge sharing presumes an act of 'internalization' by those seeking to acquire knowledge. Internalization, too, may occur in many different forms, including learning by doing, reading books, or trying to understand the codified knowledge in a knowledge base (Hendriks, 1999). The LIS professionals from the public university libraries equally agreed and disagreed with this process of KS in their libraries but the LIS professionals from private university libraries mostly disagreed with this process.

KS methods

Organisations in the industry do not promote an information-sharing culture and there was a lack of appropriate methods and tools for measuring and valuing knowledge (Egbu, 2004). Abdul-Rahman and Wang (2010) highlighted twelve knowledge management techniques used amongst large Malaysian construction organizations to share knowledge, namely

brainstorming, cross-function teamwork, face-to-face meeting, job rotation and observation, mentoring, post project review, project briefing and review, recruitment, storytelling, technical gathering, threaded discussion, and written report and manual (Abdul-Rahman & Wang, 2010). This study investigated the folllowing KS methods that can be adopted by LIS professionals for the sake of KS.

(i) **Assistance from the subject expert:** Peer assist is a technique used by a project team to solicit assistance from peers and subject matter experts regarding a significant issue the team is facing (Leask, Lee, Milner, Norton, & Rathod, 2008). The LIS professionals from both the public and private university libraries equally agreed with this method.

(ii) **Learning lesson by solving problems:** After Action Review (AAR) is a technique to evaluate and capture lessons learned upon completion of a project. It allows project team members to discover for themselves what happened, why it happened, and how to sustain strengths and improve on weaknesses (Young, 2010). The LIS professionals from both the public and private university libraries equally agreed with this method.

(iii**)** **Telling stories about experiences:** Storytelling (narrative) is emerging as an important informal method of communication and is regarded as important to convey experiences of work whilst communicating shared knowledge and learning and maintaining organizational memory (Lehaney, Clarke, Coakes, & Jack, 2004). The LIS professionals from both the public and private university libraries equally agreed with this method.

(iv) **Sharing experiences with juniors:** Mentoring is a learning relationship between two employees. Mentors are experienced employees who share their knowledge, experience and ideas with less experienced employees, or associates (Canadian International Development Agency, 2003). The LIS professionals from both the public and private university libraries equally agreed with this method.

(v) **Guiding employees to learn new skills:** Dainty, Qin, & Carrillo (2005) mentioned coaching as an approach to KS in large construction organizations (Dainty, Qin, & Carrillo, 2005). The LIS professionals from both the public and private university libraries also equally agreed with this option as a KS method.

(vi) **Forming Group among the People of Same Interest:** Communities of Practice (CoPs) have emerged as one of the most researched and widely praised techniques for KS (Bartholomew, 2005). The LIS professionals from both the public and private university libraries equally agreed with this method.

KS techniques

Dainty, Qin, and Carrillo (2005) identifies some approaches to sharing knowledge throughout a construction organization that have been utilized in a knowledge management case study; informal knowledge workshops, knowledge exchange seminars, departmental meetings, site visit programme, summary reports, project award scheme, coaching and mentoring, intranet and e-library (Dainty, Qin, & Carrillo, 2005). Graham and Thomas (2006) conducted a study to explore the knowledge-sharing practices of the leading Irish construction organizations CPD policy, mentoring, performance appraisal, lesson learned, cross audits, workshop and seminars, intranet were identified as the current knowledge-sharing practices (Graham & Thomas, 2006). This study identified the following techniques for KS among the LIS professionals.

(i) **Meetings:** Mushi (2009) found that in Tanzania public university libraries meeting is exercised as a means of KS (Mushi, 2009). The LIS professionals from both the public and private university libraries also equally agreed with this option as a technique for KS.

(ii) **Workshops:** A KS workshop should be supported as a part of a larger learning strategy (Hewlitt & Lamoureux, 2010). The LIS professionals from both the public and private university libraries equally agreed with this option as a technique for KS.

(iii) **Training sessions:** Fong and Chu (2006) founded internal training courses as a KS practice in the SMEs construction organizations (Fong & Chu, 2006). The LIS professionals from both the public and private university libraries equally agreed with this option as a technique for KS.

(iv) **Seminars:** Anna & Puspitasari (2013) discovered seminars in the KS objectives of three Indonesian University Libraries (Anna & Puspitasari, 2013). The LIS professionals from both the public and private university libraries also equally agreed with this option as a technique for KS.

(v**) Knowledge fairs:** Knowledge fair is designed to present information on a chosen theme. You can use several technical means to present your information to the target group (Canadian

International Development Agency, 2003). The LIS professionals from both the public and private university libraries equally agreed with this option as a technique for KS.

KS tools

Fong and Chu (2006), in their study of knowledge sharing in the UK contracting companies, identified 14 knowledge-sharing approaches: Internet, intranet, e-mail, memoranda and letters, knowledge sharing boards, internal newsletter and circulars, phone calls and teleconferencing, informal chatting and storytelling, meetings, project briefing and reviewing sessions, newsgroup and web-based discussions, internal training courses, talks and seminars, mentoring and tutoring (Fong & Chu, 2006). Balubaid (2013) examined the use of Web 2.0 technologies as a platform for sharing knowledge between the Industrial Engineering department of King Abdulaziz University and its students (Balubaid, 2013).

This study revealed the following tools that can be exploited by the LIS professionals for KS.

(i) **Internet/Intranet/Extranet:** Sharing knowledge has been a research topic for at least 15 years. At first, it was largely studied within organizational settings, but now Internet scale knowledge sharing is of considerable interest (Adamic, Zhang, Bakshy, & Ackerman, 2008). Intranet is an inter-organizational network that is guarded against outside access by special security tools called firewalls (Haag, Cummings, & Dawkins, 1998). Extranet is an Intranet with limited access to outsiders, making it possible for them to collect and deliver certain knowledge. This technology is very useful for making organizational knowledge available to geographically dispersed staff members and is therefore used by many organizations (Egbu, et al., 2003). The LIS professionals from both the public and private university libraries equally agreed with these tools for KS.

(ii) **E-mail/Group mail:** Coenen (2006) found that email is positively associated with KS (Coenen, 2006). Hwang and Kim (2007) measured one cultural dimension, collectivism, and found that one's collectivism was positively related to their attitude toward using the group email function in an online classroom management system to share knowledge (Hwang & Kim, 2007). The LIS professionals from both the public and private university libraries equally agreed with these tools for KS.

(iii) **Video conferencing/Tele conferencing/Video sharing:** Ghani (2009) mentioned video conferencing as a tool for managing tacit knowledge (Ghani, 2009). If participants met one another for the first time during a videoconference, or a teleconference for that matter, the interactions were much more awkward and slower, and the knowledge that was exchanged tended to be less significant (Dalkir, 2005). Social network sites have medium media richness because they enable both text-based communication and the sharing of videos, pictures and other forms of media (Bakhuisen, 2012). The LIS professionals from both the public and private university libraries equally agreed with these tools for KS.

(iv) **Blogs/YouTube/Facebook/Twitter:** Blogs certainly play an important role in social networking systems that aim at supporting knowledge sharing and learning. There are a growing number of systems on the internet where content can be easily created or made available. People can for example post content they created themselves like videos (e.g. http://www.youtube.com) (Coenen, 2006). Hosein (2013) reported that twitter help find experts in their field through the process of following people who they may not necessarily have met in person, but who broadcast interesting insights. He also outlined that the performativity of Facebook allowed knowledge workers to keep abreast of what is happening in their personal networks. Even though it may not be directly related to their work, it still helps them when they need to reach out to these social ties for work-related knowledge problem (Hosein, 2013). The LIS professionals from both the public and private university libraries equally agreed with these tools for KS.

(v) **Wikis/Groupware/Online discussion forums:** Libraries and academic institutions have been using Wikis for group learning, for sharing knowledge, experiences and open source products, and also to provide subject guides (Frumkin, 2005; King & Porter, 2007; Payne, 2008). Dalkir (2005) mentioned groupware and discussion forums as the tool of knowledge sharing and dissemination phase under the communication and collaboration technologies (Dalkir, 2005). The LIS professionals from both the public and private university libraries equally agreed with these tools for KS.

(vi) **Web portals:** There is an important role for portals in supporting knowledge sharing and team collaboration, but unless users and their willingness to use the portal are considered from

the beginning, the contribution of a portal to knowledge leadership will be limited (Tatnall, 2005). The LIS professionals from both the public and private university libraries equally agreed with these tools for KS.

(vii) **Electronic databases:** Knowledge sharing can be supported by the use of information and communication technology (ICT) for example online databases, data warehousing/knowledge repositories and intranets (Hsu, 2006). The LIS professionals from both the public and private university libraries equally agreed with these tools for KS.

(viii) **Online knowledge directories:** Information of the knowledge resources shared in the community can be registered with the coordinator for search or resource directory services in the community, such as to which subject the piece of resource related to and possible use of the resource. In addition, user feedback on the knowledge resources they received can also be put into the knowledge resource's profile, in the form of comments or rating (Tian, 2005). The LIS professionals from both the public and private university libraries equally agreed with these tools for KS.

(ix) **Website:** As the web increasingly becomes a common resource people turn to when seeking information, websites become critical to knowledge sharing (Tsui, Chapman, Schnirer, & Stewart, 2006). The LIS professionals from both the public and private university libraries equally agreed with these tools for KS.

(x) **Instant messaging/Online chatting:** Academic libraries use IM to provide virtual reference services, improve access of other services and provide the latest information to students (Stephens, 2006). Fong and Chu (2006), in their study of knowledge sharing in the UK contracting companies, identified informal chatting as a knowledge-sharing approach (Fong & Chu, 2006). The LIS professionals from both the public and private university libraries equally agreed with these tools for KS.

Barriers to KS

Some of the barriers for knowledge sharing are believed to be opportunistic behavior (Nicherson & Zenger, 2004), lack of trust between knowledge senders and receivers (Abrams, Cross, Lesser, & Levin, 2003; Borgatti & Cross, 2003), no knowledge of where knowledge is located (O'Dell & Grayson, 1998) and the epistemologically different faces of tacit and explicit

knowledge (Nonaka & Takeuchi, 1995; Szulanski, 2003). Bureš (2003) mentioned the main individual barriers i.e. loss of power, fear from revelation, uncertainty, illusion of reward deprivation, single culture elements, difference between awareness and knowledge, conflict of motives, and the main social barriers i.e. language, conflict avoidance, bureaucracy and hierarchy, incoherent paradigms, underestimating of lower levels, bad appraisal of the co-worker knowledge base, emotions, pseudoinnovators (Bureš, 2003).

However, this study found the following barriers to KS that may encounter in the selected university libraries of Bangladesh.

(i) **Lack of trust:** McEvily, Perrone, & Zaheer (2003), claims that the level of trust affects the extent of knowledge sharing (McEvily, Perrone, & Zaheer, 2003). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(ii) **Lack of collaboration:** Jain (2012) reported lack of collaboration as a challenge/barrier to KM in academic libraries (Jain, 2012). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(iii) **Lack of job security/job satisfaction:** Even today, there often is a fear amongst employees that sharing knowledge reduces job security because people are uncertain about the sharing objectives and intent of their senior management (Lelic, 2001). Studies have found that organizational attitudes including job satisfaction and organizational commitment also foster knowledge sharing (Vries, Hooff, & Ridder, 2006; Lin, 2007). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(iv) **Lack of technological support:** Santos, Soares, and Carvalho (2012) founded that inadequate information technology results as a KS barrier (Santos, Soares, & Carvalho, 2012). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(v) **Lack of rewards and incentives:** O'Reilly and Pondy (1980) indicated that the probability that organizational members will route information to other members is positively related to the rewards and negatively related to the penalties that they expect to result from sharing (O'Reilly & Pondy, 1980). The relationship between knowledge sharing and incentives was further supported by studies (e.g., Gupta & Govindarajan, 2000; Quinn, Anderson, &

Finkelstein, 1996) finding that significant changes had to be made in the incentive system to encourage individuals to share their knowledge, particularly through technology-based networks in organizations. The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(vi) **Poor leadership:** It is also possible that leadership characteristics may affect the level of team knowledge sharing through creating knowledge sharing norms (Quigley, Tesluk, Locke, & Bartol, 2007). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(vii) **Lack of support from top management:** Management should prioritize knowledge sharing. Then it should ensure it communicates its importance well. However, the understanding of the importance of knowledge sharing by management and its subsequent communication seems not to be enough. Management should ensure that the implementation is also conducted properly (Kukko, 2013). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(viii) **Lack of encouragement for creativity and innovation:** Wong (2005) explored that employees should have the skill of creativity and innovation which may be achieved through education and training, which was identified by him as a critical success factor for implementing KM in SMEs (Wong, 2005). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(ix) **Lack of empowerment for decision making:** Nonetheless, most organizations, in particular western ones, seem to value individualism and want their employees to make decisions and solve problems on their own (Nonaka & Takeuchi, 1995). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(x) **Lack of awareness:** According to Riege (2005), lack of awareness is a potential individual factor that hinders people from sharing knowledge (Riege, 2005). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(xi) **Lack of training:** Sharing was mainly people-related and facilitated by workshops, discussion forums, training, and mentoring (McAdam & Reid, 2001). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(xii) **Fear of loss of power:** One major inhibitor of knowledge sharing is that knowledge can be considered a source of power and superiority (e.g., Gupta & Govindarajan, 2000; Kim & Mauborgne, 1998; Szulanski, 1996). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(xiii) **Lack of network and communication:** Knowledge sharing can occur via written correspondence or face-to-face communications through networking with other experts, or documenting, organizing and capturing knowledge for others (Cummings, 2004; Pulakos, Dorsey, & Borman, 2003). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

(xiv) **Lack of skills:** Poor verbal/written communication and interpersonal skills is the potential individual barrier to KS (Riege, 2005). The LIS professionals from both the public and private university libraries equally agreed with this barrier to KS.

c. Consequences of KS

The figure visualizes another three components as organizational learning, feedback and knowledge transfer which represents the consequences of KS. These components are described here on the basis of the findings of previous studies and the outcome of the present study.

(i) **Influence of KS on Learning of LIS professionals:** Knowledge sharing enables managers to keep the individual learning flowing throughout the company and to integrate it for practical applications (Yang, 2007). The effective learning processes associated with exploration, exploitation and sharing of human knowledge (tacit and explicit) that use appropriate technology and cultural environments to enhance an organization's intellectual capital and performance (Kay, 1993). The study found that respondents agreed with the statement, 'knowledge sharing influences the learning of LIS professionals'. The study also found that there is no difference between the perception of the LIS professionals from the selected public and private university libraries in this regard.

This study has also investigated the benefits of learning by KS as follows:

(a) **Enhancing skills of employees:** Collaborative knowledge sharing can play a critical role for bringing people together the knowledge, experience and skills of multiple team members to contribute to organizational development more effectively than individual team members

performing their narrow tasks (Kumaraswamy & Chitale, 2012). It was found that the majority of the LIS professionals from both public and private university libraries equally agreed with this benefit of learning by KS.

(b) **Enhancing team working skills:** Smaller organizations that value sharing and reward teamwork are unlikely to have stagnant pockets of knowledge (Goldsmith, Morgan, & Ogg, 2004). It was found that the majority of the LIS professionals from both public and private university libraries equally agreed with this benefit of learning by KS.

(c) **Enhancing performance of the organization:** It becomes clear therefore that an organizational culture that fosters learning and knowledge sharing is essential for contemporary organizations seeking increase of their performance and a leading position in their field (Madge, 2012). It was found that the majority of the LIS professionals from both public and private university libraries equally agreed with this benefit of learning by KS.

(d) **Gaining user satisfaction:** King (2008) mentioned customer satisfaction under the performance measures of organizational learning while comparing the knowledge-related elements of an Effective Knowledge Organization (King, 2008). It was found that the majority of the LIS professionals from public university libraries agreed with this benefit but the LIS professionals' from private university libraries equally agreed and disagreed with this benefit of learning by KS.

(e) **Career development:** King (2008) also mentioned development-focused career paths under the processes of organizational learning while comparing the knowledge-related elements of an Effective Knowledge Organization (King, 2008). It was found that the majority of the LIS professionals from public university libraries agreed with this benefit but the LIS professionals' from private university libraries mostly disagreed with this benefit of learning by KS.

(ii) **Feedback:** Knowledge sharing is a people-to-people process (Ryu, Ho, & Han, 2003). It is the process where individuals mutually exchange their knowledge (Truch, Higgs, Bartram, & Brown, 2002); thus it is a two-way process (Liyanage, Elhag, Ballal, & Li, 2009). Hansen (2002) described knowledge sharing as the receipt of information, know-how and feedback regarding a product or procedure (Hansen, 2002). Sharratt and Usoro (2003) stated that for sharing to occur, there must be some form of exchange between both the source unit and the recipient unit (Sharratt

& Usoro, 2003). Knowledge sharing can be referred to as the exchange of knowledge between at least two parties in a reciprocal process allowing reshaping and sense-making of the knowledge in the new context (Ramayah, Yeap, & Ignatius, 2013). The respondents of this study agreed with the statement, 'after knowledge sharing the knowledge receiver should give a feedback which will enrich the knowledge of the knowledge owner'. The study also found that there is no difference between the perception of the LIS professionals from the selected public and private university libraries in this regard.

(iii) **Transferring Knowledge after KS:** According to Nonaka and Takeuchi (1991) knowledge sharing is a critical stage in the process of knowledge transfer (Nonaka & Takeuchi, 1991). Some see knowledge management and knowledge transfer as processes that undertake largely for the purpose of creating a knowledge sharing culture, fostering collaboration and communication, and so in turn enhancing organizational innovation (Liebowitz, 2002). Majchrzak, Cooper, & Neece (2004, p. 174) opined that knowledge transfer can be subdivided into knowledge sharing and knowledge reuse, where sharing refers to ''the process by which an entity's knowledge is captured''. Here, sharing takes the connotation of giving or contributing, and is included under transfer, but does not include the receiving and reuse aspect of transfer (Majchrzak, Cooper, & Neece, 2004). Almost the same distinction was made by Darr and Kurtzberg (2000, p. 29) when they stated: . . . our research argues that transfer has occurred when a contributor shares knowledge that is used by an adopter (Darr & Kurtzberg, 2000). Sie and Yakhlef (2009) found that a expert noted that a constant search for the unknown, you are compelled to learn new things every day, and since being an expert means that you spend most of your time transferring and sharing your knowledge, you are bound to learn from these exchanges with others (Sie & Yakhlef, 2009). The participants of this study agreed with the statement, 'after KS the knowledge should be transferred to other medium for further use'. The study also found that there is no significant difference between the perception of the LIS professionals from the selected public and private university libraries in this regard.

6.5.1 Implications of the conceptual model plan in the university libraries of Bangladesh

The proposed model plan will help the LIS practitioners to understand how they can share their professional knowledge among themselves in a systematic manner. It also demonstrates the

components that will act as a prerequisite for KS among them. The model gives them a view about what are the possible methods, techniques and tools for KS. However, the LIS professionals would be able to understand the KS process that goes through while sharing knowledge by using different methods, techniques and tools. The model also described the barriers to KS which will help the LIS administrators to mitigate them in order to ensure successful sharing of knowledge. In fact the model explained the most crucial components of KS by delineating the consequences of KS i.e. organizational learning, feedback and knowledge transfer. So this conceptual model will give a clear cut view about KS to the LIS administrators and professionals in the university libraries of Bangladesh and enable them to put into action the KS practices in their premises more effectively and efficiently.

6.5.2 Limitations of the proposed conceptual model plan

The main focus of the model plan is KS among the LIS professionals in some selected public and private university libraries of Bangladesh. As a result it did not take into consideration one of the basic entity of the library system i.e. the user category. Moreover, the model plan is supported by the data gathered from the selected public and private university libraries that are situated in the Dhaka city but the university libraries in the other part of the country was not covered. Another important limitation of the model plan is that it is only a conceptual model and is not justified. In spite of these limitations the model plan is a unique representation in the field that can be taken into consideration for further modification by future research.

6.6 Summary

This chapter illustrated the proposed model plan for KS among the LIS professionals in the selected public and private university libraries of Bangladesh. The model plan is built on the basis of the literature reviewed and the primary data obtained from the sample LIS professionals in the selected university libraries about the building blocks of the model plan that was primarily set up in the mental model. Though the model plan could not be justified, yet it opens up a new horizon for the LIS administrators, practitioners, academics, and researchers to pay more attention at KS in the field of LIS.

Chapter Seven:
Conclusion

Chapter Seven

Conclusion

7.1 Introduction

This chapter is the final chapter of this research study. It summarizes the major findings of the study through answering the research questions and the results of the hypotheses testing. It also put forward some recommendations for KS among the LIS professionals in the selected public and private university libraries of Bangladesh. In fact, the chapter attempted to give some directions for the practical implications of the study in the real world phenomena. In addition, it also tried to provide direction for future research in the field of KS in LIS perspectives based on the limitations of the study.

7.2 Summary of major findings of the study

This section summarizes the major findings of the study by answering the research questions on the basis of the results of the hypotheses tested.

7.2.1 Answers to the research questions

This study was aimed at exploring the answers of three research questions based on the objectives. To find the answers to the research questions several hypotheses were formulated and tested under each research question. The hypotheses were tested by applying Chi-square test of Independence and Mann Whitney U test. Since these two types of test can not indicate the degree of independence and/or difference, the cross tabulation technique and descriptive statistics were also applied respectively to clearly assess the respondents view about the questions asked.

The first research question was; **RQ1:** Is the perception of the LIS professionals same about the prerequisites for KS from the selected public and private university libraries of Bangladesh?

To find the answer of this question the respondents were requested to express their perception about intellectual capital, factors influencing KS and KS skills as the prerequisites for KS. The responses were analyzed by applying cross tabulation technique and three hypotheses were tested by applying chi-square test of independence. The summary of the findings are as follows.

Intellectual capital: The intellectual capital is defined as the knowledge of the LIS professionals, knowledge about the library systems and processes, knowledge about the library users, and knowledge gained through relationship. The cross tabulation showed that most of the LIS professionals from both the public and private university libraries agreed with these items. The chi-square test exposed that the perception of the respondents from both types of selected university libraries is same about the IC.

Factors influencing KS: On the basis of the literature review this study identified the following factors that may influence KS among the LIS professionals in the university libraries as i.e. education and experience, trust, collaboration, empowerment, team work, good leadership, rewards and incentives, availability of useful and current technology and easy communication. The results represented that, most of the LIS professionals from both the public and private university libraries agreed with these factors. The chi-square test revealed that the perception of the respondents from both types of selected university libraries is same about the factors influencing KS.

KS skills: This study explored the communication skills, team working skills, negotiating skills, leadership skills, networking skills, ICT skills, and management skills as the required set of Skills for KS. The results delineated that, most of the respondents from both the public and private university libraries agreed with these skills. The chi-square test revealed that the perception of the LIS professionals from both types of selected university libraries is same about the KS skills.

The second research question was; **RQ2:** Is the view of the LIS professionals same about the facilitators and barriers to KS from the two types of university libraries?

To find the answer of this question the respondents were requested to express their view about KS process, KS methods, KS techniques, and/or KS tools as the facilitators to KS and barriers to KS. The responses were analyzed by applying cross tabulation technique and five hypotheses

were tested by applying chi-square test of independence. The summary of the findings are as follows.

KS process: The basic KS processes that are investigated for this phenomenon are knowledge is shared directly among LIS professionals, knowledge is shared from LIS professionals to any medium, knowledge is shared through one medium to another medium, and knowledge is shared from any medium to LIS professionals. The results interestingly disclosed that, majority of the respondents from the both types of selected university libraries disagreed with the first two processes. Even more interestingly, majority of the respondents from the selected public university libraries disagreed with the third process but on the other hand majority of the respondents from the selected private university libraries agreed with the same process. Meanwhile the respondents from the selected public university libraries equally agreed and disagreed with the fourth process but the majority of the respondents from the selected private university libraries disagreed with this process. The chi-square test demarcated that the perception of the LIS professionals from both types of selected university libraries is same for the first, second and fourth KS processes but not same for the third process.

KS methods: The following methods can facilitate KS among the LIS professionals as assistance from the subject expert, learning lesson by solving problems, telling stories about experiences, sharing experiences with juniors, guiding employees to learn new skills, and forming groups among the peoples of same interest. The results outlined that, most of the LIS professionals from both types of libraries agreed with those methods. The chi-square test drew that the perception of the LIS professionals from both types of selected university libraries is same about the KS methods.

KS techniques: The techniques that can act as the facilitator to KS are meetings, workshops, training sessions, seminars, and knowledge fairs. The results denoted that, most of the respondents from both type of university libraries agreed with this set of techniques. The chi-square test reported that the perception of the LIS professionals from both types of selected university libraries is same about the KS techniques.

KS tools: The following tools can enable KS i.e. internet/intranet/extranet, email/group mail, tele-conferencing/video-conferencing/video-sharing, blogs/facebook/youtube/twitter,

wikis/online discussion forums/groupware, web portals, electronic databases, online knowledge directories, website, and instant messaging/online chatting. The results expressed that, most of the LIS professional from the selected public and private university libraries agreed with these tools. The chi-square test indicated that the perception of the LIS professionals from both types of selected university libraries is same about the KS tools.

Barriers to KS: The major barriers to KS are as follows i.e. lack of trust, lack of collaboration, lack of job security/job satisfaction, lack of technological support, lack of rewards and incentives, poor leadership, lack of support from top management, lack of encouragement for creativity and innovation, lack of empowerment for decision making, lack of awareness, lack of training, fear of loss of power, lack of network and communication, and lack of skills. The results described that, most of the professionals from the selected university libraries agreed with these barriers. The chi-square test highlighted that the perception of the LIS professionals from both types of selected university libraries is same about the barriers to KS.

The third research question was; **RQ3:** Is the opinion of the LIS professionals same about the consequences of KS from the selected university libraries?

To find the answer of this question the respondents were requested to express their opinion about the influence of KS on learning, feedback and transferring knowledge after KS as the consequences of KS. The responses were analyzed by applying descriptive statistics and one hypothesis was tested by applying Mann Whitney U test. The summary of the findings are as follows.

Influence of KS on learning: The descriptive statistics expressed that the LIS professionals from the selected university libraries agreed with a high mean score (6.36) about the influence of KS on learning. The Mann Whitney U test suggested that there is no difference between the opinion of LIS professionals in the public and private universities about the influence of KS on learning.

Feedback: The results discovered that the LIS professionals from the selected university libraries agreed with a high mean score (6.24) about feedback as a consequence of KS. The

Mann Whitney U test reported that there is no difference between the opinion of LIS professionals in the public and private universities about feedback as a consequence of KS.

Transferring knowledge after KS: The results represented that the professionals from the selected university libraries agreed with a high mean score (6.24) about transferring knowledge after KS. The Mann Whitney U test revealed that there is no difference between the opinion of LIS professionals in the public and private universities about transferring knowledge after KS.

7.3 Recommendations

This study explored a model plan for KS among the LIS professionals in the selected public and private university libraries in Bangladesh. The purpose of building the model plan is to give a better understanding to the university library stakeholders about the prerequisites for, facilitators and barriers to and consequences of KS in their organizations. Therefore, this study recommends the following things that are needed to be considered by the authority of the university libraries to successfully put into operation the KS practices among the LIS professionals to ensure better performance, higher user satisfaction and thus enhance greater organizational effectiveness. These recommendations are made based on the proposed model plan and in the light of the major research findings.

1. University libraries should take initiatives to identify, manage, and create value for the intellectual capital (i.e. human capital, structural capital and relational capital) that resides in the intangible knowledge assets/resources of the library.
2. The factors that are responsible for influencing KS should be assessed and dealt with proper and scientific management policies so that they influence positively to increase both the quality and quantity of KS.
3. The Human Resource Management (HRM) department of the libraries should incorporate the employees' performance regarding KS practices in the performance appraisal and thus identify if they lack the skills necessary for KS. The department should then report to the authority or take initiative from their own account to fill the gap of the employees KS skills. If the libraries do not have any HRM department then it should be launched immediately.

4. The leaders of the university libraries should stimulate and/or conduct more intensive studies to understand the efficient processes of KS among the LIS professionals in their libraries.
5. Every particular university library should search the best practices in other libraries and/or others similar types of organizations in order to find out suitable methods and techniques for KS and assess their effectiveness in their respective organization.
6. Besides the conventional approaches to KS the university libraries should also focus on adopting useful current ICTs (Information and Communication Technologies) to avoid time, cost and distance barriers.
7. The university library management should make their employees realize the importance of learning by KS and instill in them the manner of reciprocity in terms of KS to enhance their individual knowledge base and thus contribute to the organizational knowledge and/or intellectual capital.
8. Once knowledge has been shared and successfully utilized to improve organizational performance and thus create new value then it should be transferred to other departments of the organization and/or other organizations for further use or reuse.

7.4 Practical implications

This study has proved to be the unique one based on the literatures reviewed and synthesis of the findings. Thus it has the potentiality for implementation in the practical field to introduce and/or transform the conventional and unorganized KS practices by a systematic and organized KS culture. In doing so, the university library authority should at first determine the prerequisites for KS. In the next phase they should adopt the effective processes, methods, techniques and tools for KS. They should also guess the potential barriers to KS and mitigate them for facilitating better KS practices. In the final phase, they should focus on learning as the byproduct of reciprocal KS and transferring knowledge for reuse. Additionally, this study will also create awareness among the LIS practitioners and professionals about the usefulness of well organized KS practices for comparative advantages. The findings of this study will enable

the LIS administrators of the university libraries to assess the level of understanding of the LIS professionals about the fundamental concepts of KS.

7.5 Limitations of the Study

The study conducted on the basis of the primary data gained through a questionnaire survey in some selected public and private university libraries situated in the Dhaka city. This is the major limitation of the study as it did not cover the university libraries situated in different area of the country. Another major limitation is that it only focuses on the KS practices among the LIS professionals in the selected university libraries of Bangladesh. As a result the user category is overlooked. Finally, the model plan developed could not be justified because of the inadequacy of question items in the questionnaire that is developed as the data collection tool.

7.6 Directions for Future Research

On the basis of the limitations of the study, directions for future research can be suggested in the following area:

- by selecting the public and private university libraries from different part of the country except the Dhaka city;
- by incorporating the user category into the population with the LIS professionals and drawing a representative sample from them; and
- by adding some more items in the questionnaire dedicated to the justification of the proposed model plan.

7.7 Concluding remarks

The major objective of the study is to formulate a model plan for KS among the LIS professionals in the selected public and private university libraries of Bangladesh. In attaining this objective the present study generated three precise objectives and on the basis of these objectives three research questions (RQs) were formulated. The answers to these RQs were mentioned above which forms the major findings of the study. The proposed model plan was built based on the literature reviewed and a questionnaire survey was conducted to gain the perception of the LIS professionals about the components of the model plan from the selected public and private universities. The results showed that the LIS professionals from both type of university libraries equally agreed with almost all of the components except the KS process.

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Appendix-A: Application for seeking permission regarding data collection

Date: 28-05-2014

To,

_____

_____

_____

Subject: Application for giving permission to conduct a survey.

Dear Sir/Madam,

I am the student of M. A. 2nd Semester, Department of Information Science and Library Management, University of Dhaka. You will be glad to know that I am going to conduct a research on "Building a Model Plan for Knowledge Sharing among the Library and Information Science Professionals in the Selected Public and Private University Libraries of Bangladesh: A Study" as a partial fulfillment of the Master of Arts (M. A.) degree. In this regard, I want to conduct a short survey on the Library and Information Science (LIS) professionals of your university library.

I am expecting your kind consideration to permit me to conduct a short survey in your library.

Sincerely Yours,
Exam Roll No.: 2606
M. A. 2nd Semester
Department of Information Science
and Library Management
University of Dhaka

Recommended by the Supervisor:
XYZ
Associate Professor
Department of Information Science
and Library Management
University of Dhaka
Signature: _____

Appendix-B: Questionnaire used for conducting the survey

Survey Questionnaire on "Building a Model Plan for Knowledge Sharing among the Library and Information Science Professionals in the Selected Public and Private University Libraries of Bangladesh: A Study"

Section A: Respondents Profile (Please give tick √ mark. You can give more than one tick mark where necessary.)

1. Please mention the type of university library you are working in.:

○ Public ○ Private

2. Gender of the respondent: ○ Male ○ Female

3. Age group (in years):

○ below 30 ○ 31-35 ○ 36-40 ○ 41-45 ○ 46 and above

4. Please mention your highest educational qualification:

- Certificate course in Library & Information Science (LIS)
- Post Graduate Diploma in LIS
- B. A. / B. S. S. in LIS or Equivalent Degree
- M. A. / M. S. S. in LIS or Equivalent Degree
- M. Phil. in LIS
- Ph. D. in LIS

5. Name of the University Library:

6. Please mention your experience as librarian/information professional/documentalist etc. (in years):

○ less than 5 ○ 6-10 ○ 11-15 ○ 16-20 ○ more than 20

7. Please mention about your ICT (Information & Communication Technology) skill:

○ Extremely Good ○ Very Good ○ Good ○ Average ○ Poor ○ Very Poor ○ Extremely Poor

Section-B: Concept of Knowledge and KS (Please give tick √ mark. You can give more than one tick mark where necessary.)

8. What is knowledge? Please express your opinion from the following options.

- Knowing about something
- Knowing how to do something
- Knowing how to solve a problem
- Combination of these three options

9. What is knowledge sharing? Please express your view from the following options.

- Communication of knowledge
- Exchange of knowledge
- Transmission and absorption of knowledge
- Combination of these three options

Section C: Prerequisites for KS in the University Libraries of Bangladesh (Please give tick √ mark. You can give more than one tick mark where necessary.)

10. What is intellectual capital? Please express your opinion from the following options.

- Knowledge of the library/information professionals
- Knowledge about the library systems and processes
- Knowledge about the users
- Knowledge gained through relationship with others
- Combination of these four options

11. What factors are influencing knowledge sharing? Please express your view from the following options.

- Education and experience
- Trust
- Collaboration
- Empowerment
- Team work
- Good leadership
- Rewards and incentives
- Availability of useful and current technology
- Easy communication
- All

12. Which skills are needed for knowledge sharing? Please express your opinion from the following options.

- Communication skills
- Team working skills
- Negotiating skills
- Leadership skills
- Networking skills
- ICT skills
- Management skills
- All

Section D: Facilitators and Barriers to KS (Please give tick √ mark. You can give more than one tick mark where necessary.)

13. Please express your view about the process of knowledge sharing from the following options.

- Knowledge is shared directly between two library professionals
- Knowledge is shared from library professionals to any medium
- Knowledge is shared through one medium to another medium
- Knowledge is shared from any medium to library professionals

14. What are the methods for knowledge sharing? Please express your opinion from the following options.

- Assistance from the subject expert
- Learning lessons by solving a problem
- Telling stories about experiences
- Sharing experiences with juniors
- Guiding employees to learn new skills
- Forming groups among the people of same interest
- All

15. What are the techniques for knowledge sharing? Please express your view from the following options.

- Meetings
- Workshops
- Training sessions
- Seminars
- Knowledge fairs
- All

16. What are the tools for knowledge sharing? Please express your opinion from the following options.

- Internet/Intranet/Extranet
- E-mail/Group mail
- Video conferencing/Tele conferencing/Video sharing
- Blogs/Facebook/Twitter/You Tube
- Wikis/ Online discussion forums/ Group ware
- Web portals
- Electronic Databases
- Online knowledge directories
- Website
- Instant Messaging/Online chatting
- All

17. What are the barriers to knowledge sharing? Please express your view from the following options.

- Lack of trust
- Lack of collaboration
- Lack of job security/ job satisfaction
- Lack of technological support
- Lack of incentives and rewards
- Poor leadership
- Lack of support from top management
- Lack of encouragement for creativity and innovation
- Lack of empowerment for decision making
- Lack of awareness
- Lack of training
- Fear of loss of power
- Lack of communication and network
- Lack of skills
- All

Section E: Consequences of KS (Please give tick √ mark. You can give more than one tick mark where necessary.)

18. After knowledge sharing the knowledge receiver should give a feedback which will enrich the knowledge of the knowledge owner. Do you agree with this statement?

○ Strongly Disagree
○ Disagree
○ Somewhat Disagree
○ Average
○ Somewhat Agree
○ Agree
○ Strongly Agree

19. What are the benefits of learning by knowledge sharing? Please express your view from the following options.

- Enhancing skills of employees
- Enhancing team working skills
- Enhancing performance of the organization
- Gaining user satisfaction
- Career development

20. Knowledge sharing influences learning of library/information professionals. Do you agree with this statement?

○ Strongly Disagree
○ Disagree
○ Somewhat Disagree
○ Average
○ Somewhat Agree
○ Agree
○ Strongly Agree

21. After knowledge sharing, the knowledge should be transferred to other medium for further use. Do you agree with this statement?

○ Strongly Disagree
○ Disagree
○ Somewhat Disagree
○ Average
○ Somewhat Agree
○ Agree
○ Strongly Agree