A KNOWLEDGE MANAGEMENT(KM) MODEL FOR CREATING SERVICE-BASED VALUE FOR PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH

BY

SK MAMUN MOSTOFA

A thesis submitted in fulfilment of the requirement for the Degree of Doctor of Philosophy (Library and Information Science).

Kulliyyah of Information and Communication Technology
International Islamic University Malaysia

FEBRUARY 2023

ABSTRACT

The research aimed to propose a Knowledge Management (KM) model for creating service-based value for public university libraries in Bangladesh. The other Research Objectives (ROs) were to explore the current models of KM implemented by the university libraries, examine the current KM practices in public university libraries in Bangladesh, examine the critical success factors, and identify the challenges related to KM prac¬tice. The present research used both quantitative and qualitative approaches (mixed method). A pilot study was conducted to establish reliability and to validate the questionnaire. For the final survey, 1,060 questionnaires were distributed among the undergraduate (UG) and postgraduate (PG) students of five public university libraries in Bangladesh using a simple random sampling technique. Out of 1,060 distributed questionnaires, 811 usable questionnaires were returned, giving a response of 76.5%. This research also interviewed 11 Librarians/Deputy librarians/Assistant librarians of the selected public university libraries who hold the highest position at their university libraries. A purposive sampling method was used to determine the interviewees for the qualitative approach. Out of 13, Librarians/Deputy Librarians/Assistant librarians, 11 were interviewed, giving a response rate of 84.6%. The quantitative analysis found that users' familiarity with KM is moderately low. They learn about KM through courses provided by their respective departments and independent study through research literature. Users also agreed that KM is an alternate name for information management, and it is a modern librarianship discipline. It was found that establishing a solid infrastructure for future development, continuous training programs, utilizing technology accurately, and organizational Information and Communication Technology (ICT) structure are the critical success factors for designing and implementing a KM in public university libraries. At the same time, lack of awareness, problems with organizational culture, improper technology deployment, and inadequate support from management are the challenges related to KM prac¬tice in public university libraries in Bangladesh. The qualitative findings found that no formal KM programs are in place in any of these selected universities. The research also established that libraries are doing some resemblance of KM practices in their everyday work. The research found that tactful strategy for KM implementation, recruiting skilled manpower, a training program for staff and users, ICT infrastructure, and skilled manpower are the critical success factors of KM implementation in the public university libraries in Bangladesh. According to the findings, lack of budget, lack of user awareness, lack of trained staff, and obsolete technologies are the challenges for KM implementation in the library. Finally, the research proposed a model for public university libraries in Bangladesh. The model showed that the successful implementation of KM can bring benefits to libraries depending on the quality of the library services, critical success factors, users' familiarity with KM, KM relevance to librarianship, and the potential contribution of various departments. Based on the findings of this research, the recommendations are given to the librarians and the higher authority of the university. The research was limited to only five public university libraries in Bangladesh. Finally, the research presented managerial and practical implications with further research directions. This research would be an excellent addition to the application of KM in the library of Bangladesh.

ملخص البحث

تهدف هذه الدراسة إلى اقتراح نموذج إدارة المعرفة (KM) الذي من شأنه خلق قيمة قائمة على الخدمة للمكتبات الجامعية العامة في بنغلاديش. كما يهدف إلى استكشاف النماذج الحالية لإدارة المعرفة التي تطبقها المكتبات الجامعية، ودراسة ممارسات إدارة المعرفة الحالية التي تتم في مكتبات الجامعات العامة في بنغلاديش، ودراسة عوامل النجاح الحاسمة، وتحديد التحديات المتعلقة بممارسة إدارة المعرفة. استخدمت الدراسة المنهجين الكمي والكيفي. كما تم إجراء دراسة استطلاعية لتحديد الموثوقية، والتحقق من صحة الاستبانة. وقد تم في الدراسة الفعلية توزيع (1060) استبانة على أفراد العينة المكونة من طلاب البكالوريوس، وطلاب الدراسات العليا، في خمس مكتبات جامعية عامة في بنغلاديش، وذلك باستخدام تقنية أخذ العينات العشوائية. واستخدم الباحث (811) استبانة تم توزيعها، وهو ما يمثل (76.5٪) من الاستبانات التي تم توزيعها. تم إجراء مقابلات مع أمناء مكتبات، ونُواب أُمناء مكتبات، وأُمناء مكتبات مساعدين، في المكتبات الجامعية العامة المختارة، والذين يشغلون أعلى منصب في مكتبات جامعاتهم. وقد تم استخدام طريقة أخذ العينات الهادفة لتحديد الأشخاص الذين تمت مقابلتهم في نطاق منهج البحث الكيفي. فمن بين (13) مشاركًا تم اختيارهم لإجراء المقابلات، تمكن الباحث من إجراء مقابلات مع (11) منهم فقط، وهو ما يشكل معدل استجابة قدره (84.6٪). وقد أظهرت نتائج التحليل الكمي أن إلمام المستخدمين بمفهوم إدارة المعرفة منخفض نوعًا ما. وتبيَّن أن المستخدمين قد تعلموا عن إدارة المعرفة من خلال الدورات التي تقدمها الأقسام المعنية، ومن خلال جهودهم الذاتية في البحث. واتفق المستخدمون كذلك على أن إدارة المعرفة اسم بديل لإدارة المعلومات، وهو تخصص حديث في المكتبات. وقد تبيَّن كذلك أن إنشاء بنية تحتية قوية للتطوير المستقبلي، وبرامج التدريب المستمر، واستخدام التكنولوجيا بدقة، واستخدام هيكل تكنولوجيا المعلومات والاتصالات التنظيمية، تشكل كلها عوامل النجاح الحاسمة لتصميم وتنفيذ إدارة المعرفة في مكتبات الجامعات العامة. في الوقت نفسه، فإن قلة الوعي والمشاكل المتعلقة بالثقافة التنظيمية وعدم التوزيع العادل للتكنولوجيا، وعدم كفاية الدعم المقدم من الإدارة، تشكل كلها تحديات متعلقة بممارسة إدارة المعرفة في مكتبات الجامعات العامة في بنغلاديش. أما النتائج الكيفية، فقد أظهرت أنه لا توجد برامج رسمية لإدارة المعرفة في أي من هذه الجامعات المختارة. وأثبت البحث كذلك أن المكتبات تقوم بما يشبه ممارسات إدارة المعرفة في عملها اليومي، كما أثبت أن اتباع إستراتيجية ذكية في تطبيق إدارة المعرفة وتوظيف القوى العاملة الماهرة وتوفير برامج تدريب للموظفين والمستخدمين وتوفير بنية تحتية لتكنولوجيا المعلومات والاتصالات، تشكل كلها عوامل نجاح حاسمة في تطبيق إدارة المعرفة في مكتبات الجامعات العامة في بنغلاديش. ووفقًا للنتائج، فإن نقص الميزانية وقلة وعي المستخدم ونقص الموظفين المدربين وتطبيق تقنيات قديمة، تمثل تحديات تواجه تطبيق إدارة المعرفة في المكتبة. وأخيرًا، اقترحت الدراسة نموذجًا

للمكتبات الجامعية العامة في بنغلاديش. وقد أظهر ذلك النموذج أن التنفيذ الناجح لإدارة المعرفة، يمكن أن يعود بفوائد على المكتبات، اعتمادًا على كلٍّ من: جودة خدمات المكتبة، وعوامل النجاح الحاسمة، ومعرفة المستخدمين بإدارة المعرفة، ومدى صلة إدارة المعرفة بأمانة المكتبات، والمساهمة المحتملة للإدارات المختلفة. وقد ذُيِّلت هذه الدراسة بِعدة توصيات لأمناء المكتبات، والإدارة العليا في الجامعة. وقد اقتصر البحث على خمس مكتبات جامعية عامة فقط في بنغلاديش. وأخيرًا، قدم البحث نتائج مهمة على المستويين الإداري والعملي، مع مزيد من الإرشادات البحثية. ويأمل الباحث أن تكون هذه الدراسة إضافة مميزة في أدبيات تطبيق إدارة المعرفة في مكتبات بنغلاديش.

APPROVAL PAGE

The thesis of Sk Mamun Mostofa has been approved by the following:

_____
Roslina Othman
Supervisor

_____
Mdm Masita Binti A Rahman
Co-supervisor 1

_____
Zahidah Binti Zulkifli
Co-supervisor 2

_____
Roosfa Bin Hashim
Internal Examiner

_____
Mohamad Noorman Bin Masrek
External Examiner

_____
Mohamed Elwathig Saeed Mirghani
Chairman

DECLARATION

I hereby declare that this thesis is the result of my original work except where otherwise stated, and this thesis has not been submitted for any other degree at IIUM or any other university. I also declare that this thesis does not contain data, pictures, graphs, or additional information unless acknowledged explicitly as being referenced from other sources.

Sk Mamun Mostofa

Signature…… Date……

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

DECLARATION OF COPYRIGHT AND AFFIRMATION OF FAIR USE OF UNPUBLISHED RESEARCH

A KNOWLEDGE MANAGEMENT (KM) MODEL FOR CREATING SERVICE-BASED VALUE FOR PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH

I declare that the copyright holder of this thesis/dissertation are jointly owned by the student and IIUM.

No part of this unpublished research may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without prior written permission of the copyright holder except as provided below.

1. Any material contained in or derived from this unpublished research may only be used by others in their writing with due acknowledgement.

2. IIUM or its library will have the right to make and transmit copies (print or electronic) for institutional and academic purpose.

3. The IIUM library will have the right to make, store in a retrieval system and supply copies of this unpublished research if requested by other universities and research libraries.

By signing this form, I acknowledged that I have read and understand the IIUM Intellectual Property Right and Commercialization policy.

Affirmed by Sk Mamun Mostofa

…… ……..

Signature Date

This thesis is dedicated to the Almighty ALLAH (SWT) and to My great teacher and messenger, Mohammed (PBUH), Who taught us the purpose of life. This thesis is also dedicated to my beloved mother for raising and educating me, to my late father, to my lovely son, my wife, and my family members..

ACKNOWLEDGEMENTS

Alhamdulillah, Praise to be Almighty ALLAH (SWT). I owe Almighty ALLAH (SWT) for granting me grace, mercy, strength, and excellent health to accomplish my Ph.D. program despite the various challenges during the journey.

My deep gratitude goes to the Honorable VC sir, Pro VC madam, Dean of the Faculty of Arts at the University of Dhaka, and all the respected members of the Bangabondhu overseas scholarship program committee for granting me the scholarship to pursue my Ph.D. program at International Islamic University Malaysia (IIUM), Malaysia.

My sincere and deepest gratitude goes to my late father. I am forever grateful to my mother; it was impossible to complete my Ph.D. journey from Malaysia without her continuous inspiration.

I am very grateful to my supervisor, Professor Datin Dr. Roslina Othman, for her invaluable suggestions, encouragement, and guidance in successfully completing this journey and developing my research career. Also, I am grateful to my co-supervisors and keeping their doors open to assist me.

I would like to thank the Library and Information Science Department staff members and KICT of IIUM for their support during my Ph.D. I am deeply indebted to the respected Librarians of the Public University Libraries in Bangladesh and the library users of those libraries. They created time to complete the interview and survey questionnaires out of their busy schedules.

Many thanks are also due to all my respected teachers, and my colleague in the Department of Information Science and Library Management University of Dhaka, Bangladesh, Malaysia, and other countries, whose support made my journey comfortable and exciting.

Big thanks to my siblings, my beloved son, and my wife, especially for their love, support, and prayers throughout the program. My appreciation also goes to my students, who supported me. At the same time, my sincere gratitude to everyone who has helped in completing my Ph.D. in any capacity they could. Alhamdulillah

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

University libraries play a significant role in satisfying user demand in higher education institutions. These libraries are accountable for offering information sources and services for supporting students, staff, and faculty's teaching, learning, and research needs (Atanda et al., 2021). However, university libraries continuously face various challenges with adopting new technologies (knowledge management, big data, artificial intelligence, the internet of things, etc.) for handling knowledge sources. Due to technological advancements, libraries must now reevaluate their users' services (Musangi et al., 2019). In addition, public university libraries are important facilities at learning institutions. A knowledge source that is responsible for compiling all information acquisition, processing, storing, and disseminating in a paper-based and automated manner according to user needs is also necessary (Obinyan & Akande, 2019). University libraries should offer materials for study, group projects, seminars, symposiums, etc., since they are a hub for knowledge. Writing a literature review for research objectives and assisting students in the best possible ways with the ever-changing knowledge requires using various library resources. Libraries should act as a resource for free access to books about recent technological developments (James & John, 2018).

Learning new things is one of the most meticulous human behaviors, and knowledge is its consequence. So, it means that knowledge has been the subject of human inquiry from antique times. Knowledge then is dealt with by the brain and we get it through our sensory system (Bolisani & Bratianu, 2018). At the same time, over the past three decades, Knowledge Management (KM) has received great attention (Agarwal & Islam, 2020). It is an enterprise and knowledge, covering several scientific disciplines (Zimmer & Madeja, 2019).

Higher education has expanded the use of KM to take advantage of information exchange and utilization as an intellectual resource (Odor, 2018). KM is a crucial component across diverse businesses in the same industry since it broadens the knowledge gathered by enhancing institutions' capacity for innovation and placing them in a competitive advantage over rival companies (Omotayo, 2015). KM practices have resulted in effective services (Ogola, 2012). Libraries will benefit greatly from a good KM approach, especially in developing nations with limited resources (Abah et al., 2022). By integrating knowledge systems and resources, university libraries are positioning themselves as the torchbearers and path-makers of educational growth. University libraries could demonstrate their worth by leading KM initiatives as a repository of information and a communication hub for universities. As a developing country, Bangladesh has better prospects for sharing knowledge and managing resources in its knowledge-driven institutions like libraries and information centers (Islam et al., 2020). KM implementation in organizations often includes planning, initiation, development, and integration (Dei, 2021). As Alshehri and Cumming (2020) mentioned, KM in an organization plays a significant role in the organization's success.

In addition, Library and Information Science (LIS) experts will continue to play a role in KM. Still, for KM to survive and thrive, they must integrate and adapt to the changing organizational contexts (Liebowitz & Paliszkiewicz, 2019). KM in academic institutions could help grow learned-centered knowledge and action learning movement from closed to open knowledge systems and development in Information and Communication Technology (ICT) (Maligat et al., 2020). KM can be characterized as tools for gathering, communicating, coordinating, and locating knowledge sources to help organizations recover and use data to improve access to information sources (Igbinovia & Ikenwe, 2017).

Libraries were involved in information re-engineering, where it was applied, among other things, collecting, user support, acquiring electronic resources, and KM (Goyal & Sharma, 2014). "Service-based value includes value development by designing and delivering new and improved services, enhancing service functionality, and improving institutional and consumer operational invention" (Islam et al., 2015a). Since it allows librarians to describe their existing situation and the new knowledge age, which must be considered if the society is to be changed, KM could offer significant

promise for libraries in emerging nations to provide service-based value to their patrons (Salunke et al., 2011). Organizations that want to flourish in KM must carefully analyze and select the appropriate strategic approach (Kakhki et al., 2021). The library, therefore, should change its management pattern to KM-based objectives.

As university library services are critical to enhancing the effectiveness of university libraries, they must be provided with KM services (Jain, 2013). There is a need to reshape university libraries' structures to improve user services. The primary goal of KM is to encourage university libraries to be more intelligent in their activities and internal operations. Islam et al. (2015) claimed that KM improves library operational effectiveness by facilitating more accessible access to information resources. Implementing KM also makes it easier to innovate services (Islam et al. 2015b). Like other organizations, libraries need to reshape their structures to serve their users better (Singh, 2012). Universities can use and manage knowledge more efficiently and productively with KM (Dei & Walt, 2020).

Developed nations' university libraries are currently transforming into user-support information hubs. In the meantime, libraries in developing nations like Bangladesh try to offer their patrons a useful service to manage their current knowledge resources. According to Khan and Kamal (2015), in the past, libraries' quality was increased by using more library resources, purchasing more books, and relocating to larger spaces. A strategy like that might not work in the modern world. Providing the correct information to the relevant user is an excellent way to improve quality and sustainability. So, this necessitates a significant shift, which might be accomplished by adopting user satisfaction (Asante & Ngulube, 2020). However, despite these challenges, several libraries in Bangladesh played a significant role in teaching and learning (Islam et al., 2020). University libraries have a unique chance to help reimagine library services in the future. The role of KM can bring prime success in this area. So, KM can be applied to advance excellent user services in public university libraries in Bangladesh. This can be attained by identifying various factors and overcoming the challenges of implementing KM in these libraries.

This research aims to propose a model for creating service-based value for public university libraries in Bangladesh. Predictable research findings will help higher authorities make decisions on effective KM strategies and policies to employ in

university libraries. Additionally, the data collected from public university libraries may be applied to contribute to the various university libraries in Bangladesh, which would be facilitated to succeed of this research. Thus, proposing a model that understands how a library can offer more excellent service to the users through KM is necessary.

1.2 BACKGROUND OF PROBLEM STATEMENT

The practice of KM and users' satisfaction are two essential aspects of KM that contribute to creating service-based value (Tasmin et al., 2012). Several studies on KM and its academic applications were carried out in developed countries (Madge, 2010). Bangladesh has yet to entirely understand the concept of KM and its benefits (Siddike & Munshi, 2012). Shathi (2019), in her study, found that university libraries in Bangladesh's Chittagong divisions do not use formally harnesses and control their KM activities. She also stated that KM is not considered an essential aspect of the library's purpose and goals. Mostofa and Sultana (2019) identified limited knowledge creation, knowledge storage, retention, and the absence of a formal KM policy that prevents library staff from taking part in KM applications in the "National Library of Bangladesh" (NLB). In the libraries of Bangladesh, knowledge is always on the shelves (Islam et al., 2020). Due to the inadequate technological infrastructure and lack of KM strategy, which would play the right role in making libraries a vital part of KM initiatives, it is increasingly difficult for the library personnel to deliver services to its users (Rahman & Islam, 2020).

1.2.1 Problem Statement

According to Islam et al. (2020), KM practices are currently being carried out by non-governmental and private organizations in Bangladesh, particularly on social networks. However, in LIS, this technique is still in the theoretical stage. Islam et al. (2020) also mentioned that no notable work in Bangladesh identified various factors and challenges involving KM practices in LIS fields. Different KM models and methods have been proposed in the literature to assist organizations in doing KM, though research is still

inconclusive, particularly in KM implementation (Alosaimi, 2016). Most KM models' studies and their applications to university libraries are for developed countries, but the KM model is still rare for developing countries (Ologbo & Nor, 2015).

In their review paper, Ologbo and Nor (2015) specified that there is still a low implementation rate of KM in numerous organizations in developing countries. They also stated that the employees need to learn how to implement KM in their organization. Previous KM literature mainly focused on the KM idea, the role of LIS professionals in KM, and the value of KM in libraries. However, research on KM practices and the development of a strategic KM model for developing countries in libraries is absent (Abah et al., 2022). Therefore, it is necessary to understand the value and significance of the KM model from the viewpoint of a developing nation. In this context, a model that guides the effective application of KM in Bangladeshi libraries is required. Unlike developed countries, not much research has been published on Bangladesh's perspective on KM practices and implementation in the library sector. It is not identified whether these university libraries had formal KM practices. It is also not discovered what are the users' and employees' awareness and familiarities with KM and how the service value of the libraries can be improved by implementing KM in public university libraries. In addition, most library users in Bangladesh are unaware of the potential impact of KM. As a result, they are not actively participating in making this a worthwhile endeavor. Therefore, it is necessary to discover the relevance and importance of the KM for public university libraries in Bangladesh and investigate the various factors and challenges of KM implementation. These were the motivations that prompted this research.

1.3 RESEARCH OBJECTIVES

Users of university libraries frequently have high expectations for the support services offered by the library. A type of collaboration that improves services, gives users more organizational learning abilities and adds value is user feedback on library services. As a result, KM must be used to guarantee the consistency of user services in libraries. The primary goals of KM are to enhance library services, generate more with fewer

resources, prevent duplication of effort, and take advantage of already-existing knowledge (Jain 2013). In digital environments, the role of information and KM in library services has grown significantly. This research suggests a KM model for creating service-based value at public university libraries in Bangladesh. The Research Objectives (ROs) are:

1. To explore the existing models of KM implemented by the university libraries.
2. To examine current formal KM practices at public university libraries in Bangladesh.
3. To examine the critical success factors for the KM implementation at public university libraries in Bangladesh.
4. To identify the challenges related to KM practices at the public university libraries in Bangladesh.

1.4 RESEARCH QUESTIONS (RQS)

The main research question is: How can the KM model create service-based value for public university libraries in Bangladesh? This main research question and the following research questions guided this research.

RO1: To explore the existing models of KM implemented by the university libraries.

RQ1a: What are the existing models of KM implemented by university libraries?

RQ1b: To what extent is the KM model being implemented at university libraries as reported in previous research works?

RQ1c: How were the existing models of KM implemented at university libraries?

RO2: To examine current formal KM practices at public university libraries in Bangladesh.

RQ2a: How did the public university libraries in Bangladesh adopt the KM practices?

RQ2b: To what extent users' demographics are associated with users' characteristics, awareness, and KM familiarity issues?

RQ2c: To what extent is KM practiced in public university libraries in Bangladesh?

RO3: To examine the critical success factors for the KM implementation at public university libraries in Bangladesh.

RQ3a: What are the critical success factors for implementing a KM in public university libraries?

RQ3b: Is the present manpower adequate for providing KM services?

RO4: To identify the challenges related to KM practices at the public university libraries in Bangladesh.

RQ4a: What are the challenges related to KM practice in public university libraries in Bangladesh?

RQ4b: How would the KM practices be adopted in the future as planned by the public university libraries in Bangladesh?

1.5 RESEARCH DATA COLLECTION TECHNIQUE AND WHERE THE RESULTS FOUND

The following table shows the research data collection technique and where the results will be found.

Table 1.1 Research Data Collection Technique

S/N	Research Objectives	Research Questions	Sources of Data	Results
1	The main objective of this research is to propose a KM model for creating service-based value for public university libraries in Bangladesh.	The main research question is: How can the KM model create service-based value for public university libraries in Bangladesh?	Survey questionnaire and Semi-structured interview.	Chapters four and five
2	RO1: To Explore the different existing models of KM implemented by the university libraries.	RQ1a: What are the existing models of KM implemented by the university libraries?	Review of different KM models by systematic literature review.	Chapter two
		RQ1b: To what extent is the KM model being implemented at university libraries as reported in previous research works?		
		RQ1c: How were the existing models of KM implemented at university libraries?		
3	RO2: To examine current formal KM practices at public university libraries in Bangladesh.	RQ2a: How did the public university libraries in Bangladesh adopt the KM practices?	Semi-structured interview.	Chapters four and five
		RQ2b: To what extent users' demographics are associated with users' characteristics, awareness, and KM familiarity issues?	Survey questionnaire.	
		RQ2c: To what extent is KM practiced in public university libraries in Bangladesh?	Survey questionnaire and Semi-structured interview.	
4	RO3: To examine the critical success factors for the KM implementation at public university libraries in Bangladesh.	RQ3a: What are the critical success factors for implementing a KM in public university libraries?	Survey questionnaire and semi-structured interview.	Chapters four and five
		RQ3b: Is the present manpower adequate for providing KM services?	Semi-structured interview.	
5	RO4: To Identify the challenges related to KM practices at the public university libraries in Bangladesh.	RQ4a: What are the challenges of KM practice faced by the public university libraries in Bangladesh?	Survey questionnaire and semi-structured interview.	Chapters four and five
		RQ4b: How would the KM practices be adopted in the future as planned by the public university libraries in Bangladesh?	Semi-structured interview.	

1.6 SIGNIFICANCE OF THE RESEARCH

Due to the relative novelty of KM in Bangladesh's and other developing nations' LIS contexts, this research makes an important contribution (Islam et al., 2020). While university libraries produce and acquire knowledge, there is no policy on capturing and retaining such knowledge. In this regard, this research is expected to add to the understanding of KM in libraries. The present research also assists the authority in determining the current practices of KM in their libraries. In addition, this research may inspire higher management to implement formal KM in university libraries. This research is also significant by identifying several factors and various challenges of KM implementation and recognizing the needs of KM in the university libraries in Bangladesh. A model of KM for enhancing library services is also suggested by the research's findings and recommendations, which will benefit university libraries in Bangladesh.

The present research will be a learning paradigm for the libraries as it explores the various KM models worldwide. The working environment will support the application of KM to ensure service value generation in public university libraries, which is another contribution of this research. Finally, this research investigates KM practice in university libraries because, in the present century, libraries must know and be always ready to change management and fulfill library users' needs. Additionally, it is anticipated that this research would increase knowledge between KM and service-based value from the perspective of an emerging country like Bangladesh among library employees and users.

1.7 OPERATIONAL DEFINITIONS

The present section provides significant operational definitions of terms used in this research. The definitions provided here are also further expounded in chapter two.

Knowledge Management (KM): KM plays an important role in the organization’s success through its ability to assist in the “acquisition”, “storage”, “transformation”, and “knowledge dissemination” (Alshehri & Cumming, 2020). The

term “KM” is also used to incorporate knowledge creation, acquisition, distribution and KS in this research.

Knowledge Management (KM) and Information Management: The scope and goals of KM and information management are different, but both are crucial for an organization. In order to make data and information discoverable and retrievable while maintaining security, classification and categorization are important basic processes. Information management is focused on processes and hard facts, whereas KM is focused on people, opinions and perceptions (Brooks, 2022).

Knowledge Management (KM) Model: A model describes the various action tracks and their relationship (Alkatheeri, 2018). In this research KM model is referred a structured way to describe the process of KM practiced by a library to acquire and organize its resources for its user needs.

Knowledge Management (KM) Practices: The term "KM practices" refers to the KM process that libraries employ to identify, develop, codify, store, retrieve, and use or re-use new knowledge for organizational innovation performance (Sofiyabadi et al., 2020; Mavodza & Ngulube, 2012).

Critical Success Factors: Critical success factors denote managerial areas that can bring a competitive advantage to functioning performance in an organization (Hsu et al., 2013). In this research, critical success factors are considered as the factors that may influence public university libraries in Bangladesh to implement effective KM for the service value of the libraries.

Service-based Value: It indicates that the library satisfies the needs and desires of the users and concurrently delivers certain unanticipated services and performs their intended services (Jerome et al., 2017). In the present research, the term service-based value has been used interchangeably with service value or service innovation.

1.8 ORGANIZATION OF THE THESIS

The thesis has been divided into six chapters. The organization of the current thesis with chapter details is given below.

Chapter One: Introduction

This introductory chapter covers the background of the present research; based on the current state of the research, some problem statements are articulated. Objectives of the research and to fulfill the objectives, some research questions are also formulated based on the research. Besides this, the possible significance of the research in the different sectors is discussed, and the definition of key terms is provided, which are used in different parts of the research. Furthermore, this chapter also states how the thesis contents are outlined.

Chapter Two: Literature Review

This chapter discusses the concept and different aspects of knowledge, KM, benefits of KM in the library, KM in Bangladesh libraries, earlier KM models, hypothesis formulation and hypothesized research model that guided the present research. Furthermore, this chapter summarizes and identifies the research gaps in the existing literature to validate the research. Finally, it indicates how the present study will add value to fill the existing gaps.

Chapter Three: Research Methodology

This chapter discusses the research methodology employed in the research. It explains the research design and approach. It also highlights the population, sample and sampling technique, and data collection procedure. It further presents the development of research instruments, validity and reliability of the instruments, pilot study results, data analysis methods, generalizability, and research ethics.

Chapter Four: Data Analysis

This chapter includes an introduction, analyses of survey questionnaires from the library users, interviewees' views, data analysis findings, and triangulation of findings. Data analysis is done based on the data types. The quantitative data were analyzed using descriptive and inferential statistics using IBM®SPSS® statistics, and qualitative data were analyzed using content analysis. Several statistical tests are applied and shown in this chapter to validate the research, including “Exploratory Factor Analysis (EFA),” internal consistency for the variables, reliability testing, “Kaiser-Meyer-Olkin (KMO),”

and “Bartlett's Test of Sphericity,” “SmartPLS” and so on. Additionally, results are represented and interpreted using figures and tables suitable for the data types.

Chapter Five: Discussion of Findings

This chapter covers a brief introduction, key findings from the survey and semi-structured interviews, discussion of the overall findings and result data. Furthermore, the research proposed a KM model for the public university libraries in Bangladesh based on the literature review, the research questions and findings, and the hypothesis this research came up with. In the end, this chapter is concluded with an overall summary of the results.

Chapter Six: Conclusion

This chapter includes an introduction, discusses research contributions, managerial and practical implications of the research among public university libraries, and provides recommendations for the librarians and top management of the university. This chapter draws closing remarks based on the findings of the research. This chapter wraps up with a discussion of the present research shortcomings and offers suggestions for future research topics.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

A literature review offers a summary of the sources on a particular subject that have been investigated to assess the current state of knowledge. Considering previous Knowledge Management (KM) research is important before deciding how to proceed with the current research. Then, the papers need to be thoroughly read. This chapter examines and critically helps to understand knowledge, KM, and KM practices concerning its ability to provide better library services in different countries. The primary purpose of the research was to propose a model for creating service-based value for public university libraries in Bangladesh. The main research question was: How can the KM model create service-based value for public university libraries in Bangladesh?

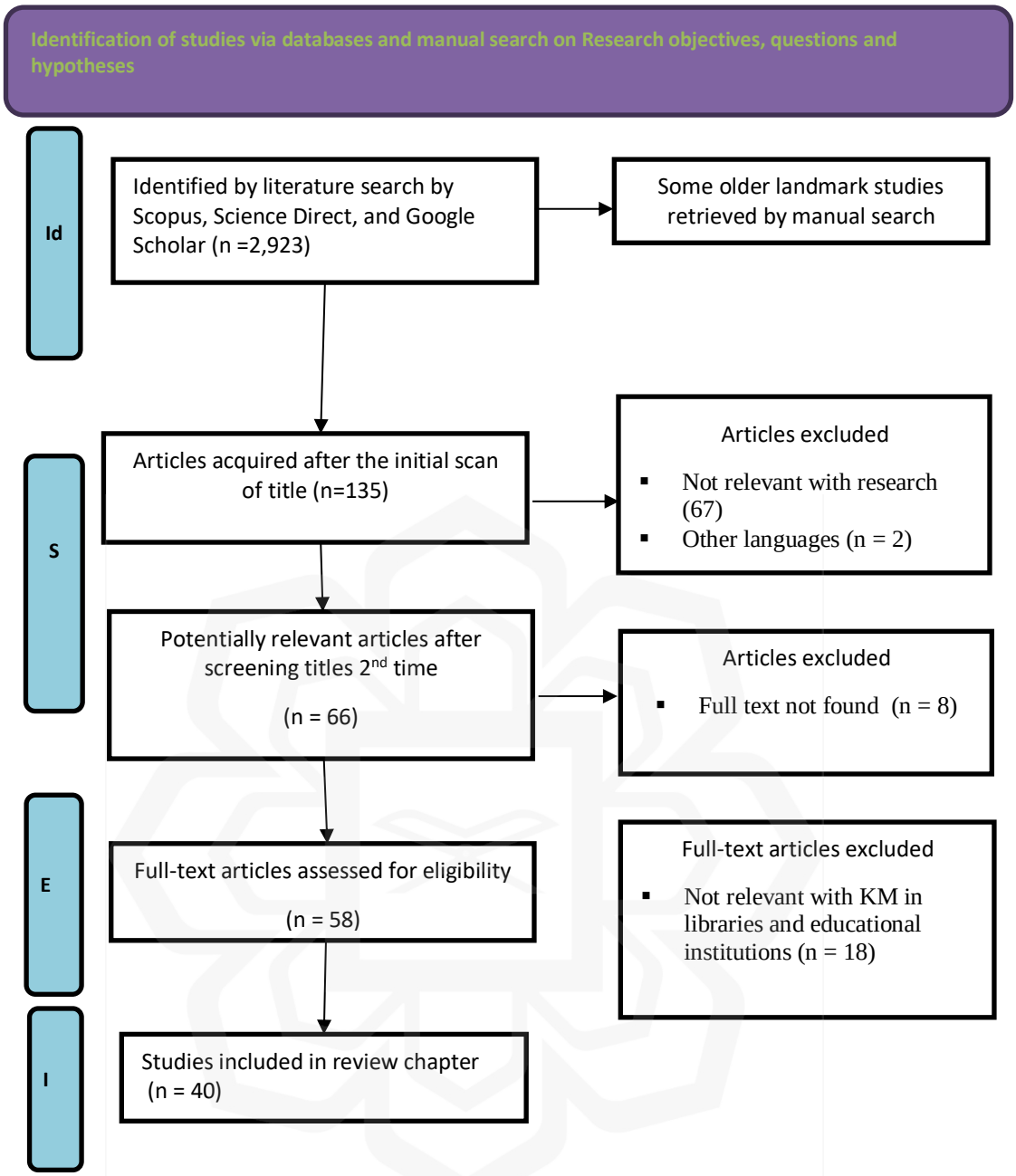
2.2 SCOPE OF THE LITERATURE REVIEW

The primary persistence of this literature review is to attempt an overview of noteworthy literature available on KM. This chapter combines recent sources that add to the legacy of previous studies with older landmark studies that were found through manual searches and systematic literature reviews. This ensures that the research has a strong base and is currently at the same time. Therefore, this portion reviewed the important literature on knowledge, types of knowledge, an overview of KM, impact of KM, benefits of KM in the libraries, and service-based value for university libraries. Existing KM models and critical success factors of KM in the public university libraries of Bangladesh and other countries are also discussed here.

This review was performed following the "Preferred reporting items for systematic reviews and meta-analyses (PRISMA)" guidelines (Mahmood, 2016; Shamseer et al., 2015). The following search method was used to conduct a systematic

search of the literature, limiting the results of the objectives and research questions. The search queries included “Knowledge Management” AND “Service-based value,” “Knowledge Management Libraries” AND “Bangladesh,” “Knowledge Management Model” AND “Bangladesh,” “Knowledge Management” AND “Critical success factors,” “Knowledge Management” AND “Knowledge Management Challenges”+Scopus, ScienceDirect and Google Scholar.

There was a restriction on the year of publication from 2015 to 2022. Only English language papers were counted in the search. Databases were searched for relevant literature that included Scopus, ScienceDirect, and Google Scholar. The document's kind was also restricted to journal and conference papers. The selection of materials was based on relevance to the research objectives and questions. The choice of eligible studies, the screening process, and the reasons for exclusion are depicted in the PRISMA diagram (Figure 2.1). After initial scanning of the titles, the author acquired 135 full-text documents from 2,923 studies. After the final screening, 40 full-texts studies were included in this literature review chapter (Table 2.1). Therefore, this literature may not include all sources not available via the searched criteria. A brief outline of sources found corresponding to the research questions, objectives, and sources are given in Table 2.1. The detailed findings from these studies are shown in Table 2.2. In addition, some other articles are used in this chapter based on the research objectives by manual search. These articles were derived from Google, which is not mentioned in Tables 2.1 and 2.2.



Note: Id= identification, S=Screening, E= Eligibility and I=Included

Figure 2.1 The PRISMA Diagram

Table 2.1 Full-text Documents Found Corresponding to the Research Questions and Objectives (Source: PRISMA Diagram, Figure 2.1)

Focus on	Sources
KM in Bangladesh and global perspectives by Bangladeshi Authors (16)	(Agarwal & Islam, 2020); (Islam et al., 2020); (Rahman & Islam, 2020); (Mostofa & Sultana, 2019); (Akter & Banik, 2019); (Shathi, 2019); (Sultana & Mostofa, 2018); (Mohajan, 2017a); (Mohajan, 2017b); (Islam et al., 2017); (Rahman & Hasan, 2017); (Panni & Hoque, 2017); (Hannan Mia & Hasan, 2016); (Islam, et al., 2015); (Mostofa & Islam, 2015); (Islam et al., 2015b).
Impacts and benefits of KM in educational institutions and libraries (19)	(Jemal & Zewdie, 2021); (Kordab et al., 2020); (Dei & Walt, 2020); (Asante & Ngulube, 2020); (Shropshire et al., 2020); (Nair & Munusami, 2020); (Maligat et al., 2020); (Sirorei & Fombad, 2019); (Ahmad et al., 2019); (Liebowitz & Paliszkiewicz, 2019); (Bello, 2018); (Sallam et al., 2018); (Oyedokun et al., 2018); (Dlamini, 2017); (Ahmad, 2017); (Koloniari & Fassoulis, 2017); (Daland, 2016); (Almudallal et al., 2016); (Dhamdhere, 2015).
KM models, critical success factors, and challenges for implementing KM in libraries and educational institutions (05)	(Rafi et al., 2020a); (Rafi et al., 2020b); (Musangi, et al., 2019); (Koloniari, et al., 2015); (Ologbo & Nor, 2015);

2.3 CONCEPT OF KNOWLEDGE

The concept of knowledge is not novel in the twenty-first century. Opportunities are created by knowledge, which helps all kinds of organizations succeed. Organizations

worldwide use knowledge to solve problems and create strategies (Mahmood et al., 2020). Since the 1990s, it has been a relevant word, introducing and increasing fascination with KM (Knox, 2019). Therefore, this is recognized by commercial and academically established establishments (Mandelson, 2009). Countless efforts were made to define the knowledge. In their book, Bolisani and Bratianu (2018) stated that knowledge was a universal concept that paid attention to philosophers from prehistoric times. Almudallal et al. (2016), in their research paper, defined knowledge as a source of creation through the human acts that can contribute to this communally organized universe. In their study, different researchers (Nonaka, 1998; Duffy, 1999; Zack, 1999; Liang, 1999; Tiwana, 2000; Sunassee & Sewry, 2002) stated the following two types of knowledge (Figures 2.2 and 2.3).

(a) Explicit knowledge: The context component of explicit knowledge is defined as facts and information that has been encoded, stored, and disseminated (Mahmood et al., 2011; Seethanaik, 2014). It is easily coded, transferred, and exchanged within an entity. Documentation and paperwork, such as project reports, contracts, schematics, product specifications, meeting minutes, and email exchanges, are examples of explicit knowledge (Fernandez & Sabherwal, 2004; cited in Sh. Al-Qdah & Salim, 2013).

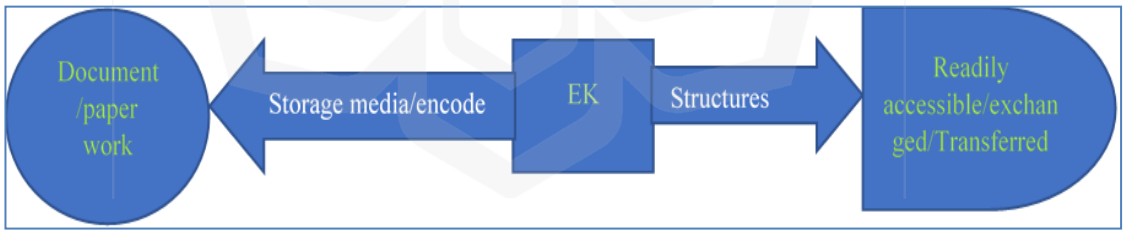


Figure 2.2 Structures of Explicit Knowledge (EK) (Anand & Singh, 2011)

(b) Tacit knowledge: Tacit knowledge is intuitive and hard to contact and learn contextual, intangible information (Magnier-Watanabe et al., 2011). Wanchaem et al. (2019) settled that tacit knowledge must be made by meeting and discussing each other

by summarizing the three principles: "(i): individual, (ii): structure, and (iii): corporate culture." Tacit knowledge is individual knowledge and is tough to formalize, techniques, obligations, ideals, and feelings. It is also associated with the knowledge in separate persons' brains and is not controlled and shared through understanding.

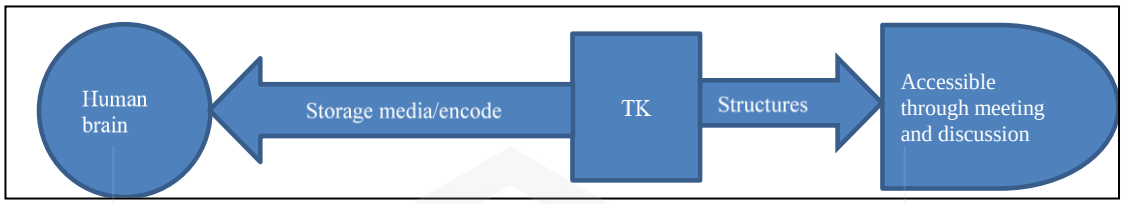


Figure 2.3 Structures of Tacit Knowledge (TK) (Anand & Singh, 2011)

According to Madhoushi and Sadati (2010), tacit knowledge and explicit knowledge are recognized as important sources of competitive advantage and value creation and necessary ingredients for developing dynamic core competencies. Both infiltrate the day-to-day operations of businesses and help them achieve their objectives (Alhamoudi, 2010).

2.4 KM: AN OVERVIEW

KM is a process for gathering, distributing, and effectively using knowledge. Knowledge acquisition and allocation in higher education are intended to personalize the internal flow and use of information for corporate performance (Davenport, 1994). Liu (2007) described KM as a multidisciplinary strategy for attaining corporate goals by making the greatest use of knowledge in the context of LIS. Similarly, Onyancha and Ocholla (2009) "KM is the management of information resources, services, systems and technologies using various technologies and tools through activities such as information acquisition/creation, information retrieval and storage, data mining,

classification and cataloguing, and information use in different information handling institutions or centers such as libraries, archives, and museums." KM is a discipline that enables individuals, groups, and entire organizations to create, exchange, and use knowledge methodically to achieve their objectives (Young, 2008). Onwurah and Chiaha (2008) stated that KM included knowledge production, dissemination, utilization, and reuse. KM is the practical use of performance-based knowledge on knowledge resources to enhance the organization. Likewise, Mathew (2010) defined KM as sharing of knowledge and incorporated management that can assist an organization in achieving its goals.

In 2011 Dalkir mentioned that since 2003, "KM has become an essential academic course, as more than 100 universities, business, and library schools offered KM courses and degrees." KM is as important for libraries as for business, excluding competitive ownership and money-making issues (Pathak, 2014). Based on the maximum number of words used for determining KM, Girard and Girard (2015, p14) in their study define "KM as the process of creating, sharing, using and managing the knowledge and information of an organization." Girard and Girard (2015) identified more than 100 definitions for KM from different domains. They collected these definitions from 13 countries and 23 disciplines, representing the authors' points of view of the definitions based on their domains and cultures (Sallam et al., 2018). Mohajan (2017b), in his review paper, stated that there is no single definition for KM, and it is understood differently depending on the industry. Like other organizations today, libraries can be seen as a collection of integrative processes that work together to accomplish the company's overall goals. The success of the organization depends on the formation, coordination, transfer, exchange, and exploitation of tacit and explicit knowledge resources for information to enhance the organization. KM is an established standardized organizational policy for business organizations from the 21st century (Shropshire et al., 2020).

2.5 RESEARCH ON KM IN LIBRARIES AND EDUCATIONAL INSTITUTIONS

Table 2.2 shows the detailed findings from the previous studies according to themes chronologically mentioned in the Prisma diagram in Figure 2.1 and Table 2.1.

Table 2.2 The detailed Findings from the Previous Studies

Authors and Years	Sample	Method	Findings
Agarwal and Islam (2020)	17 peer-reviewed journals in LIS	Systematic Literature Review	Less than 4% of LIS research deals with KM. The study also discovered that numerous scholars have already explored the usefulness of KM for libraries, which may lead some LIS and KM experts and researchers to believe that there is no sense in KM striving to be visible inside LIS research.
Islam et al. (2020)	16, library professionals of Bangladesh	Quantitative	A significant portion of respondents (25%) never attempted to encourage knowledge exchange and sharing initiatives among employees and users. Most respondents (50%) expressed no interest in promoting staff employees in any category of the talent competition. 38% of the respondents said they had never created knowledge resources to raise staff and user knowledge and skill levels. The study's main finding is that KM practice in Bangladeshi libraries has only recently begun.
Rahman and Islam (2020)	245, teachers and students of agricultural libraries in Bangladesh.	Quantitative and Qualitative	Some hindrances to the establishment of digital content management, such as lack of constant power supply, and limited bandwidth speed. Additionally, some users lack fundamental IT knowledge, a shortage of digital resources, and some suggestions for improving digital content management in these libraries.
Mostofa and Sultana (2019)	12, officers of the National Library of Bangladesh (NLB)	Quantitative	The employees and patrons of NLB's libraries need to extend their perspectives, change their customary outlooks, and become more concerned with the holistic design of KM systems by focusing on both explicit and tacit knowledge.
Akter and Banik (2019)	108, lecturers at various universities	Quantitative	The study findings showed a moderate level of knowledge discovery practice in universities, where strategies for accessing/updating knowledge and documentation and interaction for KM practices are needed to be taken care of.
Shathi (2019)	55, library professionals in Bangladesh	Qualitative	Most university librarians (77%) had no ideas about KM practices, and lack of incentives was yet another critical issue for 87% of the participants to motivate library staff. Inadequate staff training (87%), limited expertise (68%), inadequate technology

			(71%), and lack of knowledge sharing (KS) culture (88%) were acknowledged as a challenge by the participants.
Sultana and Mostofa (2018)	11, Deputy Director, Bibliographer, and other staff of NLB	Quantitative	The NLB workplace is favorable for implementing knowledge management. However, some policy modifications are required. Finally, the research disclosed that NLB is an excellent place for implementing KM and has many possibilities for the adoption of KM.
Mohajan (2017a)	Prepared based on secondary data	Literature Review`	KM models play vital roles in the rapid development of technology and the emergence of new products and services in society.
Mohajan (2017b)	Prepared based on secondary data	Literature Review	The study discussed the various issues of knowledge and KM for achieving organizational goals.
Islam et al. (2017)	107, librarians from 39 countries	Quantitative	Both knowledge development and application have a significant impact on service innovation in academic libraries.
Rahman and Hasan (2017)	167, employees of various companies in Bangladesh	Quantitative	Significant positive effects of KM and HRM practices on organizational performance. Finding also reveals that employees loyalty to the organization depends on employee job satisfaction which is highly influenced by the organizational performance
Panni and Hoque (2017)	42, employees from major telecommunication companies in Bangladesh.	Quantitative and Qualitative	This study has revealed that telecommunication organizations are oriented toward the different customer KM practices.
Hannan Mia and Hasan (2016)	200, employees of different private and public business organizations	Quantitative	The study indicated that execution-driven strategies and KM-based abilities should be considered in the implementation of KM strategy in Bangladeshi business organizations.
Islam et al. (2015)	22, professionals in public and private university libraries in Bangladesh.	Quantitative and Qualitative	The use and application of KM in LIS support improved access to information resources and services, enriched professional knowledge of information professionals, enhanced the environment and culture of KS, and changed the working behavior of information professionals.
Mostofa and Islam (2015)	25, library staff	Quantitative	The findings indicate that limited expertise and lack of clear guidelines are significant challenges for the implementation of KM in Dhaka University library.
Islam et al. (2015b)	17, academic librarians from ten countries	Qualitative	Most librarians saw service innovation as critical to the continuing success of the library and felt that KM would be beneficial for service innovation in their libraries.
Jemal and Zewdie (2021)	143, academic staff	Quantitative and Qualitative	Various challenges in the practice of KM at Jimma University, such as inadequate funds, insufficient documentation, inadequate support, and cooperation. The study recommended that colleges spend more on KM practice to improve innovation and motivate academic staff to retain and share knowledge.
Kordab et al. (2020)	378, employees from three countries	Quantitative	Organizational learning positively affects knowledge acquisition, storage, sharing, application processes, and sustainable organizational performance.

Dei and Walt (2020)	147, faculty and senior administrative staff of the university	Quantitative and Qualitative	Despite the high level of understanding and appreciation for KM practices and the existence of formal and informal forums for managing and safeguarding knowledge at the universities, the role and impact of the Community of practice in KM at the universities were insignificant.
Asante and Ngulube (2020)	124 library staff members	Quantitative Approach	Out of the eight variables tested, six of them "(i.e., top management commitment, employee innovation, employee training, organizational culture, teamwork and effective communication, and quality performance)" indicated a significant positive relationship with total quality management implementation apart from strategic planning and human resource management.
Shropshire et al. (2020)	Two academic libraries	Case Study	Academic libraries can use KM to better the circumstances under which they operate. Defining the guiding principles of this management theory offers managers a useful foundation for improving the performance of their company.
Nair and Munusami (2020)	273, employees of educational institutes in Malaysia	Quantitative	KM tools and techniques would help the institutions to meet their competitive goals; therefore, higher education institutions need to create KM awareness among the employees.
Maligat et al. (2020)	9, disciplines of Camarines Norte State College	Descriptive Survey Method	KM in higher education could help grow learner-centered knowledge and action learning.
Sirorei and Fombad (2019)	32, library management committee staff, lecturers, and librarians in Kenya	Qualitative	KM processes were utilized at St Paul's University Library, albeit to varying degrees, and the KM processes were not formalized.
Ahmad et al. (2019)	6,088 published documents	Systematic Literature Review	Developed countries dominate the field of LIS concerning the productivity of KM literature. The analysis also shows that the overall number of articles and offers has been gradually rising in all regions, particularly during the last four years.
Liebowitz, and Paliszkiewicz (2019)	Prepared based on secondary data	Literature Review	LIS professionals must be aware of and utilize artificial intelligence, data analytics, the Internet of Things (IoT), and other skill sets, which will add value to KM in the coming years.
Bello (2018)	Prepared based on secondary data	Literature Review/ Narrative	KM is concerned with how knowledge is captured, cataloged, retrieved, and utilized. It also deals with creating, securing, coordinating, combining, and distributing knowledge.
Sallam, et al. (2018)	Prepared based on secondary data	Literature Review/ Narrative	The selection of the KM tools is one of the significant challenges that face its implementation. It needs to define the organization's goals, which sometimes become hard to describe accurately.
Oyedokun et al. (2018)	389, librarians in Nigeria	Quantitative	The study reported that traditional library skills are part of the KM spectrum and processes, indicating that KM is highly relevant to librarianship.
Dlamini (2017)	6, librarians in Swaziland	Qualitative and Quantitative	Librarians understand the concept of KM. It has even been realized that they possess minimal skills and competencies to implement KM activities adequately.

Ahmad (2017)	26, head of the libraries in Pakistan	Quantitative	KM is for the improvement of library services and productive purposes. Accordingly, the Pakistani LIS professionals use KM practices to improve their library services. The LIS community is also very familiar with the term KM.
Koloniari and Fassoulis (2017)	590, personnel working in Greek academic libraries	Quantitative	LIS practitioners are aware of KM and appreciative of its benefits not only for library performance but also for LIS professionals' future career options.
Daland (2016)	Prepared based on secondary data	Hermeneutic Literature Review	Obstacles of KM must also be considered before choosing a strategy and implementing this. More research would be of interest to map the challenges and benefits of KM when it comes to library staff competencies and skills.
Almudallal et al. (2016)	46, employees are working at the Presidency of the Palestinian government	Quantitative	This paper has focused on four key enablers of KM, "i.e., organizational culture, leadership, personnel, and information technology (IT)"; the results showed clearly that these four factors have contributed in strong positive ways to the performance level of the Palestinian government.
Dhamdhere (2015)	Prepared based on secondary data	Literature Review/ Narrative	KM in the educational institute will surely help in various report generation, strengthening alumni association, improving students' employability, improving quality of staff and students' performance, decision making and problem-solving, generating funding, and industry-academia collaboration.
Rafi et al. (2020a)	339, administrative library staff in Pakistan	Quantitative	The applicability performance-based model enhances management competence and develops professional skills and KM techniques in developing the efficiency of academic libraries.
Rafi et al. (2020b)	339, responses from expert librarians from Pakistan	Quantitative	Library resources with four components ("digital resources, IT, financial planning, and service promotion") have been successfully integrated into the KM framework to organize resources and provide academic services for researchers.
Musangi, et al. (2019)	30, librarians of the public and private universities in Kenya	Qualitative	University libraries in Kenya have not optimally achieved the desired reengineering results because of overlooking training and change management as critical success factors. The paper recommends that the identified critical success factors be considered wholly, not isolated.
Koloniari et al. (2015)	120, librarians and information scientists in Greek	Quantitative	Strong relations between KM strategy and all the other factors suggest that library managers should focus on building a clear KM strategy, which will determine the appropriate framework for the implementation of knowledge-conducive practices and the adoption of ICT tools while buttressed by a knowledge-friendly culture.
Ologbo and Nor (2015)	Prepared based on secondary data and previous KM model	Literature Review/ Narrative	The study identified no clear, holistic, practical model or framework for managing organizational knowledge in developing countries.

2.6 KM IN THE LIBRARIES OF BANGLADESH

When KM was first formed, most KM research focused on developed countries. The state of developing countries is hardly ever identified and discussed (Arrau, 2015). According to Ahmad et al. (2019), the production of KM literature is governed by developed nations in the LIS field. Additionally, they claimed that China, the UK, and the USA were the three most innovative countries in the world in this sector. The total number of publications available has been steadily increasing across the areas. Despite LIS's growing research and publication tendencies, developing countries' research productivity is still stumpy.

Islam et al. (2020), Rahman and Islam (2020), Shathi (2019), Mostofa and Sultana (2019), Sultana and Mostofa (2018), Islam et al. (2015), and Mostofa and Islam (2015) have carried out the most recent and significant research into KM in Bangladesh (details are given in Table 2.3).

In their study, Islam et al. (2020) found that KM practice in Bangladesh's libraries has just started. Similarly, according to Shathi (2019), university libraries in Bangladesh's Chittagong divisions do not systematically or formally harness and control their KM activities. She also identified that KM is not considered important to the library's purpose and goals. Mostofa and Sultana (2019) reported that users and staff of NLB need to broaden their understanding, modify their usual mindset, and be concerned about the holistic approach of KM system design by giving attention to various types of knowledge, i.e., explicit and tacit knowledge. According to Sultana and Mostofa (2018), the state of KM in NLB is not sufficient. The study also found that although policies need to be amended, the working environment in NLB supports the implementation of KM.

Last but not least, the study showed that NLB was a great location for applying KM and offered many opportunities. Islam et al. (2015) showed that "document management," along with the "intranet," "instantaneous messaging," "digital warehouse," and "video conferencing," is an excessively used KM tool in the libraries in Bangladesh. The study acknowledged that the major obstacles to KM use and implementation include "lack of KM awareness," the "lack of experienced personnel," "communication gaps," and "KS's nonexistence culture." The successful application of

the KM system in the libraries of Bangladesh has a variety of obstructions and is rigorously hindered by various challenges. In the LIS fields in Bangladesh, only the "Department of Information Science and Library Management (ISLM)" of DU and RU has launched the KM course to provide students with knowledge of KM (Siddike & Munshi, 2012).

2.7 IMPACT AND BENEFITS OF KM PRACTICES FOR CREATING SERVICE-BASED VALUE FOR LIBRARIES

In the current information economy, knowledge is the key resource for any organization's success and is required for boosting, managing, and maximizing productivity (Drucker, 1993). Additionally, university libraries need to implement cutting-edge services that increase user value. If libraries want to improve customer happiness and service, they must make sure that their main audiences have simple access to trustworthy and consistent information. Therefore, this can be done by the strategy of KM (Migdadi, 2009), as innovation of library facilities is about transformation and regeneration in nature (De Jong & Vermeulen, 2003). The library staff has a broad knowledge base and the ability to make wise decisions thanks to the intensive use and use of knowledge in library practice (De Beer et al., 2011). Knowledge allows libraries for practical use, exceptionally when organized in an essential way for users (Chigada, 2014). An institution such as a library needs to assess and identify its knowledge assets. These days, KM is being utilized in universities to improve instructional activities, research activities, innovation, and the learning procedure (Verma & Jayasimha, 2014). The library and its facilities are more advanced because they are prepared to put new ideas into practice, adjust to changes in the environment and user needs, and embrace technological advancements (Lesneski, 2015). User prerequisites must be considered when improving services, and data must be continuously gathered. This can therefore be accomplished through assessment and evaluation; in addition, staff members who interact with customers must remain conscious of the potential for creativity (Islam et al., 2015b). Any organization that wants to stay in business must regard its consumers in some form and aim to create products or services that deliver a particular customer value (Cepeda-Carrion et al.,

2017). From the customer service perspective, libraries might enhance user interactions and keep a larger portion of the market from powerful data competitors like search engines, online databases, information sources, and internet service providers (Weinstein & McFarlane, 2017).

However, libraries have a long history of service to clients. Today, however, good service is still inadequate. Awareness for customers in academic libraries relates to meeting patron criteria for knowledge about facilities and other related items. Customer awareness refers to ideas and feedback that would benefit the library's implementation. It also relates to understanding trends of needs for patron information, those that library services have met, and those that are still not met (Islam et al., 2017). University libraries also determine how many customers are pleased with their services to know how to add value to their services and remain relevant in a competitive professional environment (Jerome et al., 2017). Public universities play a vital role in the monetary and social evolution of a country through research projects and creative ideas (Iqbal et al., 2018). Libraries worldwide are experiencing dramatic service delivery changes, with conventional services increasingly giving way to digital and electronic-based services (Atanda et al., 2021). Similarly, libraries are part of the communication system and are recognized as information organizations. To succeed in the altering marketplace, libraries must have to perform various fundamental activities such as "(a) managing information; (b) getting used to different requests of patrons; (c) skilled and highly educated staff should be appointed; (d) adopting with latest technological development, new mass media, and social interaction; and (e) lastly need to decide about their competitors" (Weinstein & McFarlane, 2017). Customer value practically means exceptional distribution on four SQIPs (Service, Quality, Image, and Price) components of value, known as "customer value essence" (Weinstein & McFarlane, 2017).

Kristensson (2019), in his review paper, stated that potential service developments are only sometimes beneficial for organizations. He also indicated that history is full of instances where technology has yet to offer any value to both users and organizations. Users need more expertise, awareness, or encouragement, so they may able to use the technology in a usual manner. However, new technology can mean a way for the institution to save money while users enjoy the same service as they

previously had. Some analysts claimed that KM was a brand-new term for the long-established LIS industry (Loughridge, 1999). According to Shanhong (2000), KM should focus on effective knowledge, worthwhile research, and growth in the library, KS, and staff training. It ought to facilitate sharing by hastening the explicit processing of implicit knowledge. Both formally and informally, this exchange might take place through gatherings, conferences, and speeches (Bircham, 2003). KM processes and LIS have a well-established relationship (Branin, 2004). Organizations that use KM methods benefit from the value of organizational knowledge and may make wise decisions (Sinclair, 2006). However, in non-profit organizations, KM can improve teamwork among employees and upper management and encourage a culture of sharing (Roknuzzaman & Umemoto, 2009). Successful KM methods in an organization should encourage staff to share their expertise and assist staff in overcoming psychological barriers to seeking out or absorbing knowledge from others (Tong & Shaikh, 2010).

Othman and Huda (2014) found that higher education institutions should be more able to understand KS than other organizations because knowledge creation, conversation, and application are crucial to their job and academics. They also suggested that it is urgently needed to facilitate KS in higher education institutions to improve the present situation. KM in associations is a procedure of securing and reproducing different information dispersed through associations. Semradova and Hubackova (2014) indicated that KM promoted professional skills and competence among employees. One of KM's key activities is KS (Zhang & Jiang, 2015). Allowing user-oriented solutions can make libraries more involved by reducing reply time, and it can help increase performance. Both lead to lower costs, better efficiency, and satisfied library employees and customers (Islam et al., 2015b).

Similarly, Tan (2016) noted that KS had been identified as the important KM method by multiple research literature that academic institutions should look forward to. The new trends in KM are directed to provide a more meaningful workspace for employees and engage them to enjoy their work (Prentice, 2018). The exchange of knowledge among persons is called KS (Gao et al., 2018), which plays an influential factor in knowledge reuse and is a critical KM practice strategy.

According to Bello (2018), “The main objective of KM in academic libraries is to ensure that the right information is delivered to the right person just in time to make

the most appropriate decision." At different levels, KS can occur like personal-personal, personal-group, and group-group (Gerbin & Drnovsek, 2020; Anand et al., 2019). The library world often claims ownership of KM. In practice, the acceptance of KM in libraries is not as widespread as in the business sector. Agarwal and Islam (2020) mentioned though KM is well-known in the business world, it is also familiar in the Library and Information Science (LIS) community. In their review paper, Liebowitz and Paliszkiewicz (2019) stated that KM had become an independent academic field. Still, this subject has a high degree of interaction with other disciplines such as LIS. However, KM in libraries can expand communication among users and staff of the library and can encourage the culture of KS.

The importance of KM is growing every year. As the marketplace becomes more competitive, one of the best ways to remain competitive and innovative is to intellectually and flexibly institutions (Valamis, 2020). KM is essential in a library since it enhances a librarian's capacity for sense-making. Academic libraries should use KM to deliver services and follow best practices. The most acceptable KM practices in the library may also benefit customers, making it simpler to implement change there. The following benefits that can be derived from knowledge-based initiatives and practices suggest that KM has a lot to offer organizations determined to change their environment. Public university libraries may apply the KM for the following reasons (Valamis, 2020; Anand & Singh, 2011; Aliba, 2008; Snyder & Wilson, 2002).

i. To capture the knowledge of the retirement of senior employees
ii. "Reuse of information and knowledge" (Singh et al., 2006)
iii. KM support in the training of newly appointed staff
iv. Well-organized place of work
v. "Quicker, better-quality decision-making" (Dalkir, 2005)
vi. Building institutional knowledge
vii. KM helps to enhance training procedures.
viii. Improved staff cheerfulness by valuing knowledge innovation
ix. Employees are valued for their knowledge and skill.

Skyrme (2001) and Bagorogoza (2015) stated three types of benefits of KM, viz. "(i) knowledge, (ii) intermediate, and (iii) institutional benefits" (Figure 2.4).

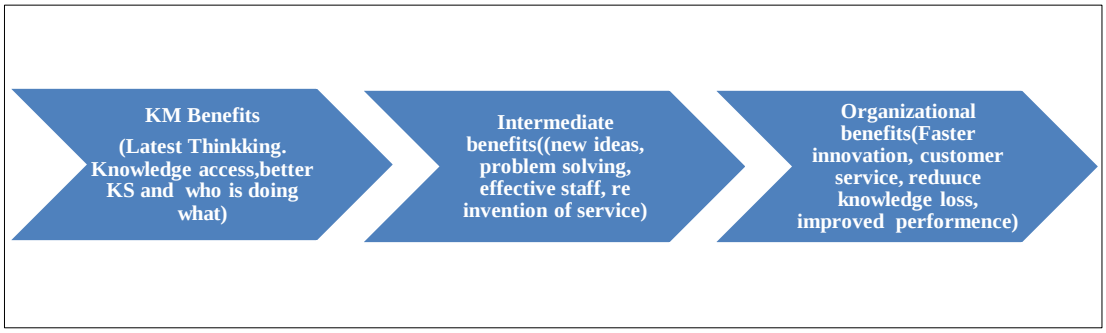


Figure 2.4 Types of KM Benefits (Skyrme, 2001; Adapted from Bagorogoza, 2015)

i. **Knowledge benefits:** This benefit is possible to track by investigating the four sources, i.e., (i) access to the latest and most current thinking, (ii) connection to information faster, (iii) enhanced KS, and (iv) realizing who does what. The sources of knowledge benefits are related to the results shown by arrows to other uses (Bagorogoza, 2015).

ii. **Intermediate benefits:** It covers (i) new approaches and thoughts, (ii) resolving problems quickly, (iii) hiring employees who are efficient and more manageable, and (iv) re-invention of service. The intermediate benefits are to be seen as sources of organizational benefits. Each source has at most three benefits (Bagorogoza, 2015).

iii. **Organizational benefits:** The organization would have (i) improved and quicker novelties, (ii) improved customer service, (iii) reduced loss of information, and (iv) better productivity performance. Knowledge-based initiatives and practices endorsed that KM has many benefits, and the libraries that are determined to change their service for their patrons can adopt KM (Bagorogoza, 2015).

2.8 GAPS IN THE LITERATURE

According to Reid et al. (2011), identifying research gaps in the literature aids in the direction of study and strengthens research methodologies. Alshahrani (2018) stated that identifying gaps contributes to sharing new insights about the research problem and challenge, which leads to the research's success. The following table shows the findings and gaps of the previous studies on KM in Bangladesh.

Table 2.3 Gap Analyses

Authors and Years	Findings	Gaps
Agarwal and Islam (2020)	Investigate the place of KM in LIS research.	This study was limited to only citation analysis based on the published KM article in scholarly journals. They used a systematic literature review of 17 peer-reviewed LIS journals.
Islam et al. (2020)	They identified the awkward situation of academic and special libraries for KM practices.	They did not mention the service-based value in the library and did not suggest any KM model. Users' perceptions were not considered.
Rahman and Islam (2020)	They focused on identifying the essential apparatuses and methods prerequisite for digital content management and prospects of digital content management for enhancing resource sharing amid the agricultural universities in Bangladesh.	The study was limited only to the agricultural libraries in Bangladesh. The critical success factor was not explained.
Mostofa and Sultana (2019)	The study showed how to record the knowledge in the library.	Only the NLB was considered. The academic library was not considered, and the sample size was small. Users' perceptions were not considered. They used only the quantitative method.
Akter and Banik (2019)	The study showed the lecturer's views on KM.	The LIS field was not considered in their study. They used only the quantitative method.
Shathi (2019)	Most university librarians had no idea about KM practices in the libraries of the Chittagong division in Bangladesh.	The study was limited only to the libraries of the Chittagong division in Bangladesh. Users' perceptions were not considered.
Sultana and Mostofa (2018)	The study identified the working atmosphere and staff's perceptions about KM.	The critical success factor was not illustrated. Users' perceptions were not considered. They used only the quantitative method. The sample size was small.

Mohajan (2017a)	Stated the impact of KM models on organizational development.	Libraries were not considered in his research. His paper was based on a literature review.
Mohajan (2017b)	The study discussed the concept of knowledge and KM in the organization.	The LIS field was not considered here. His paper was based on a literature review.
Islam et al. (2017)	A KM framework for service innovation in academic libraries was proposed in this study.	The study was carried out globally, not from a developing country perspective.
Rahman and Hasan (2017)	This research investigates the impact of KM and human resource management strategies on organizational performance and employee job satisfaction.	This study was limited to the organizational performance and employee job satisfaction level in organizations
Hannan Mia and Hasan (2016)	The study indicated that execution-driven strategies and KM-based abilities should be considered in the implementation of KM strategy in Bangladeshi business organizations.	The study was limited to the business organization. LIS field was not considered in their study.
Islam et al. (2015)	Tools and techniques of KM were discussed in the study.	They did not state how KM can help to improve library service.
Mostofa and Islam (2015)	Find out to identify challenges and the reason for practicing KM	Critical success factors and users' perceptions were not considered. How knowledge is handled and is not clearly identified. They used the quantitative method only.
Islam et al. (2015b)	How did KM help service innovation in academic libraries discussed in this study?	The study emphasized developed countries globally, not developing countries' perspectives.
Islam et al. (2014)	The study discovered that while librarians are generally familiar with Web 2.0, they are unsure if their libraries are ready to adopt KM.	The study emphasized globally, not in the context of Bangladesh's perspective.
Islam and Ikeda (2014)	This paper concentrated on a KM-based digital library system that will enable the development, organization, storage, dissemination, and use of the institution's digital knowledge assets.	Their study was qualitative and was based on an examination of secondary source literature. The sample size was minimal, and the study only looked at people who had completed a training program.
Siddike and Munshi (2012)	The study showed the Information professional's views on KM	They did not say about the service-based value and how KM can help to improve library service. They did not identify the challenges of KM practices in the LIS field.
Hoq and Akter (2012)	Discussed the overall benefits of KM in the educational institutions	The researchers did not take into consideration the library field. It was descriptive research where the advantages of KM in educational institutions were explored.
Siddike and Islam (2011)	This article investigated the skills needed by information professionals and found several critical success factors for KM implementation.	KM success factors have not been discussed for public university libraries in Bangladesh. Service value was not considered here also. They did not identify the challenges of KM practices in the LIS field.

Therefore, the above table showed that existing literature exposed no inclusive study on KM's impact on creating service-based value in public university libraries in Bangladesh. The above research indicates a clear need to investigate how a KM model can create service value in the libraries of Bangladesh. Previous KM literature mainly focused on the KM idea, the role of LIS professionals in KM, and the importance of KM in libraries. However, research on KM practices and developing a strategic KM model for developing countries in libraries is absent (Abah et al., 2022). None of the previous studies did explain how KM can create service-based value in public university libraries in Bangladesh. This gap is addressed and filled by the main research purpose and RO1 of this research. Previous studies have also not identified how knowledge is handled in the libraries and whether the university libraries are practicing formal KM. This gap is filled by RO2. Prior studies of KM in LIS have barely investigated how critical success factors and challenges influence the KM practices in the libraries. To fill these gaps, the present research examined the critical success factors and challenges for KM practices in public university libraries in Bangladesh by addressing RO3 and RO4.

Various literature on KM has shown perceptions of the information professionals on KM and the role of KM inside the library. So, the above study concentrates only on the employees or professionals of the library. Active library users are the key patrons, but none of the studies take their perceptions regarding KM implementation and other aspects for service improvement of the libraries. Previous literature uses only a single method in the context of Bangladesh. To address this gap, this research employed a mixed-mode approach comprised of quantitative data collection from active library users and qualitative data collection from the Librarians/Deputy librarians and Assistant librarians of the selected public university libraries. Therefore, this research emphasizes these gaps in the previous literature and has motivated the researchers to conduct research on public university libraries in Bangladesh. This research provides insightful literature on KM practice and implementation for performing library services in countries like Bangladesh by giving new information.

2.9 THEORETICAL BACKGROUND OF KM MODELS

The theory is presented and described, providing an explanation of why the research problem under consideration endures (Asher, 1984). The numerous action tracks and their connections are represented by a model (Alkatheeri, 2018). A theoretical model is a framework that supports or holds up a study's theory. It consists of the fundamental ideas and modern concepts that have been applied to a particular analysis, along with their definitions (Abbas, 2015). In the field of KM, many models are used worldwide. The present research discussed the following primary theoretical model of KM because these models represent a universal approach to KM by considering people, process, organization, and technology dimensions. Dalkir (2011), cited in Alosaimi (2018), argues that "experts, scholars, and researchers have extensively examined, criticized, and debated these models in the KM literature." Dalkir (2011) also claims that these models have been applied and field-tested in reliability and validity. As stated in chapter one, Table 1.1, the following sections will answer the RQ1a in this research. The details are given below.

2.9.1 Existing KM Models

The KM model describes the methodical creation, validation, presentation, dissemination, and application of knowledge to increase organizational effectiveness (Bhatt, 2001). There are already several models for putting KM systems into practice. According to Earl (2001), KM frameworks offer essential topics for firms to consider while making KM efforts. The structures can support such organizations to address KM methodically and actively (Okunoye, 2004). It will also assist in identifying a specific KM approach, establishing objectives and targets, comprehending the many KM projects, and choosing the most effective in particular contexts (Karemente, 2009; Earl, 2001). It is crucial for productive organizational KM and provides the company with guidance to effectively execute KM (Vangala et al., 2014; Alavi & Leidner, 2001). This research proposes a KM model for creating service-based value for public university libraries in Bangladesh. Therefore, some of the essential KM models are presented in the following sections.

Nonaka and Takeuchi (1995) have established a knowledge conversion model that connects tacit and explicit knowledge in an organization. The Choo model (1998) proved that corporations use information wisely when making decisions. Individual and social awareness are clearly distinguished in the Krogh and Roos (1995) approach. The Wiig KM (1993) model demonstrates how individuals or organizations produce and utilize data. Ologbo and Nor (2015) list the following 7-circle models: "KM initiative, culture, people, systems, technology, engagement, and KM motivation" (Mohajan, 2017a). These models constitute vital components of organizations that wish to create KM structures. A brief description of these models is given below.

2.9.1.1 Nonaka and Takeuchi's Knowledge Conversion Model

Nonaka is one of the leaders in KM. The SECI and Ba principles are at the core of the Nonaka KM model. In 1991, the SECI model was developed and used to describe how knowledge in companies is produced, translated, and recreated (Nonaka, 1994). Nonaka and Konno (1998) introduced a Ba in KM, a space for dynamic knowledge conversion. Therefore, the organizational setting is essential for skills development and management (Nonaka & Takeuchi, 1995). The following model (Figure 2.5) explored how information is shared, created, and learned in virtual practice design communities. This process is regarded as the transfer of information, and this relationship has been established through four modes of transfer developed by Nonaka and Takeuchi (1995). The model is explained below:

i. **Socialization-** Tacit knowledge for a tacit understanding: The process of information sharing generates tacit awareness. The findings are observed, imitations, and practices (Qwaider, 2011a).
ii. **Externalization-** Implicit to Explicit: It is a process in which silent information (concepts and hypotheses or models) is expressly understood, i.e., tacit converts to explicit (Gill, 2009).
iii. **Combination** -Knowledge to Explicit and Implicit: Explicit combinations of different bodies of knowledge (Qwaider, 2014).

iv. **Internalization** -Explicit to Tacit Knowledge: This is an explicit method of knowledge transformation into tacit knowledge contrasting 'learning by' and 'learning by doing' (Qwaider, 2011b).

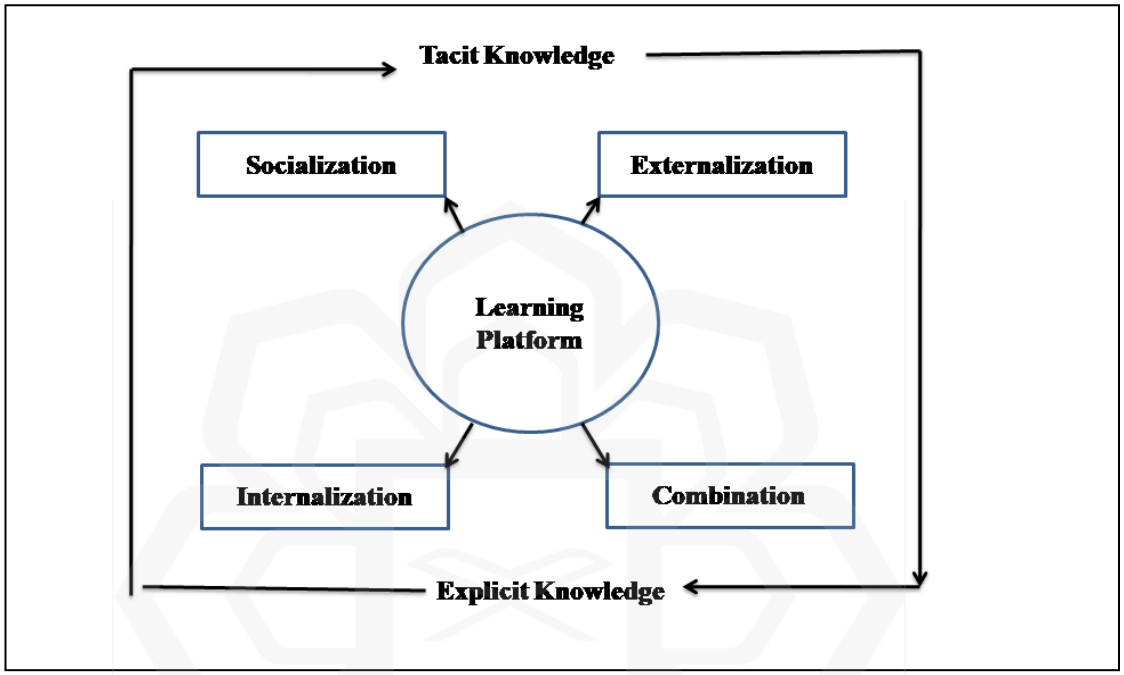


Figure 2.5 Knowledge Conversion Model (Nonaka & Takeuchi, 1995, adapted from Qwaider, 2011a, 2011b; 2014)

2.9.1.2 Chun Wei Choo's Sense-making Model

The Choo KM model (Figure 2.6) focuses on selecting and then feeding into the organization's information portion. Organizational behavior results in the concentration and absorption of information in any consecutive step from the external world (Dalkir, 2005). There is an outside stimulus or cause for each process, sense-making, information formation, and decision-making. The knowledge that flows from the outside is the sense-making process attempted to filter the content; priorities are defined and used (Dalkir, 2005).

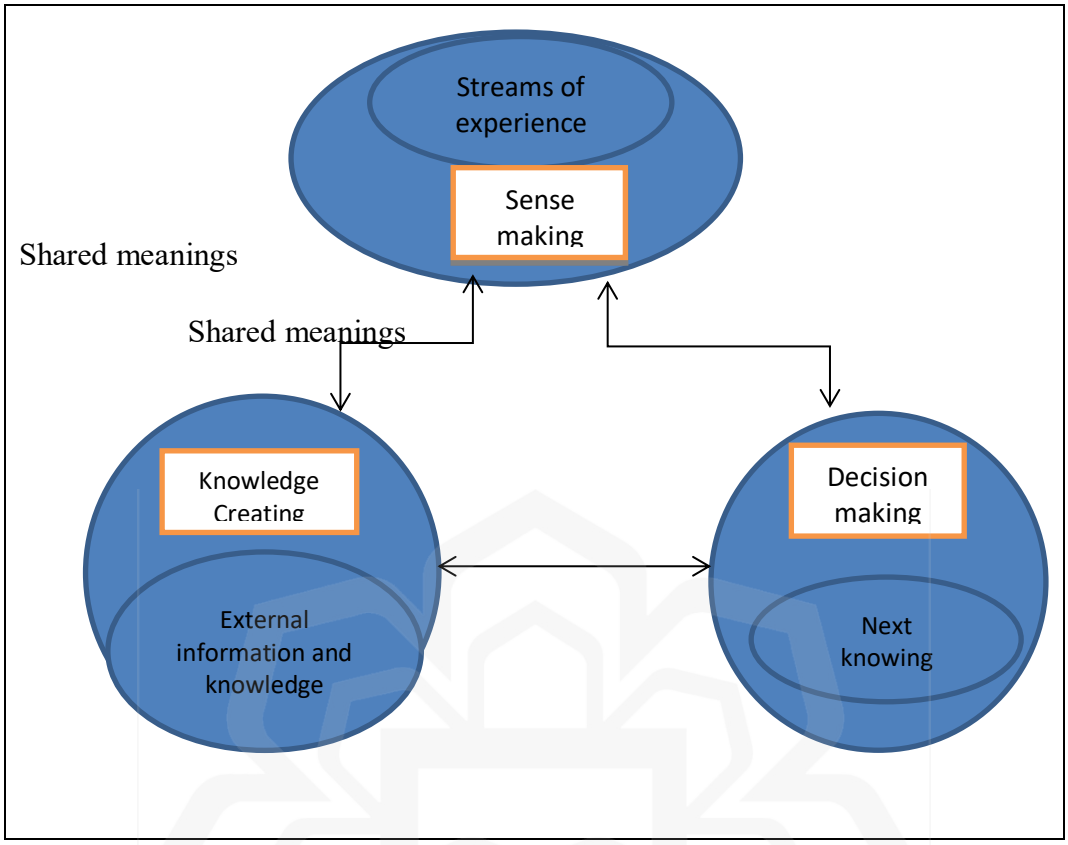


Figure 2.6 Georg von Krogh and Johan Roos KM Model

The KM model of Krogh and Roos (1995) clearly distinguishes between personal and social knowledge. To control organizational knowledge, they have taken an epistemological approach and have given philosophical reasons for tacit knowledge being entirely an attribute of individuals. The essence of KM was analyzed by the following five factors that prevent KM strategies: "workers, communication and interaction, structure and design of organizations, relations among members, and management of human resources" (Krogh & Roos, 1995).

The components of the four issues (Cristea & Căpaźîna, 2009) are discussed in this model, i.e., "(i) why and how information meets a company's employees? (ii) why and how does the expertise meet the company? (iii) what does experience mean for the employees and the company? (iv) what are the challenges of institutional KM?" This model shows that there can be no information without a knowledgeable person, and ties

must be maintained between the subjects of knowledge and those who are knowledgeable about them. It concludes that information can be found both in people's minds and in their relationships. So, this allows for a comprehensive collection of organizational practices that positively affect the development of information and promote relationships and interactions, exchanging local knowledge around the organization (Krogh & Roos, 1995; Dalkir, 2005).

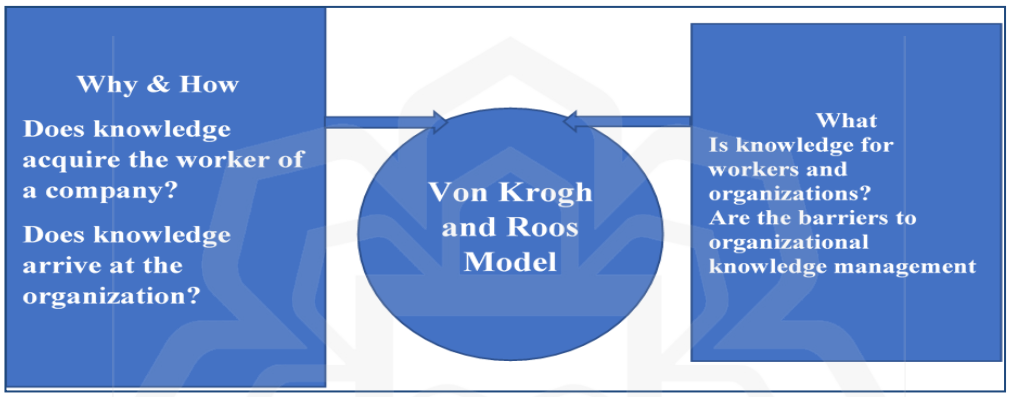


Figure 2.7 Von Krogh and Roos Model (Krogh & Roos, 1995)

2.9.1.3 Karl M. Wiig's KM Model

Via his three pillars of the KM model, Wiig (1997), another KM forerunner, pointed out that the keystone of KM is the creation of information, implementation, and decision-making in the community, technology, and processes of the organization. The three foundations were recognized in his work as the discovery of knowledge, the evaluation of knowledge worth, and its successful management (Ologbo & Nor, 2015). Wiig focuses on the three requirements for an institution to operate its functions effectively: "(i) products/services and clients, (ii) assets (persons, money, and accommodations), and (iii) ability to operate" (Wiig, 1993; cited in Dalkir, 2005). The KM cycle of Wiig discusses the creation and use of information as individuals or organizations. In this cycle, there are four significant steps; "(i) knowledge building, (ii)

information holding, (iii) information pooling (iv) applying to understand" (Dalkir, 2005).

2.9.1.4 Andrew C. Ologbo and Khalil Md Nor's the 7-circle Model

The seven-circle model was developed by Ologbo and Nor (2015), and the seven apparatuses were used to describe the critical ways that organizational awareness could be handled correctly (Figure 2.8). As the planets spin the sun, the idea of the 7-circle model revolves around KM in passionate companies about managing their understanding to enhance their systems, goods, efficiency, output, and overall business success.

This model can be characterized as KM's seven main phases that must be mutually reinforcing, cohesive, and constant in organizational KM. The model stresses seven interdependent methods in every organization that tries to build on its expertise for its performance and competitive advantage. This model is straightforward, consistent, and pertinent for small and large companies and delivers a detailed summary, leading practitioners to implement the model briefly. It notes that the information system in companies does not have a definite function. Therefore, KM and learning must be a continuous process for sustainable competitive advantage and embedded in corporate culture. In combination with the circles, the model will be used by organizations. The circles examine the relevance for the organization of KM's strategic importance. Later, consider "cultural factors, human and human meaning, social interaction processes, the technical component, the technology relationship, and the KM motivation and reward system" and incorporate them into it. The KM experts will use this model to lead and incorporate KM strategies in their companies (Ologbo & Nor, 2015).

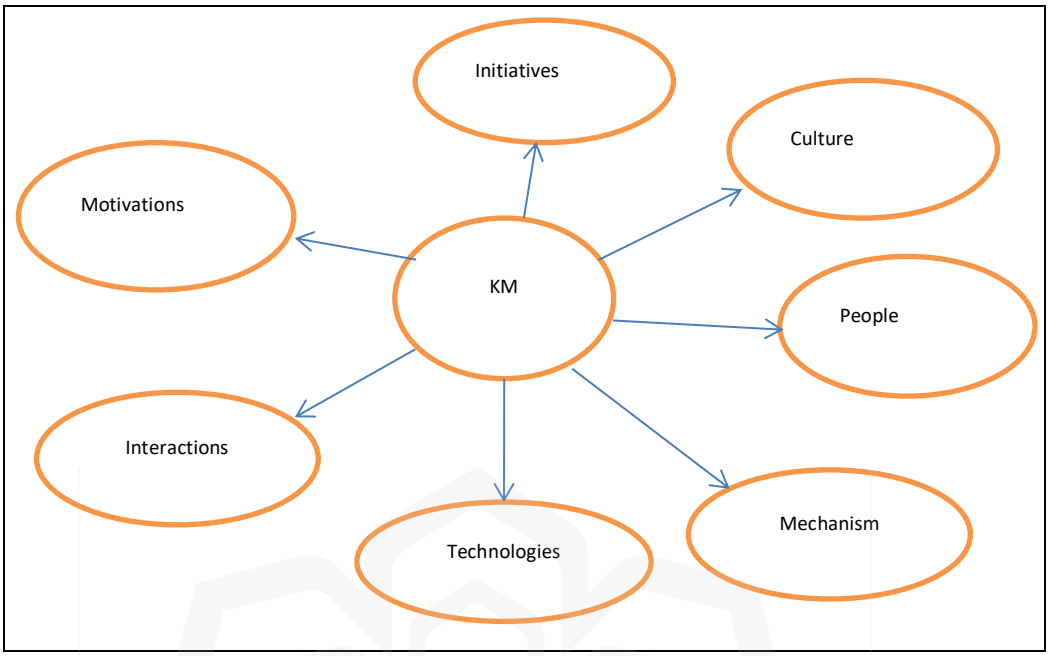


Figure 2.8 The 7-circle Model (Ologbo & Nor, 2015)

Besides the above models, Alavi and Leidner's (2001) KM model is also recommended because it is a set of cognitive and social knowledge processes. The four dimensions of mutually dependent information management on each other are divided into this model (Gottschalk, 2005). Furthermore, this model is also used to achieve excellence in creativity in the knowledge-based leadership style (Donate & Sánchez de Pablo, 2014; cited in Supermane, 2019).

The present research did not emphasize any specific model described above. Instead, it describes here because experts, scholars, and researchers have extensively examined, criticized, and debated these models in the KM literature (Dalkir, 2011; Alosaimi, 2016). Therefore, the KM models presented above attempt to answer RQ1a. The following sections answer RQ1b and RQ1c.

2.9.1.4.1 To What Extent is the KM being Implemented at University Libraries as Reported in Previous Research Works

The following table shows to what extent the KM is being implemented at university libraries, as reported in previous research works.

Table 2.4 To What Extent is the KM being Implemented at the University

Authors	To what extent is the KM being implemented
Rafi (2020b)	KM model is being implemented to improve information centers' performance through organizing library resources, implementing technology, and developing a financial plan.
Oufkir and Kassou (2019)	The KM model is being implemented to achieve organizational performance and goals through resource integration.
Schniederjans et al. (2019)	KM model is being implemented by disclosing and combining the required information to improve organizational performance.
Rafi et al. (2019)	The model is implemented by describing the theory that explains why the problem is investigated.
Ugwu and Ekere (2018)	KM implements performance assessments through generous budgets and investments in ICT infrastructure and administrative collaboration and enhances library resources and employee skills.
Cerchione and Esposito (2017)	The KM model is being implemented through better resource utilization, knowledge diffusion, and effective management of library materials.
Rouse (2016)	KM model is being implemented by identifying socio-technical factors, cultural factors, strategic and technological factors of the organization.

Islam et al. (2015b)	By incorporating implicit and explicit knowledge into organizational processes, a well-structured KM model enhances knowledge integration and application.

2.9.1.4.2 How were the Existing Models of KM Implemented at University Libraries?

KM in the libraries encompasses data, information, and knowledge and addresses tacit and explicit knowledge. The following table shows how the existing models of KM were implemented at university libraries.

Table 2.5 How the Different Existing Models of KM Implemented

Authors	The stage of the model	Key points of implementation
Nonaka and Takeuchi (1995)	Socialization, Externalization, Combination, Internalization	This model is implemented in the library by focusing on knowledge conversion that explains the transformation of tacit into explicit knowledge and then back as the basis for individual, group, and organizational innovation and learning.
Choo (1998)	Knowledge-Creating, Decision making, Sensemaking	This model is implemented by a sense-making approach that focuses on how information elements are fed into organizational actions through sense-making, knowledge-creating, and decision-making.
Krogh and Roos (1995)	Workers, communication and interaction, structure and design of	This model is implemented by an organizational epistemology approach that knowledge resides both in the minds of

	organizations, relations among members, and management of human resources	individuals and in the relations they form with other individuals.
Wiig (1993)	Creation, Manifestation, Use, Transfer	This model is implemented by using valuable knowledge classification, a form of the semantic network, which is connected, harmonious, and complete and has perspective and purpose in the organization.
Ologbo and Nor (2015)	Initiatives, Culture, People, Mechanisms, Technologies, Interactions, Motivations	This model is implemented by examining the relevance of KM's strategic importance for the organization. Later, take into account cultural factors, human and human meaning, social interaction processes, the technical component, the technology relationship, and the KM motivation and reward system and integrate them into it.

This model is implemented by examining the relevance of KM's strategic importance for the organization. Later, take into account cultural factors, human and human meaning, social interaction processes, the technical component, the technology relationship, and the KM motivation and reward system and integrate them into it.

2.10 RESEARCH HYPOTHESIS

The research sought to test the eight hypotheses based on the research objectives, questions, and reviewed literature. Survey data tested the hypothesis to demarcate what factors are significantly associated with the KM implementation in the library. For testing the hypotheses, both path estimates and t-statistics were evaluated. Path

coefficients were examined using the PLS algorithm test, and t-statistics were analyzed using bootstrapping test. The bootstrapping is a re-sample using the available observations (Rijlaarsdam, 2007). In this research, bootstrapping procedure using 5000 sub-samples was performed. The following hypotheses were tested.

Hypothesis 1: There is a significant relationship between the quality of the library services with KM practice.

Hypothesis 2: There is a significant relationship between facility and performance of the library with KM practice.

Hypothesis 3: There is a significant relationship between critical success factors with KM practice.

Hypothesis 4: There is a significant relationship between KM familiarity issues with KM practice.

Hypothesis 5: There is a significant relationship between challenges faced by the library with KM practice.

Hypothesis 6: There is a significant relationship between KM practices for implementing KM.

Hypothesis 7: There is a significant direct relationship between department contributions for implementing KM.

Hypothesis 8: There is a significant direct relationship between KM relevance to librarianship with implementation of KM.

2.11 REVIEW OF VARIABLE AND HYPOTHESIS FORMULATION

The institutional staff's ability to use the knowledge that leads to organizational assistance, such as the decision-making process, improving production and business efficiency, and others, is essential to the success of KM (Muttaqi, 2020; Kulkarni et al., 2006). Achieving KM may be summed up as gathering and getting precise information to precise users while also establishing personal management. The importance of KM is currently different for different institutions, and their heads are looking into the main

drivers and problems for the successful implementation of KM design for their institutions (Jafari et al., 2008; Akhavan et al., 2006). In organizations, several issues influence KM practices and implementation (Mahmood et al., 2020). However, the details of the variables and hypothesis formulation for the present research are given below.

2.11.1 Quality of the Library Services

Library performance evaluation aims to improve and ensure users' quality of library services (Rafi et al., 2020b). University libraries must always uphold a high level of service quality and guarantee their long-term viability in order to please readers. It's critical to examine the degree of technical and reader services and service efficiency to understand readers better and give enhanced services (Asante & Ngulube, 2020). KM has increased information resources, service innovation, service planning, and decision-making in the organization (Koloniari & Fassoulis, 2017). Further, according to Islam et al. (2015b), adopting KM will help academic libraries grow and become more creative, leading to novel service results. The quality of the library service determines the users' satisfaction. Service quality is measured using performance measurements, which help maintain user satisfaction (Rafi et al., 2020b). As a result, this promotes creating actual knowledge and a setting where user groups can develop new or improved library resources and services. They also pointed out that libraries would reduce service complexity and boost innovation opportunities by merging internal and external information that is accessible to its users. In many library sections, KM has enhanced planning and facilitates user services (Rafi et al., 2020a). The fundamentals of the quality of the library services are membership process, better service, teamwork, and getting used to these in the library environment. Therefore, the hypothesis is;

Hypothesis 1: There is a significant relationship between the quality of the library services with KM practice.

2.11.2 Facility and Performance of the Libraries

A successful KM process enhances organizational performance and employee satisfaction (Khanal & Raj, 2017). Kinyua et al. (2015) found that knowledge application is statistically significant and positively influences organizational performance. Similarly, Zargar and Rezaee (2013) reported that KM practices in the organization increase the knowledge and information of employees and increase the organization's productivity. Knowledge affects the organization's processes in several ways and dramatically affects the organization's effectiveness. Regarding productivity, the KM models help achieve organizational performance and goals through resource integration (Oufkir & Kassou, 2019). The library anticipates that KM operations will better understand customers and their needs. As a result, these requirements should ideally result in the facility and performance of the libraries, i.e., delivery of more appropriate and timely services that will satisfy users (Tasmin et al., 2012). Suppose the libraries of Bangladesh want to move forward to catch up with modern library trends and facilities, meet the users, and make their mark on the country's overall development. In that case, this is the time to march ahead (Islam, 2013). As constituents of the parent university, libraries should rethink and explore methods to improve their services to discover new ways to capture information within the library (Maponya, 2004). Similarly, if the library increases the facilities and improves its service performance, in that case, it will help the users get more information with less effort and help the authority of those universities save money and manpower (Rahman & Islam, 2020). Therefore, the hypothesis is;

Hypothesis 2: There is a significant relationship between facility and performance of the library with KM practice.

2.11.3 Critical Success Factors for Implementing KM

It is crucial to present a more thorough and deliberate examination of the essential success elements for KM implementation. Organizations must be aware of and attentive to the aspects that will affect the effectiveness of a KM program (Migdadi, 2009). Critical success criteria for an organization's information generation include techniques

to raise awareness (Ichijo et al., 1998). Koloniari et al. (2015) found that the organization's KM strategy, culture, and structures are the most important critical success factors of educational libraries in Greek. Many factors in institutions can affect KM, and leadership is one of them. Since KM is a relatively innovative field, leadership has a stronger impact on an institution than anything else. As a result, this influence is more apparent (Amarakoon & Kumari, 2013). Whether training ensures employees of an organization need to be aware of and treated as a critical resource for the profitability of an organization. Workers should also receive training and updates on KM systems and other information management technology techniques (Wong, 2005).

Through appropriate training, staff members would better understand KM, the framework of a common language, and awareness of how they perceive and think about knowledge (Migdadi, 2009). According to Musangi et al. (2019), staff must be informed about new technology and take advantage of these opportunities. Every organization has its own organizational culture. It may be a dynamic aspect in determining whether KM is accepted or rejected by the library (Poonkothai, 2016). Culture has arisen at diverse stages in an organization, and organizational cultures strongly influence the retention and productivity of the organization. Within an organization, organizational culture substantially impacts routine procedures and expectations (Debowski, 2006). KM enables the free flow of knowledge in organizational culture, encouraging KS instead of knowledge hoarding to obtain the desired outcomes (Aliba, 2008).

Harbo and Hansen (2012) mentioned that users' demands might change gradually over time, and libraries must continuously consider such changes. Students of the present era still need guidance in using the enormous amount of electronic literature. At the same time, they are also advanced users of the latest information technology (IT), which library institutions, often conservative by nature, provide this kind of service to users. Infrastructure encourages interaction between those seeking information and those directly searching for knowledge (Muchaonyerwa, 2015). KS is the practice of individuals or groups of workers exchanging expressed or implied facts, views, ideas, and expertise (Nooshinfard & Nemati-Anaraki, 2014). KS is influenced by the effectiveness of the KM system, organizational culture and rewards, and face-to-face interactive communication (Tan, 2016). Based on the above, it is hypothesized that;

Hypothesis 3: There is a significant relationship between critical success factors with KM practice.

2.11.4 User's Familiarity with KM

The awareness and familiarity of KM among librarians and users provide an added value to the library and its parental institution (Krishnamurthy & Balasubramani, 2013). Zhou et al. (2018) revealed that modern technology had improved service capabilities and created partnerships between library users and collectors. Successful KM practices result from technology giving organizations a lasting competitive edge (Madan & Khanka, 2010). Policies, techniques, leadership, selection, acquisition, and information sharing are the several categories under which KM practices are categorized in academic libraries. It is mentioned in the sections on management and administration, facilities, collections, and ICT in libraries (Singh, 2012).

Similarly, Poonkothai (2016) and Kanwal et al. (2019) suggested that KM activities can be pursued in university libraries by brainstorming, open discussions, exchanging information, arranging seminars, discussing difficulties, and finding solutions. If users are aware of KM, it helps to determine the direction of the library to improve the quality of its service, with the support of the KM process and users' feedback. The degrees of understanding of KM among the users are varied. Based on the above, it is hypothesized that;

Hypothesis 4: There is a significant relationship between KM familiarity issues with KM practice.

2.11.5 Challenges of KM Practices

Library professionals perceived several challenges to incorporating KM into academic library practices. Lack of skills and competencies, the reluctance of library professionals to accept the change, misunderstanding of KM concepts, lack of KS culture, lack of incentives or rewards for innovation and sharing knowledge, top management

commitment, lack of collaboration, and lack of resources are the major challenges discussed in LIS literature (Nazim & Mukherjee, 2011).

Similarly, Islam et al. (2015) also identified some significant obstacles to KM use and implementation in the libraries, i.e., lack of KM awareness, experienced personnel, KS culture. Dlamini (2017) identified that lack of sharing knowledge, lack of organizational knowledge policy, lack of guidelines to support the sharing of knowledge, constant budget decline, and inadequate staff training are the challenges of KM practices in academic libraries in Swaziland. The implementation of KM in academic libraries is highly problematic for librarians because there are various obstacles to overcome (Maligat et al., 2020). Based on the above, it is hypothesized that.

Hypothesis 5: There is a significant relationship between challenges faced by the library with KM practice.

2.11.6 KM Practices Mediates the KM Implementation

In today's competitive and challenging environment, KM is seen as one of the most valuable options for university libraries to improve their services and become more relevant to their parent institutions (Thanuskodi, 2010). Therefore, this is especially true in nations like Bangladesh, which are experiencing tremendous economic growth. Service innovation in libraries refers to the generation of new ideas and the effort to find ways to implement those ideas in practical ways. The nature of KM practice mediates the relationship between tangible knowledge assets and their innovation capacity by KM implementation (Abbas, 2015). It can be new or improved technology or interfaces, improved services, outreach or organization methods, and other continuous work for patron satisfaction (Islam, 2016). Thus, KM practice is associated with the KM implementation in the library. So, it is hypothesized that;

Hypothesis 6: There is a significant relationship between KM practices with implementing KM.

2.11.7 Department Contribution to KM Implementation

According to Koloniari and Fassoulis (2017), LIS professionals' major contribution to KM is their information management skills. They suggest that the LIS department can conduce to developing these competencies, expanding their curricula to include courses in business and management (Tiwari, 2013; Sarrafzadeh, 2008). Husain and Nazim (2013) classify the required KM skills for LIS professionals into people-centered skills and skills related to the management of the organization and IT skills. In university libraries, employee interaction among different departments (Management Information Systems, Computer Science and Engineering, Department of Organization Strategy and Leadership, and Information Science and Library Management) of the university might help the libraries to modern setup technology and assist them in performing daily activities better by sharing their knowledge.

In KM implementation, multiple components need to be integrated. Reasonable budgets and detailed assessments are needed so that experts from various departments and library authorities can jointly complete this innovative task (Rafi et al., 2020b). Therefore, successful KM implementation in the libraries requires the collaboration of various departments regarding technology-related assistance. Contributions from the departments could help libraries become more integral to their parent organizations by implementing KM. Therefore, it is hypothesized that.

Hypothesis 7: There is a significant direct relationship between department contributions for implementing KM.

2.11.8 KM Relevance to Librarianship

KM's goal is to help the organization realize its mission. As a result, all components of an organization (including libraries) must work together to ensure that KM contributes to achieving the library's objective. Implementing a KM takes a lot of planning, patience, and a willingness to learn. Jacobson (2020) suggested some guidelines which may aid in implementing KM in the organization. Each section heads of the libraries to

tackle and clearly define the goals and objectives based on the KM relevance to librarianship.

Therefore, the identification and application of a policy are required. If the employees see the benefits of KM practices, they will initiate the formal implementation of KM in the libraries in the relevant section. So, this will also assist potential users in searching and exploring new content and aid them down the path of curation (Jacobson, 2020). Therefore, it is crucial to recognize one or more of the organization's members to be an internal part of this KM process (Skyrme, 2011). By implementing KM in libraries, LIS professionals can address user needs while keeping in mind overall organizational goals. So, adopting KM in the libraries could help them become more integrated into their parent groups (Sarrafzadeh et al., 2006). Therefore, KM's relevance to librarianship is related to the KM implementation in the public university libraries in Bangladesh. Based on the above, it is hypothesized that.

Hypothesis 8: There is a significant direct relationship between KM's relevance to librarianship with the implementation of KM.

2.12 HYPOTHESIZED RESEARCH MODEL

Finally, a hypothesized research model shown in Figure 2.9 was developed based on independent, mediating, and dependent variables from the previous literature that underpins the research. Survey data with SmartPLS 3 tested the model. The model considered seven independent variables – 'Quality of the library service,' 'Facility and performance,' 'Critical success factor,' 'Familiarity with KM,' and 'Challenges faced by the library.' Two other independent variables directly impact KM implementation, namely department contribution and KM relevance to librarianship. KM practice is mediating variable, and KM implementation is a dependent variable. The model depicts the relationship between the various factors, KM practices, and KM implementation. Each path along with the model represents the research hypothesis which is discussed in detail in section 2.11.

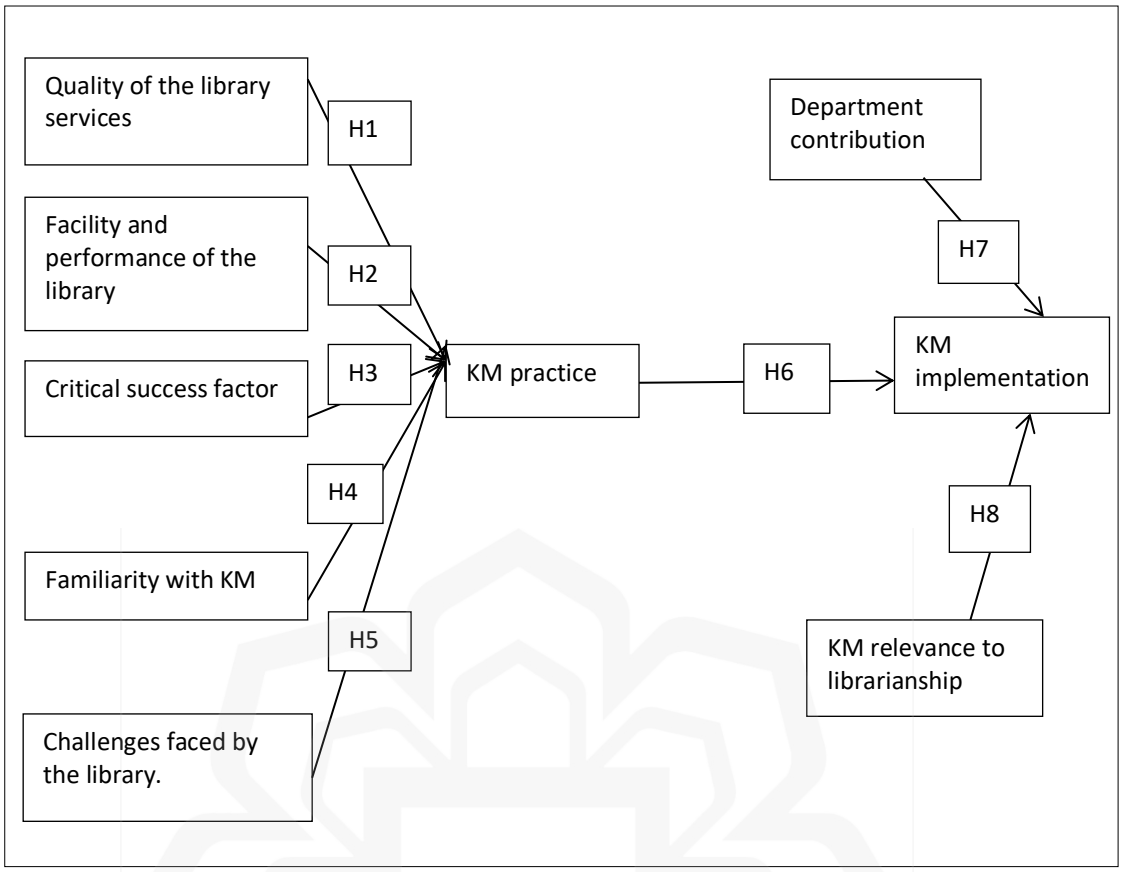


Figure 2.9 Hypothesized Research Model

2.13 CHAPTER SUMMARY

The literature review has impacted on obtaining the aim and objectives of this research by providing a broad literary background. In order to enable public university libraries in Bangladesh to create KM initiatives and modernize the library to achieve successful KM, the literature evaluation focuses on the implications of the most recent and older landmark studies. This chapter presented and defined major concepts, including knowledge, KM, the impact of KM, and the benefits of KM in the libraries. These concepts were discussed to accomplish the research goal, to understand the relationships and their effects in various libraries.

This chapter also exposed that no inclusive study had been done on the impact of KM on creating service-based value in public university libraries in Bangladesh.

Table 2.3 shows the findings and gaps of the previous studies on KM in Bangladesh perspectives. This chapter also stated the previous KM models to support the development of the KM model for public university libraries in Bangladesh, as proposed in the present research.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter presents the research methods adopted to achieve the following key objective: to propose a KM model for creating service-based value for public university libraries in Bangladesh. Other Research Objectives (ROs) are to explore the existing models of KM implemented by the university libraries, examine the current formal KM practices, examine the critical success factors, and identify the challenges related to KM practices in the public university libraries in Bangladesh. The present research utilizes a mixed-method approach. Individual quantitative and qualitative methods were also reviewed, and their possible uses and reasons for not being applied to this single method in this research are also given in this chapter. The literature review in chapter two has shown the methods used in previous research and is summarized in Table 2.2. The present research used a survey design for data collection. Other data collection techniques (Case study, Delphi technique, etc.) were also highlighted in this chapter. A summary of the research data collection technique adopted for this research is given in Table 1.1 (chapter one). The present chapter also discusses the population and sampling, pre-test of the questionnaire, data collection strategy, data analysis technique, and ethical considerations. Figure 3.1 shows the flow chart of the research methodology, which is also a breakdown in sections 3.9 and 3.9.1.

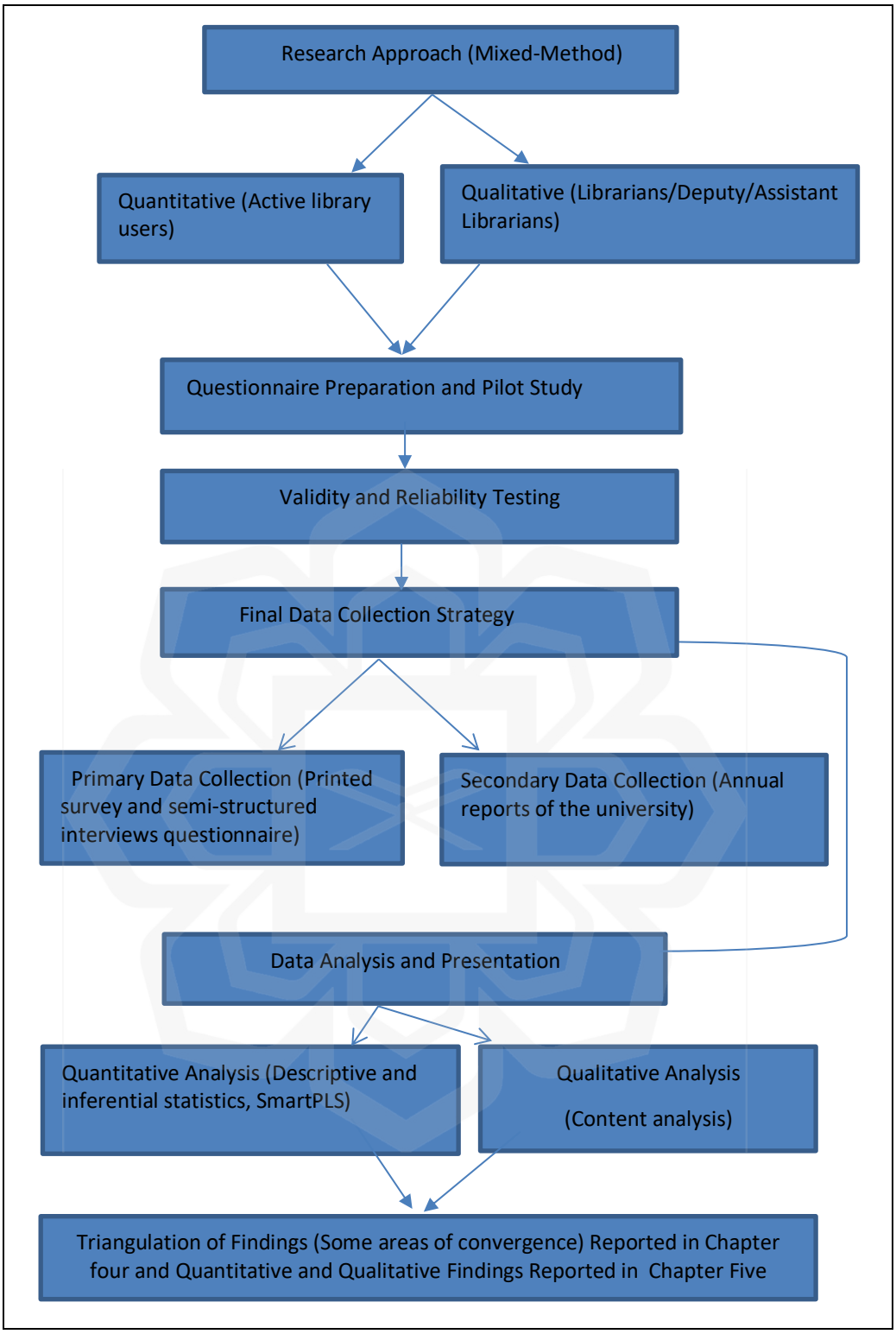


Figure 3.1 Flow Chart of Research Methodology

3.2 RESEARCH APPROACH

Research approaches are part of the primary and secondary research (Hayes et al., 2013). There are three widely used research approaches. The first is a quantitative research design that uses closed-ended questions that encourage the respondents to provide short and targeted responses. The second popular research strategy is the qualitative research strategy which typically involves asking open-ended questions and effectively inviting the respondents to supply detailed answers to help address a given research problem. Subsequently, some research decided to adopt a quantitative and qualitative approach, i.e., a mixed approach. Among these approaches, this research utilized a mixed-method using the quantitative and qualitative approaches combined in one research. The details about research approaches and the rationale for selecting a mixed-method approach are given in the following sections.

3.2.1 Quantitative Approach

Quantitative analysis essentially involves obtaining numerical data to describe a certain phenomenon (Cohen et al., 2007). Quantitative analysis' strength resides in its rigor in supporting the comparability of results. The quantitative approach exclusively uses established data gathering methods to collect quantitative data that is based on calculations (Ramohlale, 2014). Quantitative research does not allow participants to discuss their responses. Even if the information provided to researchers appears ambiguous or incorrect, the reactions must stand on their own (Miller, 2020). This conventional research method did not address all their research questions, and severe limitations exist (Dawadi et al., 2021). Though the quantitative approach has some advantages, one method cannot provide insightful information in a study, so only this approach is not appropriate for this research.

3.2.2 Qualitative Approach

In contrast to quantitative research, qualitative research examines the characteristics of phenomena. Therefore, qualitative research seeks to understand what occurs, how it occurs, and why it occurs in the manner that it does. Therefore, a qualitative analysis study is necessary to comprehend better and characterize theories' features, traits, or attributes (Henning et al., 2004). So, a qualitative research approach is also essential because it concerns identifying, documenting, examining, and evaluating conditions that either exist or have existed. Similarly, though the qualitative approach has some benefits, this single method cannot support a better understanding of a study, so this approach is also not appropriate for this research.

3.2.3 Mixed-Method Approach

In research, the mixed-method technique involves philosophical assumptions that guide the collecting and interpretation of data from different sources in a single study (Dawadi et al., 2021). Mixed methods provide different perspectives of quantitative and qualitative approaches (Shahrani, 2018). Combining a quantitative and qualitative approach can provide more facts in a study. Therefore, mixed-methods, characterized by applying more than one data collection and analysis procedure, can be used to answer research questions (Saunders et al., 2007). According to Maxwell (2016), mixed-method research provides a logical foundation, methodological flexibility, and a thorough grasp of more minor examples. In favor of mixed approaches, the precise point is that the qualitative approach encompasses areas not covered by quantitative methods and vice versa in the same analysis. The following section shows the rationale for the mixed-method approach.

3.2.4 The Rationale for Mixed-Method Approach

The methodology utilized in this research was a mixed-method (Table 3.1). This approach explicitly recognized that quantitative and qualitative studies have their

deficiencies. However, if these methods were merged, more credible results could be obtained (Abowitz & Toole, 2009). The quantitative expressions are numerical descriptions that explain and relate the phenomenon in figures with other phenomena. The qualitative terms describe the phenomenon and illustrate its qualities (Alosaimi, 2016). Therefore, it is considered to use both quantitative and qualitative methods so that the outcomes can be combined to address the inherent shortcomings of each approach (Bagorogoza, 2015). The other reason for using this method was that it helped the researcher discover rich information that could not be obtained with a single technique. So, the researcher believes this method is suitable for the present research context and thus uses both quantitative and qualitative approaches (mixed-method). Both quantitative and qualitative approaches are generally recognized as applicable in KM studies and related disciplines (Acheampong, 2014). Related studies that have used mixed methods include, among others, Chigada (2014), Abbas (2015), and Jumoke (2018). So finally, this technique was used to inspect the research queries in KM at public university libraries in Bangladesh.

Table 3.1 Research Objectives, Questions, and Method Used

Research Objectives	Research Questions	Method Used
The primary purpose of the research was to propose a KM model for creating service-based value for public university libraries in Bangladesh.	The main research question was: How can the KM model create service-based value for public university libraries in Bangladesh?	Quantitative and Qualitative
RO1: To Explore the different existing models of KM	RQ1a: What are the existing models of KM implemented by the university libraries?	Review of different KM models by

implemented by the university libraries.	RQ1b: To what extent is the KM model being implemented at university libraries as reported in previous research works?	literature review and systematic literature review.
	RQ1c: How were the existing models of KM implemented at university libraries?	
RO2: To examine current formal KM practices at public university libraries in Bangladesh.	RQ2a: How did the public university libraries in Bangladesh adopt the KM practices?	Quantitative and Qualitative
	RQ2b: To what extent users' demographics are associated with users' characteristics, awareness, and KM familiarity issues?	
	RQ2c: To what extent is KM practiced in public university libraries in Bangladesh?	
RO3: To examine the critical success factors for the KM implementation at public university libraries in Bangladesh.	RQ3a: What are the critical success factors for implementing a KM in public university libraries?	Quantitative and Qualitative
	RQ3b: Is the present manpower adequate for providing KM services?	
RO4: To Identify the challenges related to KM practices at the public university libraries in Bangladesh.	RQ4a: What are the challenges of KM practice faced by the public university libraries in Bangladesh?	Quantitative and Qualitative
	RQ4b: How would the KM practices be adopted in the future as planned by the public university libraries in Bangladesh?	

3.3 RESEARCH DESIGN

The research design is a conceptual structure within which research would be carried out. It collects relevant information, usually considering available resources (Acheampong, 2014). It specifies how the data will be collected and analyzed. There are various research designs, i.e., Case study, Delphi technique, and Survey. The present study integrated questionnaire (quantitative approach) and interview (qualitative approach), i.e., survey design, to examine KM status in university libraries of Bangladesh. The details about research designs and rationale for selecting survey design for data collection are given in the following sections.

3.3.1 Case Study

The case study method can be used for various issues, including policy analysis, project design and implementation, and organizational performance. Yin (2014) suggested that case studies apply to theoretical propositions, not populations or universes. In other words, the goal of a case study is to develop and apply theories, analytical generalizations, and not statistical application (Chipeta, 2018). Under this case study method, there are some limitations of the study. The researcher always finds difficulties deciding when to stop collecting data for their research. They may find all things to be pertinent. Therefore, this design is not an appropriate choice for this research.

3.3.2 Delphi Technique

Delphi is a systematic and participatory research approach for gathering the opinions of a group of independent experts on a particular topic. Delphi is a scientific method for organizing and structuring an expert discussion with little information to obtain insights on challenging themes. Norman Dalkey and Olaf Helmer created the Delphi approach in the 1950s to get trustworthy expert consensus. Delphi investigations are, by their nature, complicated and time-consuming. Delphi is a systematic and participatory research approach for gathering the opinions of a group of independent experts on a

particular topic. Delphi may not be the best option when more effective analytical methods are available (Skinner et al., 2015). Participants need to complete numerous rounds that can significantly dropout rates, compromising the study's validity (Barrett & Heale, 2020). As a result, this strategy is inappropriate for the current research.

3.3.3 Survey Design

Survey design uses various data collection methods, the most common being questionnaires and interviews (Ponto, 2015). The most usual primary data collection methods are surveys, and they can be categorized into manual and electronic groups (Nayak & Narayan, 2019). Survey research can use quantitative research strategies (questionnaires), qualitative research strategies (open-ended questions), or both strategies, i.e., mixed methods. Questionnaires are a list of open-ended or close-ended questions for which the respondents give answers. Questionnaires may be self-administered or administered individually and include a series of items considering the research objectives. It is the most used method in the survey. It can be conducted via telephone, mail, or live in a public area, an institute, electronic mail, or other methods. Through surveys, a large amount of information can be collected from many people within a short period of time and in a relatively cost-effective way. It can be carried out by the researcher or any number of people with limited effect on its validity and reliability. Rationalists believe that quantitative data can be used to create new theories or test existing hypotheses (Kabir, 2016).

Conducting interviews is another approach to data collection used in survey research. Interviews may be performed by phone, computer, or in-person and have the benefit of visually identifying the nonverbal responses of the interviewee and subsequently being able to clarify the intended question (Ponto, 2015). The interview is a face-to-face conversation with the respondent. The interviewer can not only record the statements the interviewee speaks, but he can observe the body language, expressions, and other reactions to the questions too. Therefore, this enables the interviewer to conclude easily. Interviews can be structured, semi-structured, or unstructured. Semi-structured interviews also allow informants to express their views

on their terms. Semi-structured interviews can provide reliable, comparable qualitative data. Some authors (Ponto, 2015; Dillman et al., 2014; Singleton & Strait, 2009) advocate using mixed method for survey research when no one method is adequate to address the planned research objectives. So, the present research has selected this approach for collecting data from active library users and the Librarians/Deputy librarians/Assistant librarians of the public university libraries in Bangladesh.

3.4 RESEARCH SETTING

Bangladesh, formally known as the People's Republic of Bangladesh, is an economically diverse country with a population of 170 million and emerged as a sovereign country in 1971 (WENR, 2019). The Ministry of education oversees education in Bangladesh. Three levels make up the primary educational framework: a. Primary, b. Secondary, and c. Tertiary. As an apex body of the government, the University Grants Commission (UGC) is responsible for controlling tertiary-level education in Bangladesh. Universities in Bangladesh are governed by statutory bodies such as the Syndicate, Senate, Academic Council, and others following their respective acts.

As of September 2020, tertiary educational institutions in Bangladesh include 46 governments, 106 private, and three international universities (UGC, 2020). Among the 46 public universities (Table 3.1), this research included five public universities in Bangladesh, i.e., "(The University of Dhaka, University of Rajshahi, Bangladesh University of Engineering and Technology, Sylhet Agricultural University, and Jashore University of Science and Technology)." A brief description of these five selected universities is given below.

3.4.1 University of Dhaka (DU)

DU was the first institution of higher learning in Bangladesh (formerly East Bengal) (Hossain & Ahmed, 2020). On the first day of July 1921, the DU opened its doors to

students, and this university is in Dhaka city. Currently, the university consists of 13 faculties, 83 departments, 12 institutes, 20 residential halls, three hostels, and more than 56 Research Centers. The number of students and teachers has risen to about 37,018 and 1,992. Presently the university enrolls more than 5,800 students, on a merit basis, in the first-year honors program in different departments of the Faculties and the Institutes. This university has awarded researchers more than 1262 Ph.D. and 1217 M.Phil. degrees. The university's main goal was to establish new knowledge fields and distribute them to society through its students. Since its inception, DU has distinguished faculties that have significantly influenced the areas of teaching and studies, enriching a global pool of knowledge (DU, 2021).

3.4.2 University of Rajshahi (RU)

RU is the second-largest public university in Bangladesh, situated in Rajshahi, a city in northwestern Bangladesh. This university was founded in 1953. The 59 departments of the university are divided into ten faculties. RU is situated in Motihar, 3 kilometers from Rajshahi city center, on a 305-hectare (753-acre) campus. This university has 37,000 students and approximately 1,000 academic staff (RU, 2021).

3.4.3 Bangladesh University of Engineering and Technology (BUET)

BUET is the country’s oldest engineering institution in Bangladesh and is also located in Dhaka. This institution's history dates to the days of the Dhaka survey school, founded in 1876 at Nalgola to train surveyors for British India's government of Bengal. In 1962, Ahsan Ullah Engineering college was upgraded to the rank of a university, East Pakistan University of Engineering and Technology, to build postgraduate education and research facilities. It was renamed the BUET after Bangladesh's independence in 1971. The university has been expanded into five faculties, beginning with two departments. In 1980, the Civil Engineering faculty opened. This university grew with new resources and services over time (BUET, 2020).

3.4.4 Sylhet Agricultural University (SAU)

SAU is also a public university sponsored by the government in Sylhet, Bangladesh. On November 2, 2006, SAU began its work following the issuance of a notification by the government under the provisions of the 'Sylhet Agricultural University Act 2006' adopted by the National Parliament on October 3, 2006. Currently, 2,501 students (Honors, Master, and Ph.D.) are enrolled at the university (SAU, 2021).

3.4.5 Jashore University of Science and Technology (JUST)

JUST is a government-funded public university in Bangladesh, based in Jashore Sadar. This is the fourth public university in the Khulna Division and Jashore's first public university. It was founded in 2007 and began the 2009-2010 sessions with four-year undergraduate courses. From the 2008-2009 sessions, JUST began to work. “Computer Science & Engineering, Environmental Science & Technology, Microbiology, and Fisheries and Marine Bioscience” were the first four departments of this university (JUST, 2021).

3.5 POPULATION AND SAMPLING PROCEDURE

Ujan et al. (2021) stated that a population is a group of people, occasions, or things the researcher wants to examine. John and James (2007) defined that the population could also be all the individuals of a specific type or a more restricted part of the group. In other words, a population is any group with one or more common characteristics that concern the researcher (Abbas, 2015). The area of this research was five public university libraries among forty-six public universities in Bangladesh. The list of public universities in Bangladesh is given in Table 3.2.

Table 3.2 Name of the Public Universities in Bangladesh (Source: UGC, 2020)

SL.	Name of The University	Est. Year	Subject Area
1	University of Dhaka	1921	General
2	University of Rajshahi	1953	General
3	Bangladesh Agricultural University	1961	Agricultural
4	Bangladesh University of Engineering and Technology	1962	Engineering
5	University of Chittagong	1966	General
6	Jahangirnagar University	1970	General
7	Islamic University	1979	Islamic
8	Shahjalal University of Science & Technology	1986	Science & Technology
9	Khulna University	1991	General
10	National University	1992	Affiliated
11	Bangladesh Open University	1992	Specialized
12	Bangabandhu Sheikh Mujib Medical University	1998	Medical
13	Bangabandhu Sheikh Mujibur Rahman Agricultural University	1998	Agricultural
14	Hajee Mohammad Danesh Science & Technology University	1999	Science & Technology
15	Mawlana Bhashani Science & Technology University	2001	Science & Technology
16	Patuakhali Science and Technology University	2000	Science & Technology
17	Sher-e-Bangla Agricultural University	2001	Agricultural
18	Chittagong University of Engineering & Technology	2003	Engineering
19	Rajshahi University of Engineering & Technology	2003	Engineering

20	Khulna University of Engineering and Technology	2003	Engineering
21	Dhaka University of Engineering & Technology	2003	Engineering
22	Noakhali Science & Technology University	2006	Science & Technology
23	Jagannath University	2005	General
24	Comilla University	2006	General
25	Jatiya Kabi Kazi Nazrul Islam University	2006	General
26	Chittagong Veterinary and Animal Sciences University	2006	Veterinary
27	Sylhet Agricultural University	2006	Agricultural
28	Jashore University of Science and Technology	2010	Science & Technology
29	Pabna University of Science and Technology	2008	Science & Technology
30	Begum Rokeya University	2008	General
31	Bangladesh University of Professionals	2009	General
32	Bangabandhu Sheikh Mujibur Rahman Science & Technology University	2010	Science & Technology
33	Bangladesh University of Textiles	2010	Textiles
34	Barisal University	2011	General
35	Rangamati Science and Technology University	2011	Science & Technology
36	Bangabandhu Sheikh Mujibur Rahman Maritime University	2013	Marine
37	Islamic Arabic University	2013	Islamic
38	Chittagong Medical University	2016	Medical
39	Rajshahi Medical University	2016	Medical
40	Rabindra University, Bangladesh	2017	General
41	Bangabandhu Sheikh Mujibur Rahman Digital University	2016	Specialized

42	Sheikh Hasina University	2018	General
43	Khulna Agricultural University	2015	Agricultural
44	Bangamata Sheikh Fojilatunnesa Mujib Science and Technology University	2018	Science & Technology
45	Sylhet Medical University	2018	Medical
46	Bangabandhu Sheikh Mujibur Rahman Aviation and Aerospace University (BSMRAAU)	2019	Aviation

This research purposively covered five public universities from four geographical regions across Bangladesh (Table 3.3). Due to their geographic locations in Bangladesh, size, and capacity to represent the many types of libraries in Bangladesh, these university libraries were chosen. The subject areas (General, Engineering, and Agricultural) covered by these universities are diverse and are the top universities in each of their distinct geographic coverage. Compared to freshly founded, smaller universities, these university libraries have an edge in terms of well-developed, appropriate infrastructural facilities. These university libraries were also chosen to find out if there are any discrepancies between the infrastructure and service standards of libraries located in the capital city and other parts of Bangladesh. Out of eight divisions, the university libraries that were represented in this research were from four different divisions of Bangladesh. The list is given below.

Table 3.3 Name of the Sample Universities, Population, and Sample of the Research (Source: University website; UGC, 2019; University representatives)

Sl. No	Name of the university	Location	Students in the university (UGC, 2019)	Active library users (Approx.)	Subject area
1.	University of Dhaka	Dhaka Division	38,172	2,500	General
2.	University of Rajshahi	Rajshahi Division	38,291	1,500	General
3.	Bangladesh University of Engineering and Technology	Dhaka Division	9,289	2,400	Engineering
4.	Sylhet Agricultural University	Sylhet Division	2,100	150	Agriculture
5.	Jashore University of Science and Technology	Khulna Division	3,959	1000	Science and Technology
	Total		91,811	7,550	

For the quantitative approach, the targeted population of this research was approximately 7,550 active library users of the respective university libraries. In this research, the term active library users mean the undergraduate and postgraduate students of various departments/disciplines of the university who use the library a few times a month and issue the book from the library. Krejcie and Morgan's (1970) method showed that 367 sample sizes fit this research (Table 3.4). Details calculation of Krejcie and Morgan formula are; n=x2 NP (1-P)/e2 (N-1) + x2 P (1-P); At a 95% confidence level with a degree of freedom of 1, the chi-square value is (x2) =3.8421; Where population size (N) =7550; Population Proportion (P) =0.5; At a 95% confidence level,

the margin of error (e) is 0.05; Population Proportion (P) =0.5. Then n=3.841×7550×0.5(1-0.5)/ (.052) (7550-1) +3.841×0.5(1-0.5) =7249.8875/18.6225+0.96025=370.22.

Therefore, the sample size is approximately 371. Similarly, Tabachnick and Fidell (2007) pointed out that 300 sample sizes are required for good research. In comparison, Vogt (2007) indicated that the larger the sample, the smaller the margin of error. Any sampling aims to secure a selection that will represent the entire population's characteristics (Jain, 2013). Therefore, the present research was carried out among 1,060 active users (undergraduate and postgraduate students who visit libraries frequently) to improve accuracy and reduce error. This research also interviewed 11 Librarians/Deputy librarians/Assistant librarians of respected public university libraries, who hold the highest position at their university library. So, it was assumed that two or three filled-up semi-structured interview questionnaires from each library would represent the whole library. Therefore, there was no need to repeat the survey with other library members. They were responsible for information involving library management and policy issues and were also the decision-makers for their library to implement new ideas.

Table 3.4 Determining Sample Size (Krejcie & Morgan's, 1970)

N	S	N	S	N	S	N	S
10	10	150	108	460	210	2600	335
15	14	160	113	480	214	2800	338
20	19	170	118	500	217	3000	341
25	24	180	123	550	226	3500	346
30	28	190	127	600	234	4000	351
35	32	200	132	650	242	4500	354
40	36	210	136	700	248	5000	357
45	40	220	140	750	254	6000	361
50	44	230	144	800	260	7000	364

55	48	240	148	850	265	8000	367
60	52	250	152	900	269	9000	368
65	56	260	155	950	274	10000	370
70	59	270	159	1000	278	15000	375
75	63	280	162	1050	285	20000	377
80	66	290	165	1200	291	30000	379
85	70	300	169	1300	297	40000	380
90	73	320	175	1400	302	50000	381
95	76	340	181	1500	306	75000	382
100	80	360	186	1600	310	100000	384
110	86	380	191	1700	313		
120	92	400	196	1800	317		
130	97	420	201	1900	320		
140 103		440	205	2000	322		

Note:N=Population and S= Sample

3.6 PRE-TEST OF THE QUESTIONNAIRE AND PILOT STUDY

A pre-test of the questionnaire allows for classifying questions from the questionnaire that tend to be misjudged by participants and do not obtain the needed information (Komanyane, 2010). The pre-test includes the expert opinion regarding the survey questionnaire of this research and the pilot study was administered to test the questionnaire before starting the final survey. Thus, checking and evaluating the questionnaire before data collection for this research through a pilot study is essential. Therefore, a pilot study was done to ensure that the participants did not have difficulty answering the questions about whether any of the essential aspects were left uncovered. The data gathering procedure was done through Google Forms for the pilot study due to the COVID-19 restrictions and closure of the educational institutions in Bangladesh from March 18, 2020, to September 30, 2021. The Ministry of education in Bangladesh issued a circular for schools and other educational institutions, including higher

education, to stop conventional teaching temporarily (Daily Prothom-Alo, 2020). From 18th March 2020, all educational institutes in Bangladesh were declared close to avert the spread of COVID-19 among the students (Anwar et al., 2020). Therefore, online survey questionnaires (https://forms.gle/nCxj3odWQRhhNRYKA) were sent to the Facebook group and the students' email with the help of class leaders. The survey questionnaire was sent for a pilot study on June 30, 2021, and the survey was closed on July 16, 2021.

The pilot study was carried out among undergraduate (honors) and postgraduate students (masters) of DU and RU using purposive sampling. For conducting a pilot study, a sample size of 10%-20% among the total sample sizes of the actual research is reasonable (Baker, 1994; cited in Skaik, 2014). With a sample size of 1,060, the researcher decides to consider more than 10% of the sample for this pilot study, i.e., more than 100. Finally, the data collected from 90 respondents were used to refine the construct measurement scales by examining their validity and reliability. Their suggestions received during pilot testing were combined into the final version of the questionnaire.

3.7 RESULTS OF THE PILOT STUDY

The following section shows the results of the pilot study.

3.7.1 Variables, Definitions, Coding, and Items of the Questionnaire

The measurement items and variables were developed from prior studies (details given in chapter two, section 2.12) to ensure the validity of the research. Some measurement items also were self-developed. The variables, their definitions, coding, and items are listed in Table 3.5.

Table 3.5 Variables, Definitions, Coding, and Items of the Questionnaire

Variables	Definitions	Coding and Items Statements
Quality of the Library Services (QLS)	The quality of the library service determines the users' satisfaction.	QLS1 - The membership process to this library is easy
		QLS2 - Service of the library is very good
		QLS3 - Staff are actively involved in better service of the library
Perception about the Facility and Performance of the Library (PFPL)	Facility and performance of the libraries means delivery of more appropriate and timely services that will satisfy users.	PFPL1-There is a long waiting time in front of the reference desk
		PFPL2-The operating times of the library are convenient to the users
		PFPL3-The staff knows about the latest technological developments
		PFPL4-Some of the staff lack of experience
		PFPL5-Staffs are polite to users
		PFPL6-Library staff encourages users to effectively use library websites for research purposes
Familiar with KM (FKM)	Users' awareness and understanding of KM and library service.	FKM1-Your familiarity with KM
		FKM2-Relationship between KM familiarity issue and service value
		FKM3-Relationship between KM familiarity issue and critical success factors
		FKM4-Library needs to be conscious of critical success factors that will influence the implementation of KM?
		FKMI1- Educational courses by different institutions

Familiar with KM Ideas (FKMI)	The way that the users are familiar with KM.	FKMI2-Expert bodies' activities
		FKMI3-Independent study, via academic/ research literature
		FKMI4-Courses provided by my department
KM Relevance to Librarianship (KMRL)	All components of an organization (including libraries) must work together to ensure that KM contributes to achieving the library's objective.	KMRL1-KM is a new perception for the LIS field
		KMRL2-It is an alternate name for information management
		KMRL3-KM is a modern librarianship discipline
		KMRL4-It is a contradictory idea dissimilar from librarianship
		KMRL5-KM is a management craze that has gained attention for a short span of time
		KMRL6-It is an allied field of study which tends to extend the librarianship scope
Advantages of KM implementation for Library Services (AKML)	The presence of a KM policy and supporting KM infrastructure and enablers to handle KM practices affect the chance of successful KM implementation.	AKML1-KM practice will add value to the output of the library and the service area
		AKML2-The chances of duplication of work can be minimized by KM
		AKML3-University libraries can be made more applicable to their affiliated universities by KM
		AKML4-KM will help turn a university library into an organization for learning factors for implementing KM with familiarity with KM

		AKML5-KM can boost the overall performance and future prospects of the library
		AKML6-KM helps to get innovative organizational ideas
Relevance of KM on Library Practice (RKMLP)	KM can be used in academic libraries to improve the situations in which they find themselves.	RKMLP1-An important ingredient of KM is the expertise of LIS specialists in librarianship
		RKMLP2-Activities in a library's readers' service section, such as distribution of books, reference services, etc., are synonymous with sharing KM awareness
		RKMLP3-KM helps in enhanced productivity or service quality
Contribution to the Education by Departments	Successful KM implementation in libraries requires the collaboration of various departments regarding managerial and technology-related assistance.	CED1-Department of Information Science and Library Management
		CED2-Department of Organization Strategy and Leadership
		CED3-Department of Computer Science and Engineering
		CED4-Department of Management Information Systems
Critical Success Factors (CSF)	Critical success factors are considered as the factors that may influence public university libraries in Bangladesh to implement effective KM for the service value of the libraries.	CSF1- Leadership
		CSF2-Continuous training programs
		CSF3- Organizational ICT structure
		CSF4- Organizational culture
		CSF5- Knowledge storage and knowledge capturing
		CSF6- Respecting users' demands
		CSF7- Establishing a solid infrastructure for future development

		CSF8- Link a knowledge directory to reduce the time to find knowledge experts
		CSF9- Establish a knowledge hierarchy to help new users browse and discover the new content
Challenges for Implementing KM(CIKM)	Library professionals perceived several challenges to incorporating KM into academic library practices.	CIKM1- Unwillingness to explore the difficulties associated with KM
		CIKM2- Problems with organizational culture
		CIKM3- Inadequate support from management
		CIKM4- Feeling shies in nature of the employee to share knowledge
		CIKM5- Don't find the KM process as interesting
		CIKM6- Improper technology deployment
		CIKM7- Losing information from an employee's resignation and retirement
		CIKM8- Lack of awareness

3.7.2 Reliability and Validity of the Research

Survey questions were adapted from previous studies and self-developed for this research. There have been many techniques that could be used for the survey's validity and reliability. Reliability is the accuracy of the measuring tool in research (Norland, 1990). Whether Creswell (2014) established that validity deals with how accurately the instrument measures the constructs a researcher intends to measure. Aithal and Aithal (2020) and Radhakrishna (2007) defined the validity of a questionnaire as a process of analyzing questions for dependability that is established using a panel of experts and a

field test. A pilot study was directed to verify the reliability and validate the survey questionnaire and interview schedule in the sample public university libraries in Bangladesh. In the present research context, face and content validation was done, i.e., checking research instruments in details by five faculty members of the Department of Information Science and Library Management of DU and RU and International Islamic University Malaysia (IIUM). The instrument was also checked by DU's Deputy librarian (Programming) (Table 3.6). For instance, one expert suggested deleting the two options from question 30 before the final data collection. In the survey questionnaire question, no 18 and 24 were corrected after the students' comments (Appendix A). Another expert suggested adding more questions regarding the challenges faced by the library. Therefore, question no 36 was added for an expert opinion before data collection (Appendix B). Finally, the survey questionnaire and interview schedule were adjusted based on their suggestions.

Table 3.6 The List of the Experts

Serial of the experts	Department	University	Country
Expert 1	Library and Information Science	International Islamic University Malaysia	Malaysia
Expert 2	Information Science and Library Management	University of Dhaka	Bangladesh
Expert 3	Information Science and Library Management	University of Dhaka	Bangladesh
Expert 4	Information Science and Library Management	University of Rajshahi	Bangladesh
Expert 5	Information System	International Islamic University Malaysia	Malaysia
Expert 6	Deputy Librarian (Programming)	University of Dhaka	Bangladesh

In addition, statistical methods of “Exploratory Factor Analysis (EFA)” were applied in this study to verify the validity of the questionnaire items. Factor loadings of more than 0.4 are acceptable and have the necessary credentials. Internal consistency is one of the strategies that may be used to assess a research's reliability. Cronbach's alpha coefficient can be used to compute it. It is a typical method applied in most studies and should be at least 0.7 (Bagheri et al., 2015). Therefore, Cronbach's Alpha (α) was examined to validate the reliability and internal validity of the survey questions (Table 3.7).

Table 3.7 Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items
.946	.948	53

3.7.3 Internal Consistency for the Variables

Cronbach’s Alpha (α) value was an index to measure the instrument's internal consistency because this research employed 1-5 point Likert scale questions for survey questionnaires. The reliability of the questionnaire has been tested by using IBM®SPSS® statistics. Table 3.8 shows the internal consistency of the variables. As shown in the following table, Cronbach’s Alpha (α), the internal consistency of the instrument varied from 0.655 for the variable “Perception about the facility and performance of the library (PFPL)” to 0.920 for the variables “Critical success factors (CSF).” Hair et al. (2010; 2006) recommended that the generally accepted value of Cronbach’s alpha (α) coefficient for reliability is 0.70. However, Lambert et al. (2007) indicated that alpha values of 0.6 or higher are viewed as acceptable. The reliability test result showed high internal consistency as per the recommendation of Lambert et al. (2007) and Hair et al. (2010).

Table 3.8 Internal Consistency for the Variables

Variables and Coding	Valid Items	Cronbach's Alpha (α)	Revised alpha score after item deleted
Quality of the Library Services (QLS)	3	.659	.738
Perception about the Facility and Performance of the Library (PFPL)	6	.563	.655
Familiar with KM (FKM)	4	.798	.798
Familiar with KM Ideas (FKMI)	4	.742	.742
KM Relevance to Librarianship (KMRL) Advantages of KM implementation for Library Services (AKMLS)	6 6	.690 .886	.737 .886
Relevance of KM on Library Practice (RKMLP)	3	.801	.801
Contribution to the Education by Departments (CED)	4	.785	.785
Critical Success Factors (CSF)	9	.920	.920
Challenges for Implementing KM (CIKM)	8	.881	.881

3.7.4 Exploratory Factor Analysis (EFA)

EFA is typically conducted to decrease the number of overall variables. Further, "Bartlett's Test of Sphericity" was used along with the "Kaiser-Meyer-Olkin" (KMO) statistic. Small values of the KMO statistic below 0.5 indicate that other variables cannot explain the correlations between pairs of variables. Thus, factor analysis may be inappropriate. Table 3.8 shows that factor analysis is appropriate for this research because the KMO value is greater than 0.5. The construct validity of 53 items was

checked using item-total correlations and principal component analysis (PCA), followed by a varimax rotation.

3.7.4.1 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity

"Kaiser-Meyer-Olkin" (KMO) index determines data fitness for factor analysis. The value of this statistic differs between zeros and one. Kaiser put the following KMO values "0.90 to 1.00 marvelous; 0.80 to 0.89 meritorious; 0.70 to 0.79 middling; 0.60 to 0.69 mediocre; 0.50 to 0.59 miserable; and 0.00 to 0.49 unacceptable" (Kaiser, 1974). For a good sample, the value of this statistic must be larger than 0.5. From the table below, it is apparent that factor analysis is appropriate. Here, the KMO value is 0.753, which is between 0.5 and 1.0, and the result is good because the KMO value is between 0.70 and 0.79 (Table 3.9). Therefore, factor analysis is appropriate for this data set. If "Bartlett's Test" is significant, there will be a correlation between variables and factor analysis. Here the approximate chi-square statistic is 3460.795 with 1378 degrees of freedom. Therefore, this is significant at the 0.05 level. Also, the p-value for the Bartlett test of Sphericity is 0.000, less than 0.05 in Table 3.9. So, this indicates that the correlation matrix is not an identity matrix (Alkatheeri, 2018; Field, 2013), and there is a correlation between variables and factor analysis. Therefore, the sample size (90) is statistically significant for the EFA, and the data has no problem.

Table 3.9 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.753
Bartlett's Test of Sphericity	Approx. Chi-Square	3460.795
	Df	1378
	Sig.	.000

According to Hair et al. (2010), an outset of 0.5 for factor loading is significant. Factor loadings of more than 0.4 are also acceptable and have the necessary credentials. Thus, the researcher determined the factor loading of 0.4 accepted in the research findings. Ten factors and 53 items were identified aligned with this research (Table 3.10). Factor 1 includes items QLS1 to QLS3, referring to qualityof the library services. Factors 2 gathers items PFPL1 to PFPL6, which represents perception about the facility and performance of the library. Factor 3 includes items FKM1 to FKM4, referring to familiar with KM. Factor 4 gathers FKMI1 to FKMI4, denotes familiar with KM ideas. Factor 5 consist of items KMRL1 to KMRL6, which represents KM relevance to librarianship. Factor 6 includes items AKML1 to AKML6 referring to advantages of KM for library services. Factor 7 includes items RKMLP, which represents relevance of KM on library practice. Factor 8 includes items CED1 to CED4, referrining to the contribution to the education by departments. Factor 9 includes items CSF1 to CSF9, which represents critical success factors. Factor 10 includes items CIKM1 to CIKM8, referring to challenges for implementing KM (Table 3.10). Almost all the items of the factor loadings exceeded the recommended outset value of 0.4. Only a few items were loading below the recommended value. The instruments' items were face and content validated by the experts, which are essential for the research perspectives. Nadiri (1970) suggested that "all commonalities of a perfectly sufficient sample above 0.5 are acceptable." Also, all the commonalities values exceeded the recommended value of Nadiri. Therefore, none of the items were deleted and the EFA was not repeated second time. Table 3.10 shows factor loading and the commonalities of the variables extracted between 0.520 and 0.835 are between the ranges recommended by Nadiri (1970).

Table 3.10 Factor Loading and Communalities of the Variables

Items coding	Factor loading	Initial	Extraction
QLS1	.778	1.000	.741
QLS2	.764	1.000	.726
QLS3	.824	1.000	.783
PFPL1	.757	1.000	.727

PFPL2	.447	1.000	.704
PFPL3	.392	1.000	.590
PFPL4	.587	1.000	.701
PFPL5	.651	1.000	.662
PFPL6	.763	1.000	.770
FKM1	.698	1.000	.722
FKM2	.820	1.000	.785
FKM3	.683	1.000	.761
FKM4	.715	1.000	.792
FKMI1	.620	1.000	.659
FKMI2	.569	1.000	.520
FKMI3	.520	1.000	.808
FKMI4	.391	1.000	.689
KMRL1	.767	1.000	.765
KMRL2	.705	1.000	.706
KMRL3	.599	1.000	.813
KMRL4	.826	1.000	.775
KMRL5	.551	1.000	.618
KMRL6	.485	1.000	.772
AKML1	.694	1.000	.807
AKML2	.466	1.000	.675
AKML3	.705	1.000	.711
AKML4	.710	1.000	.759
AKML5	.712	1.000	.755
AKML6	.793	1.000	.835
RKMLP1	.459	1.000	.697
RKMLP2	.571	1.000	.710
RKMLP3	.389	1.000	.773
CED1	.385	1.000	.694
CED2	.843	1.000	.796
CED3	.616	1.000	.734
CED4	.724	1.000	.793

CSF1	.729	1.000	.729
CSF2	.794	1.000	.822
CSF3	.535	1.000	.799
CSF4	.464	1.000	.718
CSF5	.544	1.000	.805
CSF6	.568	1.000	.749
CSF7	.552	1.000	.755
CSF8	.719	1.000	.779
CSF9	.665	1.000	.796
CIKM1	.657	1.000	.702
CIKM2	.789	1.000	.758
CIKM3	.808	1.000	.833
CIKM4	.754	1.000	.700
CIKM5	.458	1.000	.776
CIKM6	.683	1.000	.700
CIKM7	.553	1.000	.700
CIKM8	.761	1.000	.750

3.8 DATA COLLECTION STRATEGY

The use of multiple data sources helped research establish a more profound collection of data. This technique assists the research results in being generalized (Bagorogoza, 2015). There are mainly two sources of data collection that include primary data collection and secondary data collection. Data collection techniques were carried out to collect data from the five public university libraries in Bangladesh through printed survey questionnaires and semi-structured interviews, and document analysis.

3.9 PRIMARY DATA COLLECTION

The consideration of questionnaires and interviews was primarily included for primary data collection. This research was empirical; therefore, the emphasis has been put on incorporating the data collected through the questionnaire method. As mentioned earlier, both quantitative and qualitative data collection methods were employed in the research. The questionnaire was used to collect quantitative data from the active library users of the selected public university libraries in Bangladesh. The research used semi-structured interviews to collect qualitative data from the Librarians/Deputy librarians and Assistant librarians of these libraries. This research used two different questionnaires to collect primary data from the sample of the targeted university libraries (Appendix A and B). Figure 3.2 shows the primary data collection strategy used in this research.

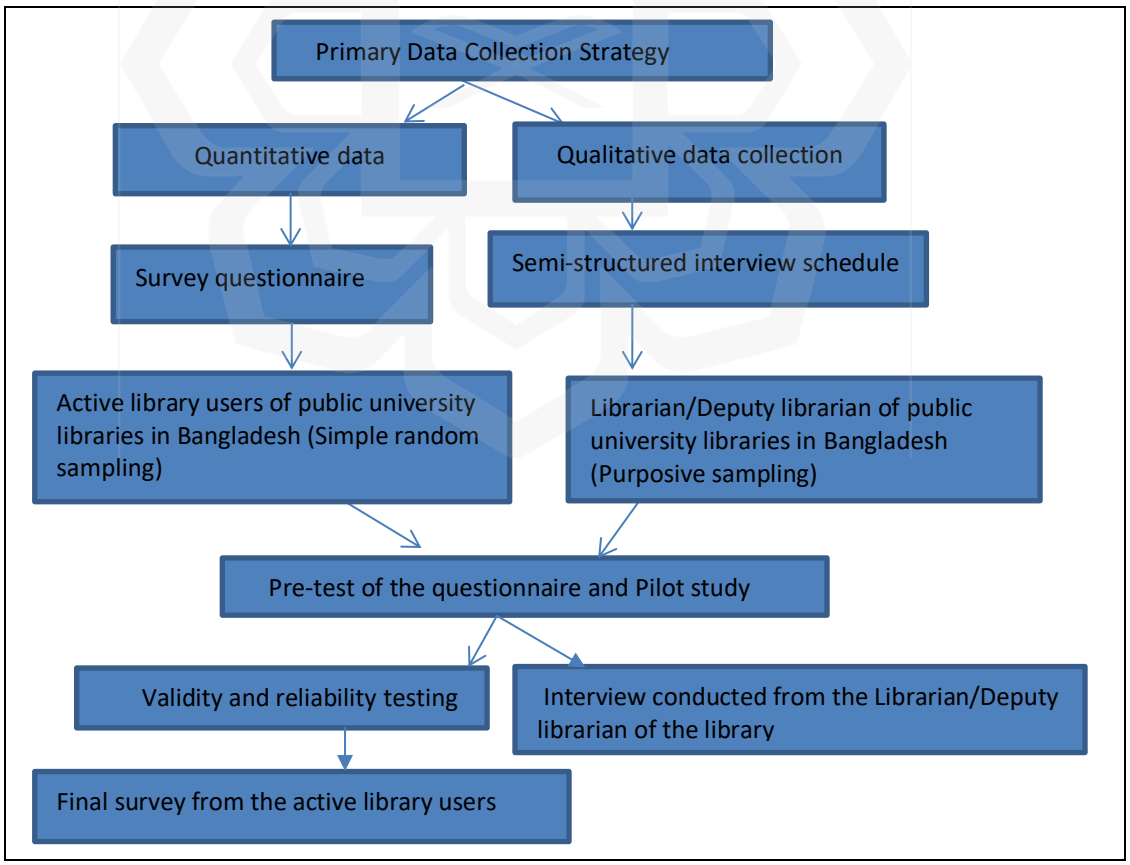


Figure 3.2 Primary Data Collection Strategy

3.9.1 Quantitative Data Collection

For the collection of quantitative data, probability sampling (a simple random sample) was used. Each active user of the respected library in different categories had an equivalent possibility of being chosen as a part of the sample. The instrument employed for this purpose was a self-administered survey questionnaire and five points Likert scales from strongly disagree (1) to strongly agree (5) and very low (1) to very high (5). These scales are designed to assess the strength of a participant's level of agreement on a specific question, with a score in the middle allowing them to feel neutral (Simonis, 2010; cited in Skaik & Othman, 2015). A self-administered survey means that respondents fill out a questionnaire by themselves. The following studies were considered for preparing the survey questionnaire (Table 3.11).

Nowrin and Mostofa (2015) found that many Business Faculty students at DU in Bangladesh occasionally visit the library. They also indicated that around half of the business students regularly use various web-based library services.

Asante and Ngulube (2020) established that six factors (i.e., "top management commitment, employee innovation, employee training, organizational culture, teamwork and effective communication, and quality performance") had a significant positive relationship with total quality management implementation at academic libraries in Ghana.

Islam et al. (2015) stated that the use and application of KM in LIS support improved access to information resources and services and enriched professional knowledge of information professionals. They also reported that the ultimate purpose of KM is to provide users with a variety of high-quality services to promote knowledge, exchange of knowledge, usage, and development.

Rahman and Islam (2020) said that if the library improves its facilities and service performance in agricultural libraries in Bangladesh, users will obtain more information with less effort, and university authorities will save money and labor.

Jemal and Zewdie (2021) reported that academic staff at Jimma University of Ethiopia perceived that existing KM practices enable them to achieve the organization's performance.

Krishnamurthy and Balasubramani (2013) showed that KM's familiarity among librarians and users in Chennai, India provides added value to the library and its parental institution.

Baghdadabad (2008), in her study, found that LIS students have the same understanding level of KM as other students and sometimes at a higher level than other students.

Siddike and Munshi (2012) showed that many information professionals in Bangladesh had initially learned about KM from literature, but none had taken a KM course.

Sarrafzadeh et al. (2006) found that in developed countries (Australia, New Zealand, the USA, the UK, South Africa, and Canada) relevancy of KM in libraries could help libraries become more integrated into their parent organization.

Ahmad (2017) reported that Pakistani LIS professionals use KM practices to improve their respective library services.

Nazim and Mukherjee (2013) stated that KM could add value to the library's operations and services. They also indicated that KM could reduce the chances of duplication of work and make academic libraries more relevant to their universities.

Kumar (2019), in his study, found that KM will boost library operating efficiency and, later, the library's ever-growing service value.

Oyedokun et al. (2018) reported that traditional library skills are part of the KM spectrum and processes, indicating that KM is highly relevant to librarianship in Nigeria.

Koloniari and Fassoulis (2017) suggest that although LIS practitioners of Greek academic libraries are aware of KM and appreciate its benefits, they should take charge of the KM implementation in the libraries.

Paudel (2019) indicated that organizational culture, IT, leadership, KM strategy, and inspiration are the impelling factors for the success of KM in the organization.

Koloniari et al. (2015) identified that KM strategy, culture, and structures of the organization, HRM are the most important critical success factors of educational libraries in Greek.

Batista and Quandt (2017) found that one of the primary obstacles to KM implementation is a lack of commitment from top managers.

Islam et al. (2014) identified that lack of awareness is one of the important barriers to implementing KM in libraries.

Finally, a printed copy of the questionnaire was provided to the participants. Communication with the respondents was made by physically visiting the selected university libraries during data collection from the library users and the nominated person by the researcher to follow up on the matter continuously. Researchers also keenly observed that designed questionnaires were soundly circulated to the 1,060 active users in different geographical areas in Bangladesh. The completed questionnaire was collected from the users by the nominated persons by the researchers with the library staff's help. Figure 3.3 shows the quantitative data collection process used in this research.

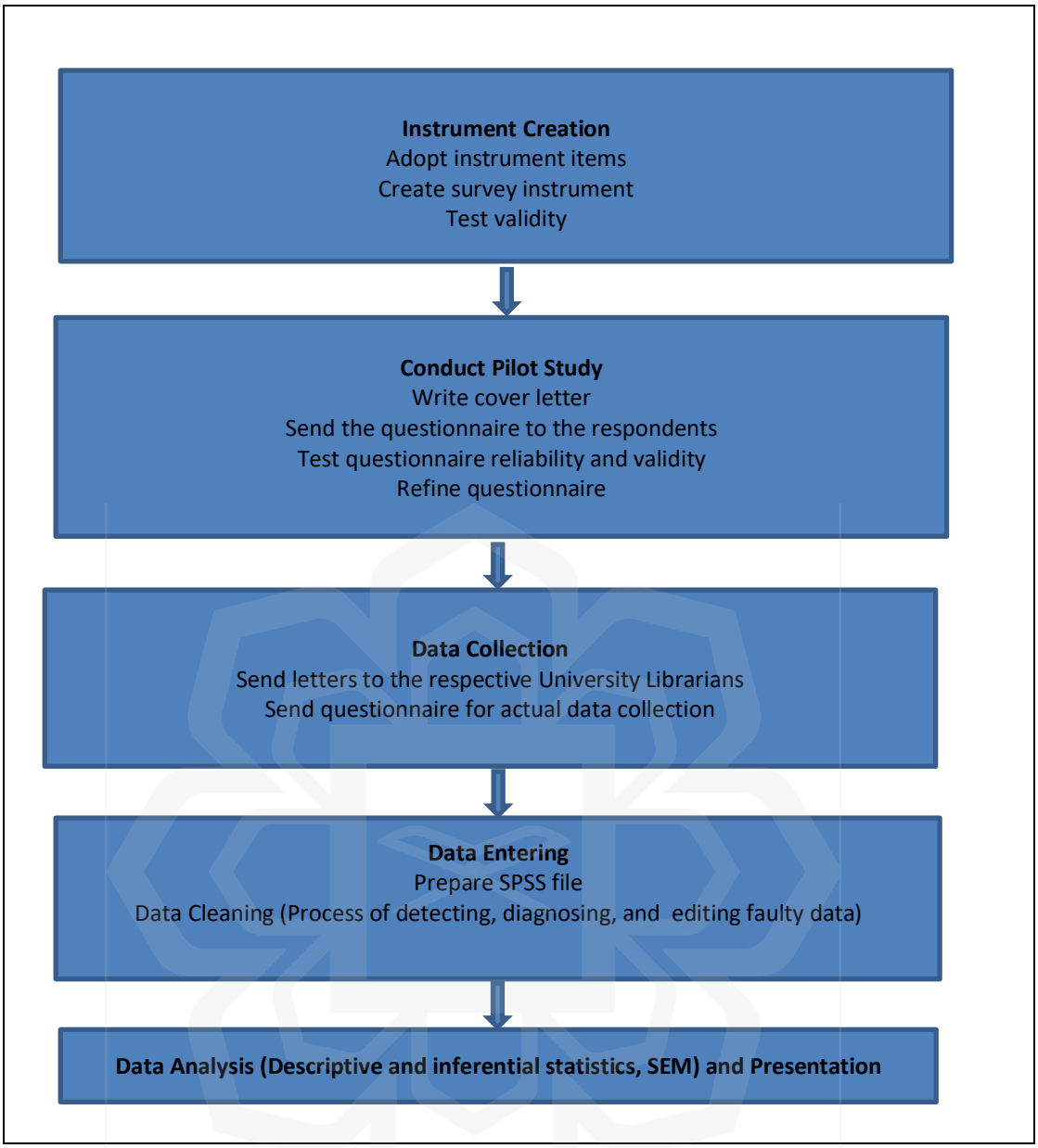


Figure 3.3 Quantitative Data Collection Process

3.9.1.1 Survey Questionnaire

By reviewing previously published literature, a comprehensive survey research questionnaire was developed with some self-developed questions to investigate the issues in the current research area. The questions were in standardized (written in the English language) format from generic to specific and logically flowed into each other (Appendix A). The respondents were given both closed and open-ended questions for a

response. For the closed questions, multiple options were applied. The first section of the survey questionnaire was designed to bring about common information about the students (name, age, gender, department, current study level). Two types of measurement scales were used in designing the questions non-metric scales, including nominal (highest academic level achieved, name of the university, and yes/no/not sure questions) and ordinal scales (Likert scales indicating the level of agreement and level of satisfaction, etc.) to measure perceptions of KM of the participants.

A questionnaire was divided into several sections. The main sections were as follows, Section A: General information of the respondents, Section B: General questions on library use and service, Section C: General questions on knowledge, Section D: Questions on KM, and Section E: Critical success factors for implementing KM. A list of the questionnaire items and their sources were also shown in Table 3.11.

Table 3.11 Variables and Sources of Questionnaire Items

Variables	Item no. with Questions	Source
Demographic information	1. Name of the participant 2. Gender 3. Name of the University 4. Current study level 5. Age 6. Email/Phone no.	Self- developed
Characteristics of the users on library visits and using library services	7-12(Characteristics of the users on library visit)	Self- developed
	7. Why do you visit the library?	Self-developed
	8. How frequently do you visit your library?	(Nowrin & Mostofa, 2015)

	9. How many years have you been using the library?	Self- developed
	10. Have you used the web-based services of the library?	(Nowrin & Mostofa, 2015)
	11. Which web-based services do you use most?	Self- developed
	12. How often do you use the above web-based services?	Self- developed
Quality of the library services	13. How would you rate the quality of the library services?	(Asante & Ngulube, 2020); (Islam et al., 2015).
Facility and performance of the library	14. As a user, what is your perception of the library's facility and performance?	(Rahman & Islam, 2020); (Jemal & Zewdie, 2021)
Explicit Knowledge	15. Do you know what Explicit Knowledge is?	Self- developed
Tacit Knowledge	16. Do you know what Tacit Knowledge is?	Self- developed
Knowledge dissemination	17. How does your library serve the gathered knowledge to the user?	Self- developed
Benefits of KM	18. Do you think that the successful use of knowledge would bring great benefits to the library?	Self- developed Self- developed
KS	19. Do you share knowledge with your friend or classmates? If yes, how?	Self- developed
Familiarity with KM	20. How much are you familiar with KM and its relationship with others?	(Krishnamurthy & Balasubramani, 2013)

		(Baghdadabad, 2008)
Way to familiar with KM	21. How did you become familiar with KM ideas?	(Siddike & Munshi, 2012)
KM relevance	22. What is your perception of KM as regards its relevance to librarianship?	(Sarrafzadeh et al., 2006) (Ahmad, 2017)
KM can meet the requirements of a library	23. Do you think KM can meet the requirements of a library in order to achieve its goals?	Self- developed
KM meets the requirements	24. How can KM meet the requirements of a library in order to achieve its goals?	Self- developed
Aware of KM	25. Are you aware of any KM practice in your library?	Self-developed
KM practice	26. Do you find KM as interesting in library practice?	Self –developed
Advantages of KM for library services	27. Please specify what advantages does KM has for library services?	(Kumar, 2019)
Relevance of KM on Library Practice	28. What relevance does KM has to library practice?	(Oyedokun et al., 2018)
Contribution to the Departments	29. How will you rate the potential contribution to the provision of education for KM by the following departments?	(Koloniari & Fassoulis, 2017)
Critical success factors	30. As an active library user, please mention the critical success factors of KM implementation in the library?	(Paudel, 2019); (Koloniari et al., 2015)

Challenges	31. As an active library user, please indicate the library's challenges for implementing KM.	(Batista & Quandt, 2017); (Islam et al., 2014)

3.9.2 Qualitative Data Collection

For qualitative data collection, non-probability sampling (purposive sampling) was utilized because specific individuals in the population, i.e., the Librarian/Deputy librarian and Assistant librarian of the libraries, were considered key individuals to give more data about how the library works. For this reason, 11 Librarians/Deputy librarians and Assistant librarians were selected from the selected public university libraries in Bangladesh. Bryman (2016) stated that the data's depth is more important than generality for qualitative data collection. So, the sample size is not indispensable for qualitative data collection in this research. The tool employed a self-administered printed questionnaire for a semi-structured interview for this data collection purpose. It is appropriate to address that the present research establishes trustworthiness in the qualitative method because the data collection and findings are credible, transferable, confirmable, and dependable. Researcher uses triangulation to show that the research findings are credible. Interviewees also verified and rechecked their questionnaire and provided signatures before submitting them. Some of the respondents were selected by the head of the library, and they knew they would be responsible for any false information. Also, the methods and findings can be applied to other studies in other contexts because the sample, respondents, techniques, and setting are described in detail in this chapter three. Finally, the research findings are based on interviewees' responses and not any bias of the researcher. The present research also used a semi-structured printed questionnaire for data collection. The English language was used to collect and interpret data, so there was no chance of wrong interpretation. To establish confirmability, the researcher also mentions every step of content analysis in Figure 3.4. These prove that the research study's findings accurately represent interviewees' responses. The feedback from the questionnaire was also checked by expert one.

Finally, it can be said that trustworthiness was ensured in this qualitative data collection and findings section.

3.9.2.1 Semi-structured Interview Questionnaire

The interviews are the core data collection method and were based on a semi-structured interview instrument. There are three methods of interview: a. structured, b. semi-structured and c. unstructured. Semi-structured interviews were employed in this research to explore various influencing factors for implementing KM in public university libraries in Bangladesh. In terms of predefined questions, semi-structured interviews allow the researcher to break free from the constraints of structured interviews.

So, this also helps the wording and order of questions and track any exciting ideas that might unexpectedly appear throughout the interviews (Rubin & Rubin, 2005; Sommer & Sommer, 2002). According to Kendall and Kendall (2011), semi-structured interviews may enable respondents to give more significant, worthwhile, and in-depth answers to the interview questions. This type of interview works well for gathering detailed contextual information in a short amount of time. Taping of interviews is frowned upon by the Glaserian approach, as it allows for fewer incorrect findings due to the researchers' own bias or interpretation (Mvungi & Jay, 2009). So, researchers did not use tape recording for this purpose. Reviewing previously published literature, a comprehensive semi-structured interview questionnaire was developed with some self-developed questions to investigate the issues in the current research area. Therefore, in this approach, a pre-written set of questions were employed to record the answers from the interviewees. The following studies were considered for preparing the semi-structured interview questionnaire (Table 3.12).

Islam et al. (2015) stated that different library professionals at public and private university libraries in Bangladesh know KM from different points of view. However, their basic understanding was almost the same.

Islam et al. (2015b) reported that academic librarians of various countries opined that service innovation is critical to the continuing success of the library and felt that KM would be beneficial for service innovation in their libraries.

Sultana and Mostofa (2018) revealed no section for dealing with KM in the National Library in Bangladesh (NLB).

Nazim and Mukherjee (2013) indicated that by providing training and learning opportunities to the employees for acquiring new knowledge and developing competencies among the employees, defining goals and objectives of the library, KM could be applied in the Indian academic libraries. They also found that reference and information services, policy and decision-making administrative services area are the potential areas of KM applications in the libraries.

Lin et al. (2014) pointed out that IT is crucial to implementing KM in an organization because it helps disseminate organized knowledge.

Martin et al. (2013) stated that LIS professions have been among the pioneers of information technology (IT) exploitation; like others, they have much to do to come to grips with technologies that can address this additional knowledge dimension.

Koloniari and Fassoulis (2017) recognized that KM increases library operational effectiveness and supports service innovation through improved internal and external KS and new knowledge in the library environment of Greek.

Hamid et al. (2007) said that KM in libraries promotes the relationship between libraries, libraries, and users, strengthening knowledge and quickening knowledge flow.

Siddike and Islam (2011) highlighted nine critical success factors that are highly important for fostering KM in libraries in Bangladesh, including staff, KM administration structure, KM strategy, IT, organizational culture, etc.

Sarawanawong et al. (2009) identified nine critical success factors (organizational culture, IT, staff, organizational administration. KM administration structure, administrators, KM process. KM measure. KM strategy) for using KM in libraries for Khon Kaen University in Thai.

Suni (2016) identified several cultural barriers in the academic library in Malaysia, such as lack of motivation, willingness to share knowledge, lack of trust, etc.

Shathi (2019) found that a lack of awareness of KM is the major challenge in the libraries in the Chittagong division in Bangladesh.

Mostofa and Islam (2015) identified that limited expertise and lack of clear guidelines are the two significant challenges in implementing KM in the DU library.

Lastly, the printed copy of the semi-structured interview questions was provided to the Librarians/Deputy librarians and Assistant librarians of the five public university libraries in Bangladesh. The content and sequence of the interview were somewhat fixed based on the research objectives and questions. A concise description of the research, the researcher, and the estimated period was placed on top of the semi-structured interview questionnaire. The semi-structured interview questions were standardized (written in the English language) format from generic to specific and logically flowed into each other (Appendix B). The questions differ from open-ended to close-ended in format. The first section of the interview questionnaire was designed to bring about common information of the interviewees "(name, age, gender, years of service in the position, academic qualification)" and general information about their university (name of the university, the total number of employees in the library and yes/no questions).

A semi-structured questionnaire was divided into several sections. The main sections were as follows, which consist of additional and further precise sub-questions; Section A: Demographic information, Section B: General information about the institution, Section C: Overall KM issues and status, Section D: General questions on information, knowledge, and KS, Section E: KM policy and implementation in the library, Section F: KM adoption in the library, Section G: Library customer service/user care, and Section H: Critical success factors and challenges of KM. A list of the semi-structured interview items and their sources were also shown in Table 3.12.

Table 3.12 Factors of Interest and Sources of Semi-Structured Interview Items

Factors of Interest	Item no. with interview questions	Source
Demographic profile of the interviewees	a. Name of the interviewees b. Age c. Gender d. Years of service in the present position e. Total service experience f. The highest academic level achieved	Self-developed
(Profile of the library)	g-p (Profile of the library)	
	g. Name of the library	
	h. Year of establishment	Self-developed
	i. Address of the library [including admin staff?]	
	j. Parent organization	
	k. The total number of library employees	
	l. The total number of active library users in the library	Self-developed
	m. In the last two years, have any changes in your library staff numbers?	
	n. Would you please state the reasons for the changing the staff?	
	o. Would you please indicate what the operation of your library is?	
	p. Internet facilities are available for all staff to look up any records in the library	
	q. Your university library is fully wi-fi networked	

Understanding KM	1. Would you please specify your understanding of KM?	(Islam et al., 2015)
KM department	2. Does your university have a separate KM department/discipline?	Self-developed
Need KM department	3. Is there a need to have a separate KM Department?	Self-developed
Practicing KM	4. Would you please mention whether your library is practicing KM? If yes, how does your library practice KM?	Self-developed
KM implementation	5. Do you plan to implement KM at your library in the near future? If yes, how would you plan to implement it?	Self-developed
Output of KM	6. Please mention how KM can play to achieve the best output of your library?	(Islam et al., 2015b)
Section of KM	7. Please specify do you have a different section/division that deals with KM in the library?	(Sultana & Mostofa, 2018)
Human resources	8. If yes, what is the total number of human resources assigned on KM in your library? If not, please ignore	Self-developed
Budget for KM	9. Do you have any budget allocated for KM initiatives at the library?	Self-developed
Knowledge managed	10. Would you please indicate how knowledge is handled in the library/section in day-to-day duties?	Self-developed
Employee's liberty	11. Does the employees have the liberty to visit and access information in the different section of the library?	Self-developed
Information retrieval	12. Would you please mention how the information is retrieved when needed in the library?	Self-developed

Knowledge gathers	13. Please specify what type of knowledge you gather most?	Self- developed
Apparatuses	14. Please mention what are the apparatuses your library uses for gathering explicit knowledge?	Self-developed
Recording tacit knowledge	15. Please state how you record tacit knowledge?	Self-developed
Knowledge preserve	16. Please mention which knowledge is most difficult to preserve?	Self-developed
Knowledge sharing	17. Has knowledge sharing (KS) provided any benefits for library users and solved a problem?	Self- developed
Information sharing benefits	18. How can teamwork and information sharing be improved among professionals?	Self- developed
KM application	19. How is KM applied to university libraries?	(Nazim & Mukherjee, 2013);
KM strategy	20. If you want to implement KM in your organization, what will your strategy be?	Self-developed
KM policy	21. Is there a written KM policy in your library?	Self-developed
Potential area	22. Please mention the potential area of KM applications in university libraries.	(Nazim & Mukherjee, 2013)
Ready to adopt KM	23. Is your library ready to adopt appropriate KM practices to enhance library performance?	Self-developed
Discussions/meetings	24. Would you please mention that discussions/meetings are conducted around new concepts and ideas in your library?	Self-developed

KM and ICT	25. Do you think that ICT should be the starting point for a KM plan?	(Lin et al., 2014)
Invest on ICT	26. Do you consider that in order to achieve KM strategy success, organizations should invest heavily in ICT?	(Martin et al., 2013)
ICT infrastructures	27. Present ICT infrastructures are adequate to provide web-based KM library services?	Self-developed
Users' needs	28. Does your library always concentrate on ways to meet the needs of users?	Self-developed
New ideas/services	29. Is your library often fast to come up with new ideas/services for users of the library?	Self-developed
Assess the satisfaction of users/readers?	30. Does your library assess the satisfaction of users/readers?	Self-developed
Method of service delivery	31. Do you have an outstanding method of service delivery (i.e., automatic circulation, interlibrary borrowing, reference online, etc.)?	Self-developed
Manpower	32. Do you think your present manpower is adequate for providing KM services in your library?	Self-developed
KM practices	33. Do you think that KM practices in the library (knowledge acquisition, sharing, utilization, and dissemination) help improve library performance?	(Koloniari & Fassoulis, 2017); (Hamid et al., 2007)
Spend on KM initiatives	34. In your opinion, should a library spend on KM initiatives? Please explain in brief.	Self-developed

Critical success factors	35. What are the critical success factors for implementing KM?	(Siddike & Islam, 2011); (Sarawanawong et al., 2009)
Cultural challenges	36. What cultural challenges exist for KM in your library?	(Suni, 2016)
Major challenges	37. Please mention what are the major challenges of implementing KM in the library?	(Shathi, 2019); (Mostofa & Islam, 2015)

3.10 DATA ANALYSIS AND PRESENTATION

Finally, the collected data from various sources were analyzed through IBM®SPSS® Statistics, SmartPLS-SEM, and content analysis.

3.10.1 Quantitative Data Analysis

Quantitative data from various sources were analyzed through IBM®SPSS® Statistics. First, the datasheet was cleaned and organized. Finally, the data were imported into IBM®SPSS® for final analysis. Due to the nature of the research, descriptive and inferential statistics were used. With cross-tabulation of responses, descriptive metrics such as frequency counts, percentages, mean, and standard deviation (SD) were derived first. To see the differences among age and gender in terms of KM familiarity, non-parametric "Mann–Whitney U" and "Kruskal–Wallis" tests were carried out, and a p-value of <0.05 was considered significant. The Mann-Whitney U test is used to test whether two samples are likely to derive from the same population (i.e., the two populations have the same shape). Usually, the Mann-Whitney U test is used when the data is ordinal or when the assumptions of the t-test are not met. A non-parametric alternative to the One-Way ANOVA is the Kruskal Wallis test. "Non-parametric" refers to a test that does not presume the data comes from a specific distribution. This test is

utilized when the assumptions for ANOVA are not met (such as the assumption of normality). It is also known as the one-way ANOVA on ranks because the test uses the ranks of the data values rather than the actual data points. A Kruskal-Wallis H test is typically used for three or more categorical, independent groups.

The hypotheses were tested with SmartPLS 3. "SmartPLS is software with a graphical user interface for variance-based structural equation modeling (SEM) using the partial least squares (PLS) path modeling method" (Hair et al., 2022). In addition, the data is analyzed using PLS and SEM techniques. Partial least squares structural equation modeling (PLS-SEM), also known as PLS Path Modeling, is one of the most widely used multivariate data analysis methods among business and social science scholars (Memon et al., 2021). SEM allows researchers to assess the overall fit and test the structural model (Gefen et al., 2000). SEM evaluates the hypothesized structural linkages among constructs and the linkages between a construct and its respective measures. Finally, the results are interpreted and documented.

3.10.2 Qualitative Data Analysis

There are several methods for analyzing qualitative data. Qualitative data that was collected through semi-structured interviews and documents from the library was analyzed using content analysis. For this research, content analysis was chosen because it is well-suited to be combined with other research techniques. It is also easy to use in research. Different observations among heads of the library also showed the categorization using the table. The following steps were followed to do content analysis (Figure 3.4).

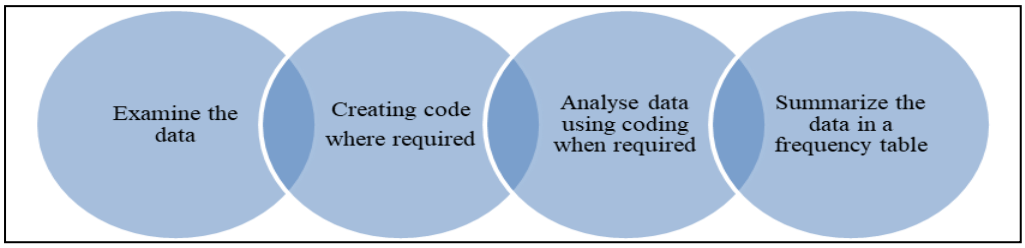


Figure 3.4 Steps of Content Analysis

3.10.3 Triangulation

The technique of land surveyors sketching a triangle to assess the accurateness of a distance measured between objects inspired the idea of triangulation in research (Baghdadabad, 2008). Triangulation is a research strategy that combines information from several sources in order to build a thorough grasp of a research problem or evaluate its validity (Carter et al., 2014). Broadly, triangulation is defined as using quantitative and qualitative methods to study the same phenomenon. Quantitative and qualitative findings can be triangulated in triangulation. Triangulation leads to a well-validated result and enhances the credibility of the research achieve from single-method research. In this research, the triangulation approach was used to concurrently show some convergent areas by collecting quantitative and qualitative data and combining the data to know the answer to the research questions.

3.11 SECONDARY DATA COLLECTION

The secondary data sources are defined as the sources of data collected from past literature, journal, and articles. The researcher has collected the data from the universities' annual reports in this research. So, document analysis was done in this research. This data from the annual reports was discussed in-detailed and presented in chapter four of this research.

3.12 MAPPING OF THE RESEARCH QUESTIONS TO RESEARCH DESIGN AND THE CHAPTER WHERE THE RESULT IS REPORTED

Table 3.13 shows the mapping of the research questions to research design and the chapter where the result is reported.

Table 3.13 Mapping of the Research Questions to Research Design

Research Questions	**Research Hypothesis**	**Research Design**			**Results**
		Data collection	**Instrument**	**Data analysis**	
The main research question was: How can the KM model create service-based value for public university libraries in Bangladesh?	H1: The quality of the library services has a significant relationship with KM practice H2: Facility and performance have an impact on KM practice. H4: KM familiarity issues have a significant relationship with KM practice. H7: Department contribution has a significant direct relationship for implementing KM. H8:KM relevance to librarianship has a significant direct relationship with implementing KM.	The survey, interview, and systematic literature review	Printed survey and Semi-structured interview questionnaire	Descriptive and inferential statistics using SPSS; SEM and Content analysis	Chapters four and five
RQ1a: What are the existing models of KM implemented by the university libraries? RQ1b: To what extent is the KM model being implemented at university libraries as reported in previous research works? RQ1c: How were the existing models of KM implemented at university libraries?		Systematic literature review		Narrative description	Chapter two

RQ2a: How did the public university libraries in Bangladesh adopt the KM practices?		Interview	Printed semi-structured interview questionnaire	Content analysis	Chapters four and five
RQ2b: To what extent users' demographics are associated with users' characteristics, awareness, and KM familiarity issues?		Survey	Printed survey and Semi-structured interview questionnaire	Descriptive and inferential statistics using SPSS, SEM	Chapters four and five
RQ2c: To what extent is KM practiced in public university libraries in Bangladesh?	H6: KM practices have a significant relationship with implementing KM.		Printed survey questionnaire	Descriptive and inferential statistics using SPSS, SEM	Chapters four and five
RQ3a: What are the critical success factors for implementing a KM in public university libraries?	H3: Significant relationship exists between critical success factors with KM practice.	Survey and interview	Printed survey and Semi-structured interview questionnaire	Descriptive and inferential statistics using SPSS, SEM and Content analysis	Chapters four and five
RQ3b: Is the present manpower adequate for providing KM services?		Interview	Printed Semi-structured interview questionnaire	Content analysis	Chapters four and five
RQ4a: What are the challenges related to KM practice at the public university libraries in Bangladesh?	H5: Significant relationship between challenges faced by the library with KM practice.	Survey and interview	Printed survey and Semi-structured interview questionnaire	Descriptive and inferential statistics using SPSS, SEM and Content analysis	Chapters four and five
RQ4b: How would the KM practices be adopted in the future as planned by the public university libraries in Bangladesh?		Interview	Printed Semi-structured interview questionnaire	Content analysis	Chapters four and five

3.13 ETHICAL CONSIDERATIONS

Before collecting data, the researcher sought permission from the supervisors. Approval from the appropriate head/administrator of public university libraries was requested to collect data from those libraries in Bangladesh. When participating in research, participants should be safeguarded against any danger or abuse, such as mental, intellectual, or physical abuse (Saunders et al., 2016). So, moral consent was also accomplished by using a standardized informed consent declaration which was included in the questionnaire. Therefore, the moralities of secrecy of information given by the respondents were rigorously confidential. No participant was compelled to contribute data and information against their will. In addition, participants were given a detailed explanation of the research's major goal. The questionnaire required the respondents to read to participate in the data collection before filling out the questionnaire. Once the quantitative data were collected, data were transferred into IBM®SPSS® statistics for analysis. Qualitative data was analyzed using content analysis. Both data were kept until the end of this research. Furthermore, the study's sources were properly cited and referenced.

3.14 CHAPTER SUMMARY

The present chapter describes the methodology used and how the research was done. This chapter starts by describing the research method and design. A mixed-method strategy has been applied in this research. After that, it described the research setting, which was composed of five public universities scattered all over Bangladesh. Population and sampling procedures and data-gathering techniques were described in this chapter. The present study generated data from 811 active library users of the library using questionnaires and a semi-structured interview with 11 Librarians/Deputy librarians/Assistant librarians of the selected five public university libraries in Bangladesh. The data collection procedure involved obtaining approvals from the universities, and then a printed survey and semi-structured questionnaire were sent to the participants. The chapter concluded with a discussion on the presentation of data analysis methods and addressing ethical considerations. So, this chapter was presented

and reflected to understand how the study was conducted. The findings of the data analysis are shown in the next chapter.

CHAPTER FOUR

DATA ANALYSIS

4.1 INTRODUCTION

This chapter discusses the themes of the research questions, key variables derived from the research questions (Tables 3.11 and 3.12 in chapter three), explored hypotheses, and challenges related to the research topic. The primary purpose of the research was to propose a KM model for creating service-based value for public university libraries in Bangladesh. The study questions answered are as follows:

The main research question was: How can the KM model create service-based value for public university libraries in Bangladesh?

RQ1a: What are the existing models of KM implemented by university libraries?

RQ1b: To what extent is the KM model being implemented at university libraries as reported in previous research works?

RQ1c: How were the existing models of KM implemented at university libraries?

RQ2a: How did the public university libraries in Bangladesh adopt the KM practices?

RQ2b: To what extent users' demographics are associated with users' characteristics, awareness, and KM familiarity issues?

RQ2c: To what extent is KM practiced in public university libraries in Bangladesh?

RQ3a: What are the critical success factors for implementing a KM in public university libraries?

RQ3b: Is the present manpower adequate for providing KM services?

RQ4a: What are the challenges related to KM prac¬tice in public university libraries in Bangladesh?

RQ4b: How would the KM practices be adopted in the future as planned by the public university libraries in Bangladesh?

This chapter presents the results of analyzing the data from survey questionnaires and semi-structured interviews using the data analysis procedures discussed in chapter three (Table 3.13). According to Creswell (2014), quantitative data analysis can be done separately from qualitative data by the researcher in explanatory and exploratory designs. The qualitative data analysis is segregated from the quantitative data analysis in this research. Finally, quantitative results are first presented, followed by qualitative results in tables and narratives. In this research, quantitative data was collected from the active users of the library, and qualitative data were collected from the Librarians/Deputy librarians and Assistant librarians of the library. Quantitative data were analyzed first using IBM®SPSS® statistics. Data analysis was presented in two parts. The first part of the data analysis introduced descriptive and inferential statistical analysis.

Last part of the quantitative data analysis, the researcher used the partial least squares (PLS) method to analyze the proposed research model and justify using this model. Eight research hypotheses were tested (Table 4.46) by SmartPLS path coefficient applying to bootstrap. PLS path modeling is widely used in management research and virtually all social sciences disciplines (Henseler et al., 2014). Present research estimated structural and measurement models using Smart PLS 3 software (Ringle et al., 2015). Five university library was studied for collecting quantitative and qualitative data; Central Library of University of Dhaka (DUCL), Central Library of University of Rajshahi (RUCL), Central Library of Bangladesh University of Engineering and Technology (BUETCL), Central Library of Sylhet Agricultural University (SAUCL) and Central Library of Jashore University of Science and Technology (JUSTCL). Researchers personally visited those libraries to collect quantitative and qualitative data. The findings presented in this chapter are preceded by response rates, the profile of the libraries, user demographics, and their characteristics of library visits and using the library services.

4.2 RESPONSE RATE FROM FIVE PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH

A total of 1,060 questionnaires were distributed among undergraduate (1st-year to 4th-year honors) and postgraduate (master) students of various departments in the five public university libraries in Bangladesh. The selected universities were the University of Dhaka (DU), University of Rajshahi (RU), Bangladesh University of Engineering and Technology (BUET), Jashore University of Science and Technology (JUST), and Sylhet Agricultural University (SAU). Questionnaires were distributed based on Krejcie and Morgan's (1970) sample size distribution recommendations, presented in the research methodology chapter (Table 3.4). Out of 1,060 distributed questionnaires, 811 usable questionnaires were returned, giving a response of 76.5%, as shown in Table 4.1. Five universities conducted the questionnaire survey. The questionnaire survey was conducted from October 17, 2021, to November 20, 2021, at DU, RU, and JUST. From November 20, 2021, to December 7, 2021, data were collected from the SAU and BUET. Babbie and Mouton (2001), cited in Jumoke (2018), highlighted that: the "Overall rate of response is a guide to the representativeness of the sample of respondents. If a high response rate is achieved, there is less chance of significant response bias than a low-rate response." A response rate of "50 percent is suitable," "60 percent as good," and "70 percent and above as very good" for analysis and reporting of the findings." Therefore, based on these criteria, this study's response rate (76.5%) fell into the very good category (Table 4.1).

Table 4.1 shows that the BUET and JUST response rates among five universities are comparatively lower than the other three universities. The reason behind that the university authority opened the residential hall for the students lately after the covid-19 restrictions and students were busy with their exams. Some returned the incomplete questionnaire and some of the linear responses on the Likert scale questions. However, the response rate of these two universities falls in the good category, according to Babbie and Mouton (2001).

Table 4.1 Response Rate from the Universities

Sl. No.	Name of the University	No. of questionnaires distributed	No. of usable questionnaires returned	Response rate
1.	DU	330	288	87.2%
2.	RU	270	211	78.1%
3.	BUET	190	116	61.0%
4.	JUST	160	100	62%
5.	SAU	110	96	87%
	Total	1,060	811	76.5%

4.3 PROFILE OF THE LIBRARIES

The respondents in the study were drawn from the five selected public university libraries in Bangladesh. Table 4.2 shows the basic information about these libraries. DUCL was the oldest library, established in 1921, and SAUCL, established in 2007, is the youngest library among the five. Among the universities, DU and RU are in the 'general' category, offering a wide range of subjects. BUET is an 'engineering university,' JUST is 'science and technology,' and SAU is in the 'agricultural category.' The table also reported that the highest numbers of employees are working in DUCL (202), followed by RUCL (98), BUETCL (39), JUSTCL (16), and SAUCL (8).

Table 4.2 Profile of the Libraries (Source: Interview questionnaires)

Parent Organization	Name of the Library	Address in Bangladesh	Year of Established	Total Employees including Admin Staff	Subject Area
DU	DUCL	Shahbagh, Dhaka	1921	202	General
RU	RUCL	Rajshahi	1955	98	General
BUET	BUETCL	BUET Central Road, Dhaka	1962	39	Engineering
JUST	JUSTCL	Jessore	2007	16	Science and Technology
SAU	SAUCL	Sylhet	2006	08	Agriculture

4.4 QUANTITATIVE FINDINGS

This section presents the data collected through questionnaires from the active users of the DUCL, RUCL, BUETCL, SAUCL, and JUSTCL. Quantitative data was arranged according to the questions asked to the library's active users based on the research questions and variables stated in chapter three, Table 3.10. As stated earlier, descriptive and inferential statistical analysis was presented first. Then, the partial least squares (PLS) method was used to analyze the proposed hypothesized research model.

4.5 DESCRIPTIVE STATISTICS

Descriptive statistics, as a method of data analysis, presents and summarizes data to become meaningful for the study (Creswell, 2014). It describes the data through measures of central tendency, such as means, median, and modes, while the measures

of dispersion as standard deviation and variance are used (Algahtani, 2019). First, the demographic data collected from the survey questionnaire were analyzed to understand the research context better.

4.5.1 Variables, Coding, and Items of the Final Questionnaire

To ensure the validity of the research, the measurement items and variables were developed. The variables, coding, and items are listed in Table 4.3.

Table 4.3Variables, Coding, and Items of the Final Questionnaire

Variables	Coding and Items Statements
Quality of the Library Services (QLS)	QLS1 - The membership process to this library is easy
	QLS2 - Service of the library is very good
	QLS3 - Staff are actively involved in better service of the library
Perception about the Facility and Performance of the Library (PFPL)	PFPL1-There is a long waiting time in front of the reference desk
	PFPL2-The operating times of the library are convenient to the users
	PFPL3-The staff knows about the latest technological developments
	PFPL4-Some of the staff's lack of experience
	PFPL5-Staffs are polite to users
	PFPL6-Library staff encourages users to effectively use library websites for research purposes
	FKM1-Your familiarity with KM
	FKM2-Relationship between KM familiarity issue and service value

Familiar with KM (FKM)	FKM3-Relationship between KM familiarity issue and critical success factors
	FKM4-Library needs to be conscious of critical success factors that will influence the implementation of KM?
Familiar with KM Ideas (FKMI)	FKMI1- Educational courses by different institutions
	FKMI2-Expert bodies' activities
	FKMI3-Independent study, via academic/ research literature
	FKMI4-Courses provided by my own department
KM Relevance to Librarianship (KMRL)	KMRL1-KM is a new perception for the LIS field
	KMRL2-It is an alternate name for information management
	KMRL3-KM is a modern librarianship discipline
	KMRL4-It is a contradictory idea dissimilar from librarianship
	KMRL5-KM is a management craze that has gained attention for a short span of time
	KMRL6-It is an allied field of study which tends to extend the librarianship scope
Advantages of implementing KM for Library Services (AKML)	AKML1-KM practice will add value to the output of the library and the service area
	AKML2-The chances of duplication of work can be minimized by KM
	AKML3-University libraries can be made more applicable to their affiliated universities by KM
	AKML4-KM will help turn a university library into an organization for learning factors for implementing KM with familiarity with KM
	AKML5-KM can boost the overall performance and future prospects of the library
	AKML6-KM helps to get innovative organizational ideas

Relevance of KM on Library Practice (RKMLP)	RKMLP1-An important ingredient of KM is the expertise of LIS specialists in librarianship
	RKMLP2-Activities in a library's readers' service section, such as distribution of books, reference services, etc., are synonymous with sharing KM awareness
	RKMLP3-KM helps in enhanced productivity or service quality
Contribution to the KM by Departments	CED1-Department of Information Science and Library Management
	CED2-Department of Organization Strategy and Leadership
	CED3-Department of Computer Science and Engineering
	CED4-Department of Management Information Systems
Critical Success Factors (CSF)	CSF1- Leadership
	CSF2-Continuous training programs
	CSF3- Utilizing Technology Accurately
	CSF4- Organizational ICT structure
	CSF5- Organizational culture
	CSF6- Knowledge storing and knowledge capturing
	CSF7- Respecting user's demand
	CSF8- Establishing a solid infrastructure for future development
Challenges for Implementing KM(CIKM)	CIKM1- Unwillingness to explore the difficulties associated with KM.
	CIKM2- Problems with organizational culture
	CIKM3- Inadequate support from management
	CIKM4- Feeling shies in nature of the employee to share knowledge
	CIKM5- Don't find the KM process as interesting

	CIKM6- Improper technology deployment
	CIKM7- Losing information from an employee's resignation and retirement
	CIKM8- Lack of awareness

4.5.2 Demographic Profile of the Respondents (N=811)

A total of 811 active library users participated in this study from the five selected public university libraries in Bangladesh. Among the respondents, 546 (67.3%) were male, and 265 (32.7%) were female. Table 4.4 shows that the proportion of male students was higher than female students in the selected public university libraries in Bangladesh. According to UGC's (2019) 46th annual report, male students (5,07,928) represented the largest number than female students (3,09,779) in the 46 public universities in Bangladesh. The data in the table also show that more than half of the respondents, 423 (52.2%), were from the 22-25 age group. Less than half of the respondents, 365 (45%), were 18-21 years old. The remaining 23 (2.8%) were from 26-29 years old.

The educational status of the respondents in Table 4.4 revealed that among the 811 participants, 208 (25.6%) were 1st-year students (undergraduate), 268 (33%) 2nd-year (undergraduate), 156 (19.2%) were 3rd-year (undergraduate), 110 (13.6%) were 4th-year (undergraduate) students. The remaining 69 (8.5%) respondents were master's students (postgraduate). The current study level distribution shows that most respondents were undergraduate 2nd-year students.

Table 4.4 Demographic Profile of the Respondent

Demographic	Frequency (N=811)	Percentage (%)
Gender		
Male	546	67.3
Female	265	32.7
Age group		
18-21 years	365	45.0
22-25 years	423	52.2
26-29 years	23	2.8
Current Study level		
Undergraduate		
1st- year	208	25.6
2nd- year	268	33.0
3rd- year	156	19.2
4th- year	110	13.6
Postgraduate	69	8.5
Total	811	100

4.5.3 Characteristics of the Users Regarding Library Visit

It is essential to know how frequently users visit the library. In this part of the survey questionnaire (Section B, questions 7, 8, and 9; Appendix A), the users were asked, "Why do you visit the library?" "How frequently do you use your library?" and "How many years have you been using the library?" Most of the respondents replied that they visited the library for "reading books" (n=652; 80.4%), followed by "recreation" (n=66; 8.1%), "research purpose" (n=38; 4.7%), and "searching periodicals" (n=33; 4.1%). At the same time, (n=22; 2.7%) respondents said they visited the library to use "IT facilities" (Table 4.5).

Table 4.5 also revealed that most of the students, 377 (46.5%), used the library "every day," followed by "twice a week" 189 (23.3%). 184 (22.7%) students used the

library “every week.” The remaining 61 (7.5 %) used the library “sometimes.” From the table below, it is apparent that out of 811 respondents, most of them, i.e., 694 (85.6%) are using the library for “1-5 years”, followed by 93 (11.5%) “6-10 years”. 13 (1.6%) users have used the library for “11-15 years”. The remaining 11 (1.4%) use the library for “less than one year.”

Table 4.5 Characteristics of the Users Regarding Library Visits

Students’ library visit	Frequency (N=811)	Percentage (%)
Why do you visit the library		
Reading books	652	80.4
Searching periodicals	33	4.1
Using IT facilities	22	2.7
Research purpose	38	4.7
Recreation	66	8.1
How frequently do you use your library?		
Everyday	377	46.5
Twice a week	189	23.3
Every week	184	22.7
Sometimes	61	7.5
How many years have you been using the library?		
1 - 5 Years	694	85.6
6 - 10 Years	93	11.5
11 - 15 Years	13	1.6
Less than one Year	11	1.4
Total	811	100

Cross-tabulation of How Frequently Use Your Library and Why Visit the Library?

Table 4.5.1 shows that the respondents who go to the library every day go for reading books in the library (n=310), followed by recreation (n=40), searching periodicals, and research purposes (n=11). Among them, only (n=5) participants go for using IT facilities. Most users who go to the library twice a week also use the library to read books. Only (n=15) of them go for research purposes, followed by recreation (n=12), using IT facilities (n=8), and searching periodicals (n=7). The table also reveals who goes to the library every week; many go for reading books (n=148). Among the remaining users goes for searching periodicals (n=11), recreation (n=10), research purposes (n=8), and using IT facilities (n=7). The participants who use the library sometimes go to the library for reading intentions (n=47).

Table 4.6 Cross-tabulation of How Frequently Use and Why Visit the Library?

How frequently do you use your library?	Why do you visit the library?					Total
	Reading Books	Searching Periodicals	Using IT facilities	Research Purpose	Recreation	
Everyday	310(82.2%)	11(2.9%)	5(1.3%)	11(2.9%)	40(10.6%)	377
Twice a week	147(77.8%)	7(3.7%)	8(4.2%)	15(7.9%)	12(6.3%)	189
Every week	148(80.4%)	11(5.9%)	7(3.8%)	8(4.3%)	10(5.4%)	184
Sometimes	47(77.1%)	4(6.5%)	2(3.4%)	4(6.5%)	4(6.5%)	61
Total	652	33	22	38	66	811

Cross-tabulation of Current Study Level and How Many Years Use the Library?

Among the 1st-year students' the majority of them (n=173) have 1-5 years of experience in using the library, followed by (n=18), (n=9), and (n= 8) have 6-10 years, less than one year, and 11-15 years experience of using the library. Among the 2nd-year students, many (n=227) have 1-5 years of experience using the library, followed by 38 of them who have experience of 6-10 years. Only three of them have experience of 11-15 years of using the library. The cross-tabulation also shows that most of the 3rd- year students (n=15) have experience of 1-5 years, followed by (n=15) of them have experience of 6-10 years. Most 4th-year students also have 1-5 years of experience using the library. Among the master's students, many also have 1-5 years of experience using the library.

Table 4.7 Cross-tabulation of Current Study Level and Years of Using the Library

Current study level	How many years have you been using the library?				Total
	1-5 years	6-10 years	11-15 years	Less than one year	
Undergraduate (1st)	173(83.3%)	18(8.6%)	8(3.8%)	9(4.3%)	208
Undergraduate (2nd)	227(84.7%)	38(14.2%)	3(1.1%)	0(0%)	268
Undergraduate (3rd)	140(89.8%)	15(9.6%)	0(0%)	1(0.6%)	156
Undergraduate (4th)	103(93.7%)	5(4.5%)	1(0.9%)	1(0.9%)	110
Masters	51(73.9%)	17(24.7%)	1(1.4%)	0(0%)	69
Total	694	93	13	11	811

4.5.4 Characteristics of the Users Regarding Web-based Library Services

The development and application of emerging technology have changed conventional library and information (LIS) services. The expectation levels of users have also changed considerably. Nowadays, users can easily access the library's required information and resources. In this part of the survey questionnaire (Section B, question number 10, 11, and 12; Appendix A), the active library users were asked, "Have you used the web-based services of the library?" (Table 4.6). In questions 11 and 12, they were asked, "How long have you been using the library's web-based services" and "Which web-based library services do you use most?" (Table 4.7). Among the 811 respondents, 468 (57.7%) replied positively that they used the library's web-based services. The remaining 343 (42.3%) reacted negatively. It means they are not using the web-based library services provided by the library.

Table 4.8 Have You Used the Web-based Library Services?

Have you used the web-based services of the library?	Frequency (N=811)	Percentage (%)
Yes	468	57.7
No	343	42.3
Total	811	100

Table 4.7 indicated that most users used ask-a-librarian services 111 (13.7%). At the same time, 93 (11.5%) used Web OPAC services. Digital reference services are used by 91 (11.2%), followed by online document delivery 63 (7.8%), bulletin board services 41 (5.1%), online full-text databases 28 (3.5%), reference databases 26 (3.2%), interlibrary loan services 13 (1.6%). Only 2 (.2%) used library genesis services. The users were asked, "How often do you use the above web-based services?" Table 4.7 found that the maximum number of students who used web-based services rarely was 232 (28.6%), followed by sometimes 142 (17.5%), usually 73 (9%). Only 21 (2.6%)

always used web-based services. The table also showed that 343 (42.3%) did not use the web-based services as they replied negatively to question 10.

Table 4.9 Usage of Web-based Library Services by the Respondents

Which of the web-based library services do you use most? (n=468)	Frequency (N=811)	%
Web OPAC	93	11.5
Bulletin Board Services	41	5.1
Ask- a- Librarian Services	111	13.7
Digital Reference Services	91	11.2
Online Document Delivery	63	7.8
Interlibrary Loan Services	13	1.6
Online Full-text Databases	28	3.5
Reference Databases	26	3.2
Library Genesis	2	.2
Used total	468	57.7
Not used	343	42.3
How often do you use the above web-based services? (n=468)		
Rarely	232	28.6
Sometime	142	17.5
Usually	73	9.0
Always	21	2.6
Used total	468	57.7
Not used total	343	42.3
Total	811	100.0

Cross-tabulation of Characteristics of the User's Regarding Web-based Library Services

A Cross-tabulation of web-based services in the library used by the users presented in Table 4.7.1 shows that male students (n=339) used the web-based library services more than female students (n=129). Similarly, a Cross-tabulation of which web-based services were used by the users in the library presented in the following table shows that most of the male users used the Digital Reference Services (n=78), followed by ask-a-Librarian service (n=65), Web OPAC (n=64), online document delivery (n=47), bulletin board services (n=31), online full-text databases (n=22), reference databases (n=20). Only two of them use Library genis. Most of the female students used ask- a-librarian services (n=46), Web OPAC (n=29), online document delivery (n=16), digital reference services (n=13), bulletin board services (n=10), online full-text databases and reference databases (n=6). Only three of them used interlibrary loan services.

A cross-tabulation of how often users use the above web-based services presented in the following table shows that most male and female students used the web-based services rarely (Male, n=167; Female, n=65). The second-largest number of students used sometimes (Male, n=103; Female, n=39), followed by usually (Male, n=55; Female, n=18). The remaining users (Male, n=14; Female, n=7) used web-based services.

Table 4.10 Cross-tabulation of the User's Regarding Web-based Library Services

Have you used the web-based services of the library?	Gender		Total
	Male	Female	
Yes	339(72.4%)	129(27.6.%)	468
No	207(60.3%)	136(39.7%)	343
Total	546	265	811
If yes, which web-based library services do you use most? (N=468)	Gender		Total
	Male	Female	
Web OPAC	64(68.8%)	29(31.2%)	93

Bulletin Board Services	31(75.6%)	10(24.4%)	41
Ask- a- Librarian Services	65(58.6%)	46(41.4%)	111
Digital Reference Services	78(85.7%)	13(14.3%)	91
Online Document Delivery	47(74.6%)	16(25.4%)	63
Interlibrary Loan Services	10(76.9%)	3(23.1%)	13
Online Full-text Databases	22(78.6%)	6(21.4%)	28
Reference Databases	20(76.9.%)	6(23.1%)	26
Library Genesis	2(100%)	0(0%)	2
Total	339	129	468
If yes, how often do you use the above web-based services? (N=468)	Gender		Total
	Male	Female	
Rarely	167(71.9%)	65(28.1%)	232
Sometime	103(72.5%)	39(27.5%)	142
Usually	55(75.3%)	18(24.7%)	73
Always	14(66.6%)	7(33.4%)	21
Total	339	129	468

4.5.5 Quality of the Library Services

The respondents were asked how they rate the quality of the library services rendered by the library (Section C, question 13; Appendix A). Table 4.8 shows the survey questionnaire results from the active library users of the public university libraries in Bangladesh. On a 1-5-point Likert scale, respondents were given a list of three possible statements to rate. This scale is considered an interval scale. It's also worth noting that the responses' Mean and Standard Deviations (SD) were determined using the following scores: "1= Strongly disagree, 2=Disagree, 3=Neither agree nor disagree, 4=Agree, 5= Strongly agree". According to Pimentel (2010), from "1.00-1.80, it means strongly disagree (very negative); 1.81-2.60, disagree (negative); 2.61-3.40, neither agree nor disagree (moderate); 3.41-4.20, agree (positive) and 4.21-5.00, it means strongly agree (very positive)". Each of the statements demonstrates good reliability and validity. The survey respondents affirmed the highest mean score of 3.14 and the lowest mean score

of 2.97. The details of the statements for the descriptive statistics are given below in Table 4.8.

For the first statement, “The membership process to this library is easy,” the table below shows that 256 (31.6%) of the users agreed, and 111 (13.7%) strongly agreed with the statement. Among the users, 189 (23.3%) strongly disagreed, and 125 (15.4%) disagreed with the statements. At the same time, 130 (16%) of them replied neither agreeing nor disagreeing. The mean score is 2.97 (SD=1.397) for the first statement. It means that most library users moderately consent regarding the first statement.

For the statement “Service of the library is very good” was the second statement for the users to give their opinion. The table shows that 257 (31.7%) of the users agreed and 113 (13.9%) strongly agreed that the library's service is very good. At the same time, 176 (21.7%) replied neither agreeing nor disagreeing. 160 (19.7%) disagreed, and 105 (12.9%) strongly disagreed with the statement among the library users. The mean of the second statement is 3.14 (SD=1.254). It means that many library users are moderate regarding the second statement. Finally, it can be said that users have a reasonable level of satisfaction with the library's service.

For the last statement, “Staffs are actively involved in better library service.” Among the active users of the library, 259 (31.9%) agreed, and 104 (12.8%) strongly agreed with the statement. 207 (25.5%) of them replied neither agree nor disagree. 129 (15.9%) disagreed, and 112 (13.8%) strongly disagreed with the statement that staff is not actively involved in better library service. The mean score of the last statement is 3.14 (SD=1.235). It means that most library users are moderate regarding the last statement. So, it means that users are optimistic about the staff’s involvement in providing better service to the users.

Table 4.11 Quality of the Library Services (N=811)

Statements	1	2	3	4	5	Mean (SD)
The membership process to this library is easy.	189 (23.3%)	125 (15.4%)	130 (16%)	256 (31.6%)	111 (13.7%)	2.97 (1.397)
The service of the library is very good.	105 (12.9%)	160 (19.7%)	176 (21.7%)	257 (31.7%)	113 (13.9%)	3.14 (1.254)
Staff is actively involved in the better service of the library.	112 (13.8%)	129 (15.9%)	207 (25.5%)	259 (31.9%)	104 (12.8%)	3.14 (1.235)

Cross-tabulation of Staff is Actively Involved in Better Service of the Library, and Some of the Staff Lacks Experience

Table 4.8.1 shows that among the users who strongly disagreed with the statement that staff is actively involved in the better service of the library, most of them (n=48) also strongly disagreed with the statement that some of the staff lacks experience, followed by disagreeing (n=19), agree (n=16) and strongly agree (n=14), and neither agree nor disagree, i.e., neutral (n=15). The table reveals that among the respondents who disagreed with the statement that staff is actively involved in the better service of the library, most of them (n=37) also disagreed with the statement that some of the staff lacks experience, followed by neutral (n=37), agree (n=33), strongly agree (n=13), and strongly disagree (n=9). The table reveals that among the respondents who neither agreed nor disagreed with the statement that staff is actively involved in the better service of the library, most of them (n=81) agreed with the statement some of the staff lacks experience, followed by neither agree nor disagree (n=65), disagree (n=30), strongly disagree (n=19), and strongly agree (n=12). The table shows that among the users who agreed with the statement that staff is actively involved in the better service

of the library, most of them (n=105) agreed with the idea that some of the staff lacks experience, followed by neither agree nor disagree (n=80), disagree (n=36), strongly agree (n=23) and strongly disagree (n=15). The table below reveals that among the respondents who strongly agreed with the statement that staff is actively involved in the better service of the library, most of them (n=33) agreed that some of the staff lacks experience, followed by neither agree nor disagree (n=26), strongly agree (n=21), disagree (n=14), and strongly disagree (n=10).

Table 4.12 Cross-tabulation of Staff Involved in Better Service of the Library and Lacks Experience

Staff is actively involved in the better service of the library.	Some of the staff lack experience					Total
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	
Strongly disagree	48 (42.9%)	19 (16.9%)	15 (13.4%)	16 (14.3%)	14 (12.5%)	112
Disagree	9 (6.9%)	37 (28.7%)	37 (28.7%)	33 (25.6%)	13 (10.1%)	129
Neither agree nor disagree	19 (9.2%)	30 (14.5%)	65 (31.4%)	81 (39.1%)	12 (5.8%)	207
Agree	15 (5.8%)	36 (13.9%)	80 (30.9%)	105 (40.5%)	23 (8.9%)	259
Strongly agree	10 (9.6%)	14 (13.5%)	26 (25%)	33 (31.7%)	21 (20.2%)	104
Total	101	136	223	268	83	811

4.5.6 User Perception of the Facility and Performance of the Library

The participants were asked to express their thoughts on various comments about the library's facility and performance (Section C, question number 14; Appendix A). As a result, respondents were given six statements to choose from and were asked to rate them on a 1-5 point Likert scale. All six items were found valid and reliable. This question revealed users' perceptions about the facility and the performances of the library. This scale is considered an interval scale. Acquired responses are analyzed in this section. The survey respondents affirmed the highest mean score of 3.40 and the lowest mean score of 2.40. The details of the descriptive statistics are given below in Table 4.9.

For the first statement, "There is a long waiting time in front of the reference desk," the table below shows that 253 (31.2%) strongly disagreed and 212 (26.1%) disagreed with the statement. 136 (16.8%) agreed, and 46 (5.7%) strongly agreed with the statement. 164 (20.2%) replied neither agree nor disagree. The table also shows that the first statement's mean score is 2.40 (SD= 1.241). It means that most library users are negatively replied to the first statement.

For the second statement, "The operating times of the library are convenient to the users," 263 (32.4%) of them agreed, and 101 (12.5%) of them strongly agreed with the statement. 172 (21.2%) and 98 (12.1%) disagreed and strongly disagreed with the statement. At the same time, 177 (21.8%) of them replied neither agreeing nor disagree regarding the statement. The mean score is 3.12 (SD= 1.227) for the second statement. It means that most library users are moderate regarding the second statement.

For the statement, "The staff knows about the latest technological developments," 249 (30.7%) replied that they neither agreed nor disagreed with the statement. 209 (25.8%) and 66 (8.1%) agreed and strongly agreed with the statement. The remaining 174 (21.5%) and 113 (13.9%) disagreed and strongly disagreed with the idea. The mean score is 2.93 (SD= 1.163) for the third statement. It means that many of the library users are moderate regarding this statement.

The statement, "Some of the staff's lack of experience," table shows that 268 (33%) and 83 (10.2%) users agreed and strongly agreed with the statement. 223 (27.5%) replied that they neither agreed nor disagreed with the idea. 136 (16.8%) and 101

(12.5%) disagreed and strongly disagreed with the statement. The mean score is 3.12(SD= 1.180) for the fourth statement. It means that many library users are a moderate level of consent regarding the statement.

For the statement, "Staffs are polite to users," 300 (37%) and 155 (19.1%) agreed and strongly agreed. 100 (12.3%) and 94 (11.6%) disagreed and strongly disagreed with the statement. Among the users, 162 (20%) replied that they neither agreed nor disagreed with the idea. The mean score is 3.40 (SD= 1.251) for the fifth statement. It means that most of the library users are positively replied to the behavior of the library staff.

For the statement "Library staff encourages users to effectively use library websites for research purposes," 189 (23.3%) and 128 (15.8%) agreed and strongly agreed with the statement, whereas 164 (20.2%) and 113 (13.9%) disagreed and strongly disagreed with the idea. At the same time, 217 (26.8%) of them neither agreed nor disagreed. The mean score is 3.07 (SD= 1.273) for the last statement.

Table 4.13 Facility and Performance of the Library (N=811)

Statements	1	2	3	4	5	Mean (SD)
There is a long waiting time in front of reference desk.	253 (31.2%)	212 (26.1%)	164 (20.2%)	136 (16.8%)	46 (5.7%)	2.40 (1.241)
The operating times of the library are convenient to the users.	98 (12.1%)	172 (21.2%)	177 (21.8%)	263 (32.4%)	101 (12.5%)	3.12 (1.227)
The staff knows about the latest technological developments.	113 (13.9%)	174 (21.5%)	249 (30.7%)	209 (25.8%)	66 (8.1%)	2.93 (1.163)
Some of the staff's lack of experience.	101 (12.5%)	136 (16.8%)	223 (27.5%)	268 (33%)	83 (10.2%)	3.12 (1.180)

Staffs are polite to users.	94 (11.6%)	100 (12.3%)	162 (20%)	300 (37%)	155 (19.1%)	3.40 (1.251)
Library staffs encourage users to effectively use library websites for research purposes.	113 (13.9%)	164 (20.2%)	217 (26.8%)	189 (23.3%)	128 (15.8%)	3.07 (1.273)

4.5.7 User's Familiarity with Explicit Knowledge and Tacit Knowledge

In this part of the survey questionnaire (Section C, questions 15 and 16; Appendix A), the active library users were asked, "Do you know what explicit knowledge is?" and "Do you know what tacit knowledge is?" Among the 811 participants, 535 (66%) replied positively that they knew about explicit knowledge. The remaining 276 (34%) reacted negatively. Again, the respondents were asked whether they knew what tacit knowledge was. Table 4.10 identified that more than half of the participants, i.e., 453 (55.9%), reacted positively that they knew about tacit knowledge. The remaining 358 (44.1%) replied negatively. This finding means they do not know about tacit knowledge.

Table 4.14 User's Familiarity with Explicit and Tacit Knowledge

Statements	Frequency (N=811)	Percentage (%)
Do you know what Explicit Knowledge is?		
Yes	535	66
No	276	34
Total	811	100
Do you know what Tacit Knowledge is?		
Yes	453	55.9

No	358	44.1
Total	811	100

Cross-tabulation of Users about Explicit and Tacit Knowledge

Table 4.10.1 shows that most users who know about explicit knowledge (n=393) have an idea about tacit knowledge, followed by no (n=142). The table also reveals that those who didn't have any idea about explicit knowledge but only (n=60) of them replied that they had an idea about tacit knowledge. The table shows that the users who have no idea about explicit knowledge (n=216) also responded that they have no idea about tacit knowledge.

Table 4.15 Cross-tabulation of Users about Explicit and Tacit Knowledge

Do you know what Explicit Knowledge is?	Do you know what Tacit Knowledge is?		Total
	Yes	No	
Yes	393(73.5%)	142(26.5%)	535
No	60(21.7%)	216(78.3%)	276
Total	453	358	811

4.5.8 User's Perception of Knowledge Dissemination and Knowledge Sharing (KS)

In this part of the survey questionnaire (Section C, questions 17 and 18; Appendix A), the active library users were asked, "How does your library disseminate the captured knowledge to the user?" and "The use of knowledge would bring great benefits to the library?"

Out of 811 users, 406 (50.1%) respondents replied that libraries disseminate the captured knowledge to the user through the traditional library system, followed by

publication 184 (22.7%), through newsletters, 121 (14.9%) their library disseminated the captured knowledge. The remaining 100 (12.3%) active library users replied that publishing in the website library shares the captured knowledge.

The students were asked, "Use of knowledge brings great benefits to the library?" The maximum number of users, i.e., 668 (82.4%), replied positively to the statement. In contrast, 143 (17.6%) responded negatively. It means that using knowledge would not bring significant benefits to the library. In question number 19, users were asked how they share knowledge with their friends and classmates in the same section. Among the users, 551 (67.9%) of them replied yes. It means that they share knowledge with their friends and classmates. One-fourth of them sometimes shared 204 (25.2%). At the same time, 56 (6.9%) replied negatively regarding the statement. Later the students were asked if yes, then how they shared. Table 4.11 shows that most users, i.e., 521 (64.2%), shared their knowledge through conversation. While 128 (15.8%) of them shared their expertise through meetings, followed by chat 86 (10.6%). Only 14 (1.7%) and 6 (.7%) shared their knowledge through storytelling and wikis.

Table 4.16 User's Perception of Knowledge Dissemination and KS

Statements	Frequency (N=811)	Percentage (%)
How does your library disseminate the captured knowledge to the user?		
Through publication	184	22.7
Through newsletter	121	14.9
Through the traditional library system	406	50.1
By publishing on the website	100	12.3
The use of knowledge would bring great benefits to the library?		
Yes	668	82.4
No	143	17.6

Do you share knowledge with your friend or classmates?		
Yes	551	67.9
No	56	6.9
Sometimes	204	25.2
If yes, then how do you share?		
Conversation	521	64.2
Meetings	128	15.8
Chat	86	10.6
Wikis	6	.7
Storytelling	14	1.7
Total	755	93.1
No replied to the previous questions	56	6.9
Total	811	100

Cross-tabulation of Knowledge Would Benefit the Library and Sharing Knowledge with Friends or Classmates

The users who said yes that using knowledge would benefit the library also shared knowledge with their friends or classmates (n=497), followed by sometimes (n=148). Those who replied know that only (n=56) of them share knowledge with their friend or classmates, followed by yes (n=54).

Table 4.17 Cross-tabulation of Knowledge Benefits and KS with Friends

Knowledge would bring benefits to the library	Do you share knowledge with your friend or classmates?			Total
	Yes	No	Sometimes	
Yes	497(74.4%)	23(3.4%)	148(22.2%)	668
No	54(37.7%)	33(23.1%)	56(39.2%)	143

Total	551	56	204	811

4.5.9 Users' Familiarity with KM

In this part of the survey questionnaire (Section D, question 20; Appendix A), the active library users were asked about "Student familiarity with KM." Table 4.12 shows the results of the users' familiarity with KM. For this purpose, they were given four statements that revealed their familiarity with KM and its relationship with others. All the statements were valid and reliable. Respondents were given their opinion on a 5-point Likert scale. It's also worth noting that the responses' Mean and Standard Deviations (SD) were determined using the following scores: "1= Very low, 2=Low, 3=Neither high nor low, 4=High, 5=Very high". The survey participants stated the highest mean score of 2.75 and the lowest mean score of 2.24. The details of the descriptive statistics are given below in Table 4.12.

For the first statement, "Familiarity with KM," users replied that their familiarity with KM is very low and low, i.e., 273 (33.7%) and 213 (26.3%), respectively. Whereas 197 (24.3%) replied neither high nor low. 110 (13.6) and 18 (2.2%) replied high and very high. The mean score is 2.24 (SD= 1.124) for the first statement. It means that most library users have a low level of familiarity. The users are familiar with the KM, but their understanding is not up to the mark.

For the second statement, "Relationship between KM familiarity issue and service value," 243 (30%) replied low, and 170 (21%) answered very low with the statement. Where 245 (30.2%) responded that neither high nor low. 111 (13.7%) and 42 (5.7%) replied high and very high. The mean score is 2.52 (SD=1.120) for the second statement. It means that the library users think that KM familiarity issues and the service value of the library are low.

For the third statement, "Relationship between KM familiarity issue and critical success factors," they replied that the relationship between familiarity with KM issue and critical success factors is low and very low, i.e., 206 (25.4%) and 172 (21.2%), respectively. Where 258 (31.8%) replied neither high nor low. 143 (17.6%) and 32

(3.9%) answered high and very high. The mean score is 2.58 (SD=1.122) for this statement. It means that the users of the library negatively replied to this statement.

For the fourth statement, "Library needs to be conscious of critical success factors that will influence the implementation of KM?" Users agreed with the statement by replying as very low and low, i.e., 163 (20.1%) and 162 (20%), respectively. At the same time, 256 (32.1.6%) answered neither high nor low. The remaining 171 (21.1%) and 59 (7.3%) responded with high and very high regarding the statement. The mean score is 2.75 (SD=1.203) for the fourth statement. This finding means that the library needs to be conscious of critical success factors that will influence the implementation of KM.

Table 4.18 Users Familiarity with KM (N=811)

Statements	1	2	3	4	5	Mean (SD)
Familiarity with KM	273 (33.7%)	213 (26.3%)	197 (24.3%)	110 (13.6%)	18 (2.2%)	2.24 (1.124)
Relationship between KM familiarity issue and service value	170 (21%)	243 (30%)	245 (30.2%)	111 (13.7%)	42 (5.7%)	2.52 (1.120)
Relationship between KM familiarity issue and critical success factors	172 (21.2%)	206 (25.4%)	258 (31.8%)	143 (17.6%)	32 (3.9%)	2.58 (1.122)
Library needs to be conscious of critical success factors that will influence the implementation of KM	163 (20.1%)	162 (20%)	256 (32.1%)	171 (21.1%)	59 (7.3%)	2.75 (1.203)

4.5.10 How do Users Become Familiar with KM Ideas?

In this part of the survey questionnaire (Section D, question 21; Appendix A), the active library users were asked, "How do students become familiar with KM ideas?" For this purpose, they were given four statements to tick, revealing their familiarity with KM. Picked-up responses are analyzed in this section. Respondents were given their opinion on a 1-5 point Likert scale. The survey respondents affirmed the highest mean score of 2.97 and the lowest mean score of 2.24. The details are given below in Table 4.13.

For the first statement, "Educational programs by different institutions (seminars, conferences, training, etc.)," the table below shows that 259 (31.9%) strongly disagreed and 143 (17.6%) disagreed with the statement. Where 177 (21.8%) replied neither agree nor disagree. 179 (22.1%) agreed, and 53 (6.5%) strongly disagreed with the statement. The table also shows that the first statement's mean score is 2.54 (SD= 1.313). It means that many library users negatively replied to this statement. So, this finding implies that they are unfamiliar with KM through educational courses by different institutions.

For the second statement, "Expert bodies' activities," the table shows that 139 (17.1%) strongly disagreed and 208 (25.6%) disagreed with the idea. Whereas 209 (25.8%) replied neither agree nor disagree. 204 (25.2%) agreed, and 51 (6.3%) strongly disagreed with the statement. Table 4.13 also shows that the second statement's mean score is 2.78 (SD= 1.182). So, it can be said that a significant number of users are familiar with KM through expert bodies' activities.

For the third statement, "Independent study, via academic/ research literature," the table below also shows that 155 (19.1%) strongly disagreed and 127 (15.7%) disagreed with the statement. Whereas 215 (26.5%) replied neither agree nor disagree. 215 (26.5%) agreed, and 99 (12.2%) strongly disagreed with the statement. The table also shows that this statement's mean score is 2.97 (SD= 1.294). This finding revealed that many library users are familiar with KM through independent study and academic/research literature.

For the statement "Courses provided by my department," the table shows that 182 (22.4%) strongly disagreed and 123 (15.2%) disagreed with the statement. At the same time, 174 (21.5%) replied neither agree nor disagree. 219 (27%) agreed, and 113

(13.9%) strongly agreed with the statement. The table also shows that the last statement's mean score is 2.95 (SD= 1.370). So, it can be said that a significant number of user's moderate level of consent about this statement.

Table 4.19 How did Users Become Familiar with KM Ideas? (N=811)

Statements	1	2	3	4	5	Mean (SD)
Educational programs by different institutions (seminars, conferences, training, etc.)	259 (31.9%)	143 (17.6%)	177 (21.8%)	179 (22.1%)	53 (6.5%)	2.54 (1.313)
Expert bodies' activities	139 (17.1%)	208 (25.6%)	209 (25.8%)	204 (25.2%)	51 (6.3%)	2.78 (1.182)
Independent study, via academic/ research literature	155 (19.1%)	127 (15.7%)	215 (26.5%)	215 (26.5%)	99 (12.2%)	2.97 (1.294)
Courses provided by my department	182 (22.4%)	123 (15.2%)	174 (21.5%)	219 (27%)	113 (13.9%)	2.95 (1.370)

4.5.11 Perception of KM's Relevance to Librarianship

In this part of the survey questionnaire (Section D, question 22; Appendix A), the active library users were asked their perception of KM's relevance to librarianship. For this purpose, they were given six statements to provide their agreement or disagreement. Respondents were given their opinion on a 1-5 point Likert scale. All the statements were found valid and reliable. The survey respondents affirmed the highest mean score of 3.36 and the lowest mean score of 2.82. The details are given in Table 4.14.

For the first statement, “KM is a new perception for LIS field,” the table beneath reveals that many of the respondents, 230 (28.4%) agreed and 56 (6.9%) strongly agreed that KM is a new perception for the LIS field, followed by 222 (27.4%) were neutral. However, 183 (22.6%) and 120 (14.8%) respondents strongly disagreed and disagreed. The table also shows that the statement's mean score is 2.82 (SD= 1.257). This finding reveals that users are neutral regarding this statement.

For the second statement, “It is an alternate name for information management,” the following table reveals that most of the respondents, 295 (36.4%), agreed and 76 (9.4%) strongly agreed that KM is an alternate name for information management, followed by 203 (25%) were neutral. Though, 149 (18.4%) and 88 (10.9%) respondents disagreed and strongly disagreed with the statement. The table also shows that the statement's mean score is 3.15 (SD= 1.156). This finding means that most users are not sure about the second statement.

For the third statement, “KM is a modern librarianship discipline,” the following table reveals that many of the respondents, 290 (35.8%) agreed and 86 (10.6%) strongly agreed that KM is a modern librarianship discipline, followed by 218 (26.9%) were neutral. While 115 (14.2%) and 102 (12.6%) respondents disagreed and strongly disagreed with the statement. The table also shows that the statement's mean score is 3.18 (SD= 1.182). This result means that most library users neither agree nor disagree with this statement.

For the fourth statement, “It is a contradictory idea dissimilar from librarianship,” the table reveals that many respondents, 268 (33%), were neutral. In comparison, 242 (29.8%) and 69 (8.5%) respectively agreed and strongly agreed with the statement. Though, 137 (16.9%) and 95 (11.7%) respondents disagreed and strongly disagreed with the statement. The table also shows that the statement's mean score is 3.07 (SD= 1.128). So, this means that users have a moderate level of consent regarding this statement.

For the fifth statement, “KM is a management craze that gains attention for a short span of time,” the table reveals that most of the respondents, 260 (32.1%), were neutral. At the same time, 235 (29%) agreed, and 91 (11.2%) strongly agreed with the statement. However, 122 (15%) and 103 (12.7%) respondents disagreed and strongly

disagreed with the statement. The table also shows that the statement's mean score is 3.11 (SD= 1.178). It means that most library users have a moderate level of consent regarding the fifth statement.

For the last statement, "It is an allied field of study which tends to extend the librarianship scope," the following table reveals that most of the respondents, 261 (32.2%) agreed, and 141 (17.4%) strongly agreed with the statement, followed by 239 (29.5%) were neutral. While 87 (10.7%) and 83 (10.2%) respondents disagreed and strongly disagreed with the statement. The mean score is 3.36 (SD= 1.186) for the statement. This finding shows that most library users are positive regarding this statement.

Table 4.20 User Perception of KM's Relevance to Librarianship (N=811)

Statements	1	2	3	4	5	Mean (SD)
KM is a new perception for the LIS field.	183 (22.6%)	120 (14.8%)	222 (27.4%)	230 (28.4%)	56 (6.9%)	2.82 (1.257)
It is an alternate name for information management.	88 (10.9%)	149 (18.4%)	203 (25%)	295 (36.4%)	76 (9.4%)	3.15 (1.156)
KM is a modern librarianship discipline.	102 (12.6%)	115 (14.2%)	218 (26.9%)	290 (35.8%)	86 (10.6%)	3.18 (1.182)
It is a contradictory idea dissimilar from librarianship	95 (11.7%)	137 (16.9%)	268 (33%)	242 (29.8%)	69 (8.5%)	3.07 (1.128)
KM is a management crazes that gain attention	103 (12.7%)	122 (15%)	260 (32.1%)	235 (29%)	91 (11.2%)	3.11 (1.178)

for a short span of time.						
It is an allied field of study which tends to extend the librarianship scope.	83 (10.2%)	87 (10.7%)	239 (29.5%)	261 (32.2%)	141 (17.4%)	3.36 (1.186)

4.5.12 KM Meets the Requirements of a Library in order to Achieve Goals

The students were asked, "Do you think KM meets the requirements of a library?" (Section D, question 23; Appendix A). Out of 811 respondents, 482 (59.4%) of them replied positively that KM meets the requirements of a library to achieve its goals. Whereas 230 (28.4%) said they were unsure about the statement. The remaining 99 (12.2%) replied negatively (Table 4.15).

Table 4.21 KM Meets the Requirements of a Library in order to Achieve Goals

KM meets the requirements of a library	Frequency (N=811)	Percentage (%)
Yes	482	59.4
No	99	12.2
Not sure	230	28.4
Total	811	100

4.5.13 How KM Meets the Requirements of a Library to Achieve Goals

Keeping in mind in the previous questions, the users who replied 'no' options were also given chances to add their suggestions how does the KM meet the requirements of a library to achieve goals. Therefore, in the following question (Section D, question 24)

of the survey questionnaire, library users were asked how KM can meet the requirements of a library to achieve its goals. They were given six options for choosing the answers. Most of the users, 355 (43.8%), replied that KM meets the requirements of a library by creating new knowledge. More than one-fourth of them, i.e., 180 (22.2%), believed that by expanding the access of knowledge for the users, KM meets the requirements of a library, followed by accessing and retrieving knowledge from outer sources 137 (16.9%), representing knowledge in databases, software, and others 86 (10.6%), transmitting present knowledge round the libraries 44 (5.4%). Only 9 (1.1%) of them said that KM meets the requirements of a library by using reachable knowledge in policymaking (Table 4.16).

Table 4.22 How does KM Meet the Requirements of a Library to Achieve Goals?

How KM meets the requirements of a library	Frequency (N=811)	Percentage (%)
Creating new knowledge.	355	43.8
Accessing and retrieving knowledge from outer sources.	137	16.9
Expand the access to knowledge for their users.	180	22.2
Representing knowledge in databases, software, and others.	86	10.6
Transmitting present knowledge around the libraries.	44	5.4
Using reachable knowledge in policymaking.	9	1.1
Total	811	100.0

Cross-tabulation of How KM Can Meet the Requirements of a Library by Achieving the Goals of the Library

Among the users who said that KM meets the requirements of a library by creating new knowledge, most of them (n=240) replied that KM met to achieve its goals, followed by not sure (n=88) and no (n=27). Table 4.16.1 shows that KM meets the requirements of a library by accessing and retrieving knowledge from outer sources among the users. Many of them (n=84) replied yes, followed by not sure (n=39) and no (n=14). Users who were told that KM meets the requirements of a library by expanding the access of knowledge for their users among them (n=91) replied positively, followed by not sure (n=67) and no (n=22).

Similarly, among the users who said that KM meets the requirements of a library by representing knowledge in databases, software, and others, most of them (n=40) replied yes, followed by not sure (n=26) and no (n=20). Among the users who said that KM meets the requirements of a library by transmitting present knowledge, most of them replied yes (n=21), followed by not sure (n=9). The table also reveals that among the users who said that KM meets a library's requirements by using reachable knowledge in policymaking, most of them (n= 6) replied positively.

Table 4.23 Cross-tabulation of KM Can Meet the Requirements of a Library by Achieving the Goals of the Library

How can KM meet the requirements?	KM meets to achieve its goals			Total
	Yes	No	Not sure	
Creating new knowledge.	240 (67.6%)	27 (7.6%)	88 (24.7%)	355
Accessing and retrieving knowledge from outer sources.	84 (61.3%)	14 (10.2%)	39 (28.5%)	137
Expand the access of knowledge for their users.	91 (50.5%)	22 (12.2%)	67 (37.2%)	180

Representing knowledge in databases, software, and others.	40 (46.5%)	20 (23.2%)	26 (30.2%)	86
Transmitting present knowledge round the libraries.	21 (47.7%)	14(31.8 %)	9 (20.4%)	44
Using reachable knowledge in policymaking.	6 (66.6%)	2 (22.2%)	1 (11.1%)	9
Total	482	99	230	811

4.5.14 Aware of KM Practice in the Library

In this part of the questionnaire (Question 25, Appendix A), users were asked about their awareness of KM practice in the library. Table 4.17 showed that the highest number of respondents, 333 (41.1%), replied positively. The remaining 249 (30.7%) reacted negatively, whereas 229 (28.2%) said they were unsure about the library's KM practice.

Table 4.24 Aware of KM Practice in the Library

Aware of KM practice in the library	Frequency (N=811)	Percentage (%)
Yes	333	41.1
No	249	30.7
Not sure	229	28.2
Total	811	100.0

Cross-tabulation of How KM Can Meet the Requirements of the Library and Users' Awareness of any KM Practices

Among the users, who said that KM meets the requirements of a library by creating new knowledge, many of them (n=165) replied that they are aware of KM practices in the library, followed by no (n=96) and not sure (n=94). The table shows that among those who told KM to meet the requirements of a library by accessing and retrieving knowledge from outer sources among the respondents, most of them (n=60) replied yes, followed by not sure (n=43), and no (n=34). Users who said that KM meets the requirements of a library by expanding the access to knowledge for the users, many of them (n=64) replied positively, followed by no (n=60) and not sure (n=64). Similarly, the users who said that KM meets the requirements of a library by representing knowledge in databases, software, and others, many of them replied no (n=34) that they are not aware of KM practices in the library, followed by not sure (n=30) and yes (n=22). Among the users who replied that KM meets the requirements of a library by transmitting present knowledge round, most of them answered no (n=23), followed by yes (n=16) and not sure (n=5). Table 4.17.1 also reveals that among the users who said that KM meets the requirements of a library by using reachable knowledge in policymaking, among the users, most of them (n=4) replied positively, followed by not sure (n=3) and yes (n=2).

Table 4.25 Cross-tabulation of KM Meet the Requirements and Aware of KM Practice

How can KM meet the requirements?	Are you aware of any KM practice in your library?			Total
	Yes	No	Not sure	
Creating new knowledge.	165 (46.4%)	96 (27%)	94 (26.5%)	355
Accessing and retrieving knowledge from outer sources.	60 (43.8%)	34 (24.8%)	43 (31.4%)	137
Expand the access to knowledge for their users.	66 (36.7%)	60 (33.3%)	54 (30%)	180

Representing knowledge in databases, software, and others.	22 (25.6%)	34 (39.5%)	30 (34.9%)	86
Transmitting present knowledge round the libraries.	16 (36.4%)	23 (52.2%)	5 (11.4%)	44
Using reachable knowledge in policymaking.	4 (44.4%)	2 (22.2%)	3 (33.4%)	9
Total	333	249	229	811

4.5.15 KM as Interesting in Library Practice

In this part of the questionnaire (Question 26, Appendix A), users were asked, "Do you find KM as interesting in library practice?" Table 4.18 shows that 531 (65.5%) users replied positively. The remaining 280 (34.5%) responded negatively. It is clear from the table that KM practices in the library would be interesting for service improvement.

Table 4.26 KM as Interesting in Library Practice

KM as interesting in library practice	Frequency (N=811)	Percentage (%)
Yes	531	65.5
No	280	34.5
Total	811	100.0

Cross-tabulation of Find KM as Interesting in Library Practice, and KM Helps in Enhanced Service Quality

Table 4.18.1 shows that among the users who replied that KM is interesting in library practice majority of them also agreed that KM helps in enhanced library service, followed by neutral (n=131), strongly agree (n=92), disagree (n=59), and strongly

disagree (n=43). The table also shows that the users who replied that KM is not interesting in library practice majority of them were neutral (n=98) that KM helps in enhanced library service, followed by agreeing (n=78), disagree (n=36), strongly agree (n=36), and strongly disagree (n=32).

Table 4.27 Cross-tabulation of KM Interesting in Library Practice and Helps in Enhancing Service Quality

Do you find KM as interesting in library practice?	KM helps in enhanced service quality					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Yes	43 (8.1%)	59 (11.1%)	131 (24.6%)	206 (38.7%)	92 (17.3%)	531
No	32 (11.4%)	36 (12.8%)	98 (35%)	78 (27.8%)	36 (12.8%)	280
Total	75	95	229	284	128	811

4.5.16 Advantages of Implementing KM for Library Services

In this part of the questionnaire (Question 27, Appendix A), users were asked about the advantages of KM for library services. Table 4.19 indicates the respondents' level of agreement for each of the benefits of KM for library services in Bangladesh perspective on 1-5 Likert scales. All the items were found valid and reliable. It's also worth noting that the responses' Mean and Standard Deviations (SD) were determined using the following scores: "1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree, 5= Strongly agree". According to Pimentel (2010), from "1.00-1.80, it means strongly disagree (very negative); 1.81-2.60, disagree (negative); 2.61-3.40, neither agree nor disagree (moderate); 3.41-4.20, agree (positive) and 4.21-5.00, it means strongly agree (very positive)". The survey confirmed the highest mean score of 3.38 and the lowest mean score of 2.77. The detailed descriptive statistics are given below in Table 4.19.

For the first statement, “KM practice will add value to the output of the library and the service area,” the table below reveals that many of the respondents, 274 (33.8%) and 52 (6.4%), agreed and strongly agreed that KM practice will add value to the output of the library and the service area. Among the users, 152 (18.7%) were neutral. However, 235 (29%) and 98 (12.1%) respondents strongly disagreed and disagreed with the statement. The table also shows that the statement's mean score is 2.77 (SD=1.350). It means that most library users are a moderate level of the consent of KM practice will add value to the output of the library and the service area.

For the second statement, “The chances of duplication of work can be minimized by KM,” the table reveals that most of the respondents, 262 (32.3%) and 67 (8.3%), agreed and strongly agreed that the chances of duplication of work can be minimized by KM. 189 (23.3%) were neutral. 182 (22.4%) and 111 (13.7%) respondents disagreed and strongly disagreed with the statement. The table also shows that the statement's mean score is 2.99 (SD=1.195). It means that many of the library users are neutral about this statement.

For the third statement, “University libraries can be made more applicable to their affiliated universities by KM,” the following table reveals that many of the respondents, 284 (35%) and 82 (10.1%), agreed and strongly agreed that KM practice will add value to the output of the library and the service area. 211 (26%) of them were neutral. While 131 (16.2%) and 103 (12.7%) respondents strongly disagreed and disagreed with the statement. The table also shows that the statement's mean score is 3.10 (SD=1.233). It means that most library users are a moderate level of consent from university libraries that can be made more applicable to their affiliated universities by KM.

For the fourth statement, “KM will help turn a university library into an organization for learning factors for implementing KM with familiarity with KM,” the table reveals that many of the respondents, 271 (33.4%) and 113 (13.9%), were, agreed and strongly agreed with the statement. Though, 212 (26.1%) were neutral. While 111 (13.7%) and 104 (12.8%) users disagreed and strongly disagreed with the statement. The table also shows that the statement's mean score is 3.22 (SD=1.233). This finding indicates that many users are not sure about this statement.

For the fifth statement, “KM can boost the overall performance and future prospects of the library,” the table reveals that many of the respondents, 275 (33.9%) and 145 (17.9%), agreed and strongly agreed that KM can boost the overall performance and prospects of the library. Table 4.19 also shows that 175 (21.6%) were neutral. Though, 118 (14.5%) and 98 (12.1%) respondents strongly disagreed and disagreed with the statement. The table also shows that the statement's mean score is 3.28 (SD=1.295). It means many of the library users are nearly optimistic regarding this statement.

For the last statement, “KM helps to get the innovative organization ideas,” the table reveals that most of the respondents, 251 (30.9%) and 184 (22.7%), agreed and strongly agreed with the statement. At the same time, 171 (21.1%) were neutral. However, 103 (12.7%) and 102 (12.6%) respondents strongly disagreed and disagreed with the statement. The following table shows that the last statement's mean score is 3.38 (SD=1.306). This finding indicates that most library users are positive regarding this statement.

Table 4.28 KM for Library Services (N=811)

Statements	1	2	3	4	5	Mean (SD)
KM practice will add value to the output of the library and the service area.	235 (29%)	98 (12.1%)	152 (18.7%)	274 (33.8%)	52 (6.4%)	2.77 (1.350)
The chances of duplication of work can be minimized by KM.	111 (13.7%)	182 (22.4%)	189 (23.3%)	262 (32.3%)	67 (8.3%)	2.99 (1.195)
University libraries can be made more applicable to their	131 (16.2%)	103 (12.7%)	211 (26%)	284 (35%)	82 (10.1%)	3.10 (1.233)

affiliated universities by KM.						
KM will help turn a university library into an organization for learning factors for implementing KM with familiarity with KM.	104 (12.8%)	111 (13.7%)	212 (26.1%)	271 (33.4%)	113 (13.9%)	3.22 (1.233)
KM can boost the overall performance and prospects of the library.	118 (14.5%)	98 (12.1%)	175 (21.6%)	275 (33.9%)	145 (17.9%)	3.28 (1.295)
KM helps to get the organization innovative ideas.	103 (12.7%)	102 (12.6%)	171 (21.1%)	251 (30.9%)	184 (22.7%)	3.38 (1.306)

4.5.17 Relevance of KM on Library Practice

To determine the relevance of KM on library practice (Section D, question 28; Appendix A) on a 1-5 point Likert scale and asked them to rate their level of agreement among those statements. They were given three statements. All the statements were found valid and reliable. The survey respondents affirmed the highest mean score of 3.36 and the lowest mean score of 2.80. The detailed descriptive statistics are given below in Table 4.20.

For the first statement, "An important ingredient of KM is the expertise of LIS specialists in librarianship," the table shows that most of the respondents, 263 (32.4%), were neutral. 203 (25%) and 55 (6.8%) agreed and strongly agreed with the statement. Though, 185 (22.8%) and 105 (12.9%) respondents strongly disagreed and disagreed with the statement. Table 4.20 also shows that the statement's mean score is 2.80 (SD=1.235). It means that most library users have a moderate level of consent regarding this statement.

For the second statement, “Activities in a library's readers' service section, such as distribution of books, reference services, etc., are synonymous with the sharing of KM awareness,” the table discovers that many respondents, 271 (33.4%) were neutral. Where 226 (27.9%) and 80 (9.9%) agreed and strongly agreed with the statement. However, 161 (19.9%) and 73 (9%) respondents disagreed and strongly disagreed with the statement. The table also shows that the statement's mean score is 3.10 (SD=1.106). Therefore, the maximum number of users is neutral regarding this statement.

For the last statement, “KM helps in enhanced service quality,” the table reveals that the majority of the respondents, 284 (35%) and 128 (15.8%), agreed and strongly agreed with the statement. 229 (28.2%) were neutral. While 95 (11.7%) and 75 (9.2%) respondents disagreed and strongly disagreed with the statement. The table also shows that the statement's mean score is 3.36 (SD=1.157). It means that users think KM can enhance the library's service quality. It means that the highest number of users have nearly positive consent regarding this statement.

Table 4.29 Relevance of KM on Library Practice (N=811)

Statements	1	2	3	4	5	Mean (SD)
An important ingredient of KM is the expertise of LIS specialists in librarianship.	185 (22.8%)	105 (12.9%)	263 (32.4%)	203 (25%)	55 (6.8%)	2.80 (1.235)
Activities in a library's readers' service section, such as distributing books, reference services, etc., are synonymous with sharing KM awareness.	73 (9%)	161 (19.9%)	271 (33.4%)	226 (27.9%)	80 (9.9%)	3.10 (1.106)
KM helps in enhanced service quality.	75 (9.2%)	95 (11.7%)	229 (28.2%)	284 (35%)	128 (15.8%)	3.36 (1.157)

4.5.18 Potential Contribution of Departments to KM

In this part of the questionnaire (Section D, question 29, Appendix A), users were asked about potential contributions to KM by the various departments. For this purpose, the users were given the name of four departments on 1-5 Likert scales and asked to rate their level of agreement among those statements. All the statements were found valid and reliable. The survey respondents affirmed the highest mean score of 3.32 and the lowest score of 2.97. The details are given below in Table 4.21. For the first option, "Department of Information Science and Library Management," the table reveals that the majority of the respondents, 274 (33.8%) and 93 (11.5%), agreed and strongly agreed that the "Department of Information Science and Library Management" has the potential contribution to the provision of education for KM. While 196 (24.2%) and 92 (11.3%) respondents strongly disagreed and disagreed with the statement. 156 (19.2%) were neutral. The table also shows this department's mean score is 2.97 (SD=1.370). This finding means that majority of the students are not sure about the potential contribution of the Department of Information Science and Library Management.

For the second option, "Department of Organization Strategy and Leadership," 276 (34%) were neutral. Where 223 (27.5%) and 67 (8.3%) agreed and strongly agreed that the department of "Organization Strategy and Leadership" has the potential contribution to the provision of education for KM. 143 (17.6%) and 102 (12.6%) disagreed and strongly disagreed. The table also shows that this department's mean score is 3.01 (SD=1.134). It means that the maximum number of users is neutral regarding this department.

The third option for the user was the "Department of Computer Science and Engineering." The table indicated that 220 (27.1%) and 71 (8.8%) of them agreed and strongly agreed that the Department of Computer Science and Engineering has the potential contribution to education for KM. Table 4.21 shows that a significant number of them, i.e., 287 (35.4%), were neutral for this department. 119 (14.7%) disagreed, and 114 (14.1%) strongly disagreed with the statement. The table also shows that the statement's mean score is 3.01 (SD=1.162). It means that the maximum number of users is neutral regarding this department.

"Department of Management Information Systems" was the last option to give their opinion. 279 (34.4%) and 131 (16.2%) agreed and strongly agreed that this department has the potential contribution to the provision of education for KM. Whereas 220 (27.1%) replied that they neither agree nor disagree. The remaining 99 (12.2%) strongly disagreed, and 82 (10.1%) disagreed with the option. The table also shows that the statement's mean score is 3.32 (SD=1.216). It means that the maximum number of users is to have a nearly positive level of consent regarding this department.

Table 4.30 Potential Contribution of the Department to KM (N=811)

Statements	1	2	3	4	5	Mean (SD)
Department of Information Science and Library Management.	196 (24.2%)	92 (11.3%)	156 (19.2%)	274 (33.8%)	93 (11.5%)	2.97 (1.370)
Department of Organization Strategy and Leadership.	102 (12.6%)	143 (17.6%)	276 (34%)	223 (27.5%)	67 (8.3%)	3.01 (1.134)
Department of Computer Science and Engineering.	119 (14.7%)	114 (14.1%)	287 (35.4%)	220 (27.1%)	71 (8.8%)	3.01 (1.162)
Department of Management Information Systems.	99 (12.2%)	82 (10.1%)	220 (27.1%)	279 (34.4%)	131 (16.2%)	3.32 (1.216)

4.5.19 Critical Success Factors of KM Implementation in the Library

In this part of the questionnaire (Section E, question 30, Appendix A), users were asked about critical success factors of KM implementation in the library. For this purpose, they were given eight factors. All eight factors were found valid and reliable. On a 1-5 Likert scale, Table 4.22 shows the respondent's level of agreement for each of the KM important success factors in Bangladesh. It is also worth noting that the Mean and Standard Deviation (SD) of the responses were calculated according to the following scores: 1= Strongly disagree, 2= Disagree, 3= Neither agree nor disagree, 4= Agree, 5= Strongly agree. The survey respondents affirmed the highest mean score of 3.57 and the lowest mean score of 2.95. Table 4.22 presents the details of the descriptive statistics.

"Leadership" was the first option among the critical success factors in the questionnaire. 260 (32.1%) agreed, and 91 (11.2%) strongly agreed with this factor. 197 (24.3%) strongly disagreed, and 85 (10.5%) disagreed. Rest 178 (21.9%) were neutral. The table also shows that the statement's mean score is 2.95 (SD=1.359). It means that most library users are a moderate level of consent regarding this statement.

"Continuous training programs" were the second option. 318 (39.2%) of the users agreed, and 102 (12.6%) strongly agreed with this critical success factor. At the same time, 160 (19.7%) disagreed, and 84 (10.4%) strongly disagreed. In comparison, 147 (18.1%) were neutral. The table also shows that the statement's mean score is 3.24 (SD=1.205). This result indicates that many library users are neutral regarding this statement.

For the option "Utilizing technology accurately," 313 (38.6%) agreed, and 116 (14.3%) strongly agreed. At the same time, 200 (24.7%) were neutral. Among the users, 106 (13.1%) disagreed, and 76 (9.4%) strongly disagreed with this option. Table 4.22 also shows that the statement's mean score is 3.35 (SD=1.158). It means that many of the library users are neutral regarding this statement.

For the options "Organizational ICT structure," the table shows that among the users of the library, 300 (37%) agreed, and 144 (17.8%) strongly agreed. At the same time, 193 (23.8%) were neutral. An equal number of users who were chosen the options disagreed and strongly disagreed, i.e., 87 (10.7%). The table also shows that the statement's mean score is 3.40 (SD=1.207). This finding means library users agreed that

organizational ICT structure is a significant critical success factor for KM implementation in the library.

"Organizational culture" was the fifth option. Among the active library users, 268 (33%) agreed, and 164 (20.2%) strongly agreed. Whereas 193 (23.8%) were neutral. 99 (12.7%) strongly disagreed, and 87 (10.7%) disagreed. The table also shows that the statement's mean score is 3.38 (SD=1.261).

For the options "Knowledge storage and knowledge capturing," 279 (34.4%) agreed, and 190 (23.4%) strongly agreed. While 172 (21.2%) were neutral. 89 (11%) disagreed, and 81 (10%) strongly disagreed. The table also shows that the statement's mean score is 3.50 (SD=1.241). It means that most of the library users positively replied to this statement.

"Respecting user's demand" was the seventh option. Among the active library users, 249 (30.7%) agreed, and 173 (21.3%) strongly agreed. Where 209 (25.8%) were neutral. 97 (12%) disagreed, and 83 (10.2%) strongly disagreed. The table also shows that the statement's mean score is 3.41 (SD=1.234). It means that most of the library users positively replied to this statement.

"Establishing a solid infrastructure for future development" was the last option. Among the active library users, 281 (34.6%) agreed, and 212 (26.1%) strongly agreed. Where 159 (19.6%) were neutral. 80 (9.9%) strongly disagreed, and 79 (9.7%) disagreed. The table also shows that the statement's mean score is 3.57 (SD=1.247). It means that many of the library users positively replied to this statement.

Table 4.31 Critical Success Factors of KM (N=811)

Statements	1	2	3	4	5	Mean (SD)
Leadership.	197 (24.3%)	85 (10.5%)	178 (21.9%)	260 (32.1%)	91 (11.2%)	2.95 (1.359)
Continuous training programs.	84 (10.4%)	160 (19.7%)	147 (18.1%)	318 (39.2%)	102 (12.6%)	3.24 (1.205)

Utilizing technology accurately.	76 (9.4%)	106 (13.1%)	200 (24.7%)	313 (38.6%)	116 (14.3%)	3.35 (1.158)
Organizational ICT structure.	87 (10.7%)	87 (10.7%)	193 (23.8%)	300 (37%)	144 (17.8%)	3.40 (1.207)
Organizational culture.	99 (12.7%)	87 (10.7%)	193 (23.8%)	268 (33%)	164 (20.2%)	3.38 (1.261)
Knowledge storage and capturing.	81 (10%)	89 (11%)	172 (21.2%)	279 (34.4%)	190 (23.4%)	3.50 (1.241)
Respecting user's demands.	83 (10.2%)	97 (12%)	209 (25.8%)	249 (30.7%)	173 (21.3%)	3.41 (1.234)
Establishing a solid infrastructure for future development.	80 (9.9%)	79 (9.7%)	159 (19.6%)	281 (34.6%)	212 (26.1%)	3.57 (1.247)

4.5.20 Challenges Faced by the Library for Implementing KM

As an active library user, the researcher sought to know from the users about the challenges of KM activities in the libraries. For this purpose, they were given eight challenges on a 1-5 point Likert scale and asked to rate their agreement and disagreement among those challenges. All eight items were found valid and reliable. The survey respondents affirmed the highest mean score, 3.48, and the lowest mean score, 2.79. The results are shown in Table 4.23.

"Unwillingness to explore the difficulties associated with KM" was the first option among the challenges in the questionnaire. The table below shows that 242 (29.8%) agreed, and 56 (6.9%) strongly agreed with these challenges. While 217 (26.8%) strongly disagreed and 89 (11%) disagreed regarding this. The remaining 207 (25.5%) were neutral about the challenge of unwillingness to explore the difficulties associated with KM. The table also shows that the statement's mean score is 2.79 (SD=1.309).

"Problem with organizational culture" was the second option among the challenges in the questionnaire. Among the participants, 278 (34.3%) agreed, and 71

(8.8%) strongly agreed with the problem with organizational culture. The remaining 210 (25.9%) were neutral regarding the challenge. Whereas 159 (19.6%) disagreed and 93 (11.5%) strongly disagreed. The table also shows that the mean score is 3.09 (SD=1.158) for this challenge.

"Inadequate support from management" was the third option for the active users of the library. Table 4.23 shows that 274 (33.8%) agreed, and 102 (12.6%) strongly agreed that inadequate support from management for implementing KM. The remaining 224 (27.6%) replied that they neither agreed nor disagreed about the challenges. 116 (14.3%) strongly disagreed, and 95 (11.7%) disagreed. The table also shows that this option's mean score is 3.19 (SD=1.224).

"Feeling shy in nature of the employee to share knowledge" was the fourth option among the questionnaire's challenges. The table shows that 271 (33.4%) agreed, and 107 (13.2%) strongly agreed with this challenge. The remaining 219 (27%) were neutral about the employee's shyness to share knowledge with others. 111 (13.7%) disagreed, and 103 (12.7%) strongly disagreed about this challenge. The table also shows that this option's mean score is 3.21 (SD=1.211).

For the option "Don't find KM process as interesting," 242 (29.8%) users agreed, and 125 (15.4%) strongly agreed. In contrast, 205 (25.3%) of them were neutral. In contrast, 133 (16.4%) disagreed, and 106 (13.1%) strongly disagreed with the option. The table also shows that this option's mean score is 3.18 (SD=1.253).

For the option "Improper technology deployment," among the users, 277 (34.2%) agreed, and 124 (15.3%) strongly agreed that this is a challenge for implementing KM in the library. At the same time, 216 (26.6%) replied neither agree nor disagree. 97 (12%) disagreed, and 97 (12%) strongly disagreed. The table also shows that the mean score is 3.29 (SD=1.212) for the challenge of improper technology deployment in the library.

For the options "Losing information from employee's resignation and retirement," 255 (31.4%) agreed, and 143 (17.6%) strongly agreed. In comparison, 231 (26.3%) were neutral. Among the active users of the library, 107 (13.2%) disagreed, and 93 (11.5%) strongly disagreed with the option as a challenge. The table also shows that the statement's mean score is 3.31 (SD=1.232).

For the option “Lack of awareness,” 262 (32.3%) agreed, and 199 (24.5%) strongly agreed. At the same time, 170 (21%) were neutral. The remaining 93 (11.5%) strongly disagreed, and 87 (10.7%) disagreed that lack of awareness is not a challenge for implementing KM in the library. The table also shows that the statement's mean score is 3.31 (SD=1.232).

Table 4.32 Challenges are Faced by the Library (N=811)

Statements	1	2	3	4	5	Mean (SD)
Unwillingness to explore the difficulties associated with KM.	217 (26.8%)	89 (11%)	207 (25.5%)	242 (29.8%)	56 (6.9%)	2.79 (1.309)
Problems with organizational culture.	93 (11.5%)	159 (19.6%)	210 (25.9%)	278 (34.3%)	71 (8.8%)	3.09 (1.158)
Inadequate support from management.	116 (14.3%)	95 (11.7%)	224 (27.6%)	274 (33.8%)	102 (12.6%)	3.19 (1.224)
Felling shy in nature of the employee to share knowledge.	103 (12.7%)	111 (13.7%)	219 (27%)	271 (33.4%)	107 (13.2%)	3.21 (1.211)
Don’t find the KM process as interesting.	106 (13.1%)	133 (16.4%)	205 (25.3%)	242 (29.8%)	125 (15.4%)	3.18 (1.253)
Improper technology deployment.	97 (12%)	97 (12%)	216 (26.6%)	277 (34.2%)	124 (15.3%)	3.29 (1.212)
Losing information from employee’s resignations and retirement.	93 (11.5%)	107 (13.2%)	231 (26.3%)	255 (31.4%)	143 (17.6%)	3.31 (1.232)
Lack of awareness.	93 (11.5%)	87 (10.7%)	170 (21%)	262 (32.3%)	199 (24.5%)	3.48 (1.283)

Cross-tabulation of KM as Interesting in Library Practice

Among the users who said that they find KM as interesting in library practice, most of them also agreed (n=164) and strongly agreed (n=95) that libraries are not finding the KM process as interesting in library practice, followed by neutral (n=129), disagreed (n=87) and strongly disagreed (n=56). However, among the users who answered that they don't find KM as interesting in library practice, the majority of them agreed (n=78) and strongly agreed (n=30), followed by neutral (n=76), strongly disagreed (n=50), and disagreed (n=133).

Table 4.33 Cross-tabulation of KM as Interesting in Library Practice

Do you find KM as interesting in library practice?	Don't find KM the process as interesting by the library					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Yes	56 (10.5%)	87 (16.4%)	129 (24.3%)	164 (30.9%)	95 (17.9%)	531
No	50 (17.8%)	46 (16.4%)	76 (27.1%)	78 (27.8%)	30 (10.7%)	280
Total	106	133	205	242	125	811

4.6 INFERENTIAL STATISTICS

Inferential statistics is a data analysis method used to test hypotheses to make conclusions about a population. Inferential statistics make predictions about the people from observations of a sample. Skaik (2014) reported that most inferential statistics come from the general statistical linear model, including many multivariate methods like factor analysis. The following section shows the relations of students' demographics and personal characteristics, followed by exploratory factor analysis.

4.6.1 Mann-Whitney U Test for Users' Gender and Characteristics

The "Mann-Whitney U" test is a prominent non-parametric test comparing two independent groups. The "Mann Whitney U" test is also known as the Wilcoxon Rank Sum Test or the Mann Whitney Wilcoxon Test. It is used to determine whether two samples are likely to come from the same population. When the data is ordinal, or the t-test assumptions are not met, the Mann-Whitney test is usually utilized. To see the differences among gender and personal characteristics, non-parametric "Mann–Whitney U" tests were carried out, and a p-value of <0.05 was considered significant.

The results of the Mann–Whitney test found statistically significant differences between gender and their ratings on personal characteristics for "How frequently do you use your library?" (Mann–Whitney U= 55742.500, $p<0.05$). These findings showed that female users (Mean rank=468.65) are the frequent library visitors than male users (Mean rank=375.59). "Have you used the web-based services of the library?" (Mann–Whitney U=62644.500, $p<0.05$). These results also revealed that female users (Mean rank=442.61) used the web-based library service more than male users (Mean rank=388.23).

"Are you aware of any KM practice in your library?" (Mann–Whitney U=58153.000, $p<0.05$). This finding showed that female users (Mean rank=459.55) are more aware of KM practice than male users (Mean rank=380.01).

Significant differences were not found between gender and personal characteristics "Why do you visit the library?" (Mann–Whitney U=72006.500, $p>0.05$), "How many years have you been using the library?" (Mann–Whitney U=71177.000, $p>0.05$), "How often do you use the above web-based services?" (Mann–Whitney U= 21628.000, $p>0.05$), "Do you share knowledge with your friends or classmates?" (Mann–Whitney U=72142.000, $p>0.05$), "How much familiarity with KM?" (Mann–Whitney U= 69906.500, $p>0.05$).

Table 4.34 Mann-Whitney U Test for Users' Gender and Characteristics (N=811)

Personal Characteristics	Gender	Mean Rank	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
Why do you visit the library?	Male (n=546)	406.62	72006.500	107251.500	-.156	.876
	Female (n=265)	404.72				
How frequently do you use your library?	Male (n=546)	375.59	55742.500	205073.500	-5.673	.000
	Female (n=265)	468.65				
How many years have you been using the library?	Male (n=546)	403.86	71177.000	220508.000	-.612	. 540
	Female (n=265)	410.41				
Have you used the web-based services of the library?	Male (n=546)	388.23	62644.500	211975.500	-3.623	.000
	Female (n=265)	442.61				
How often do you use the above web-based services?	Male (n=546)	242.87	21628.000	30013.000	-.197	.843
	Female (n=265)	212.50				
Do you share knowledge with your friend or classmates?	Male (n=546)	406.37	72142.000	107387.000	-.079	.937
	Female (n=265)	405.23				
	Male (n=546)	401.53			-.809	.418

How much Familiarity with KM	Female (n=265)	415.20	69906.500	219237.500		
Are you aware of any KM practice in your library?	Male (n=546)	380.01	58153.000	207484.000	-4.837	.000
	Female (n=265)	459.55				

4.6.2 The Kruskal-Wallis H test for Age Groups of Users and Personal Characteristics

A non-parametric alternative to the One-Way ANOVA is the "Kruskal Wallis test". Non-parametric is a test that does not presume the data comes from a specific distribution. When the assumptions for ANOVA aren't met (such as the assumption of normality), the H test is utilized. It's also known as the one-way ANOVA on ranks because the test uses the ranks of the data values rather than the actual data points. A "Kruskal-Wallis H" test is typically used for three categorical, independent groups. However, it can also be employed when just two groups (i.e., a Mann-Whitney U test is more commonly used for two groups).

To see the differences among age and personal characteristics, non-parametric "Kruskal–Wallis" tests were carried out, and a p-value of <0.05 was considered significant. A separate Kruskal–Wallis's test found significant differences between the age group of users and the personal characteristics between "How frequently do you use your library?" (Chi-square=6.066; Df=2; $p<0.05$), "Which web-based library services do you use most (Chi-square=8.277; Df=2; $p<0.05$)". These findings mean that respondents with a relatively less old had more using the library (Mean rank=410.39). The results also showed that users somewhat older had used web-based services (Mean rank=264.91) but not so between the rest of the other age categories and personal characteristics because p is greater than 0.05 for different categories.

Table 4.35 The Kruskal-Wallis H test for Age Groups and Personal Characteristics

Statements	Age	Mean Rank	Chi-Square	Df	Asymp. Sig
Why do you visit the library?	18-21 years=(n=365)	398.51	5.399	2	.067
	22-25years= (n=423)	408.56			
	26-29 years =(n=23)	477.89			
How frequently do you use your library?	18-21 years=(n=365)	410.39	6.066	2	.048
	22-25 years= (n=423)	408.23			
	26-29 years =(n=23)	295.26			
How many years have you been using the library?	18-21 years=(n=365)	414.13	2.573	2	.276
	22-25 years= (n=423)	398.32			
	26-29 years =(n=23)	418.24			
Have you used the web-based services of the library?	18-21 years=(n=365)	412.25	2.862	2	.239
	22-25 years= (n=423)	404.18			
	26-29 years =(n=23)	340.28			
Which web-based library services do you use most	18-21 years=(n=205)	251.97	8.277	2	.016
	22-25 years=(n=246)	217.84			
	26-29 years=(n=17)	264.91			
How often do you use the above web-based services?	18-21 years=(n=205)	241.84	1.303	2	.521
	22-25 years=(n=246)	229.14			
	26-29 years=(n=17)	223.47			

4.6.3 The Kruskal Wallis for Current Study Level of Users with KS and KM Perceptions

To see the differences among the current study level, and with KS, KM familiarity, KM awareness, and KM as interesting in library practice, non-parametric "Kruskal–Wallis" tests were also carried out, and a p-value of <0.05 was considered as significant. Table 4.26 found the statement "How much Familiarity with KM" (Chi-square=38.719; Df=4; P <0.05), and "Do you find KM as interesting in library practice" (Chi-square=18.118; Df=4; P<0.05) has a significant difference from the current study level. These findings

mean that respondents with a relatively high level of education had more familiarity with KM (Mean rank=434.45 for 3rd-year students; Mean rank=474.26 for 4th-year students; Mean rank=454.8 for master's students). The findings also showed that respondents with a lower level of education showed KM as interesting in library practice (Mean rank=404.42 for 1st-year students; Mean rank= 440.00 for 2nd-year students and Mean rank=401.17 for 3rd-year students) but not so between the rest of the current study level categories. Table 4.26 also revealed that no significant difference was found between "Do you share knowledge with your friend or classmates?" (Chi-square=4.415; Df=4; p> 0.05) and "Are you aware of any KM practice in your library?" (Chi-square=2.286; Df=4; p> 0.05) with the current study level.

Table 4.36 The Kruskal Wallis for Study Level with KS and KM Perceptions (N=811)

Statements	Current Study Level	Mean Rank	Chi-Square	Df	Asymp. Sig
Do you share knowledge with your friend or classmates?	Undergraduate(1st)=208	386.25	4.415	4	.353
	Undergraduate(2nd)=268	422.72			
	Undergraduate(3rd)=156	409.39			
	Undergraduate(4th)=110	401.32			
	Masters=69	400.40			
How much Familiarity with KM	Undergraduate(1st)=208	416.50	38.719	4	.000
	Undergraduate(2nd)=268	340.69			
	Undergraduate(3rd)=156	434.45			
	Undergraduate(4th)=110	474.26			
	Masters=69	454.87			
Are you aware of any KM practice in your library?	Undergraduate(1st)=208	395.88	2.286	4	.683
	Undergraduate(2nd)=268	409.59			
	Undergraduate(3rd)=156	424.54			
	Undergraduate(4th)=110	389.02			
	Masters=69	407.68			
	Undergraduate(1st)=208	404.42	18.118	4	.001

Do you find KM as interesting in library practice	Undergraduate(2nd)=268	440.00			
	Undergraduate(3rd)=156	401.17			
	Undergraduate(4th)=110	361.85			
	Masters=69	360.03			

4.7 EXPLORATORY FACTOR ANALYSIS (EFA)

EFA was applied in this research to test the validity. The factors were extracted using EFA and principal component analysis, followed by Varimax rotation. The approach facilitates identifying latent constructs or underlying links between measured variables. Factor loadings of more than 0.4 are acceptable and have the necessary credentials. Internal consistency is one of the strategies that may be used to assess a research's reliability. The details are given below.

4.7.1 Internal Consistency

IBM®SPSS® was used to check the questionnaire's internal consistency. Cronbach's alpha coefficient was used to compute it. It's a typical method in most studies, and it should be at least 0.7 (Bagheri et al., 2015). Therefore, Cronbach's Alpha (α) was examined to determine the internal consistency of the questions (Table 4.27). The level to which a methodology can be relied on to produce the same results if it is repeated is referred to as reliability (Saunders et al., 2009). The scores exceed the proposed by Malhotra (1999) 0.6 minimum acceptable level for all constructs in this research. According to Konting et al. (2009), the threshold or cut-off alpha value is as follows; alpha value 0.91-1.00 is excellent, alpha value 0.81-0.90 is very good; 0.71-0.80 is good; 0.61-0.70 acceptable; 0.01-0.06 is non-acceptable. Similarly, Gliem and Gliem (2003), Kline (2013), and Field (2013) stated the cut-off alpha value is as follows; "alpha value ≥0.9 is excellent", "alpha value ≥0.8 is good," "alpha value≥0.7 is acceptable", "alpha value ≥0.6 is questionable"' "alpha value ≥0.5 is poor," "alpha value ≤0.5 is unacceptable." The table shows the alpha value is 0.954 indicating an

excellent internal consistency. So, the questionnaire used in this study is appropriate for conducting research.

Table 4.37 Internal Consistency of the Items in the Questionnaire

Cronbach's Alpha	No. of Items
.954	70

4.7.2 Outliers and Suitability of Data

To conduct EFA, the suitability of data was performed fast. Outliers can occur during incorrect data entry. Hair et al. (2010) indicated that incorrect data entry could cause potential problems and the statistical test result. After the data were transferred into the IBM®SPSS® file, the error was checked through data cleaning that data had been transferred accurately. For determining the suitability of data, the researcher reviewed the normality of data, sample size adequacy, "Kaiser-Meyer-Olkin (KMO)," and "Bartlett's Test of Sphericity."

4.7.3 Normality of Data

The measurement items' minimum, maximum, mean, standard deviation, skewness, and kurtosis were analyzed to determine the normality of the data distribution. The minimum value was 1, and the maximum was 5. The mean values ranged from 2.40 to 3.57. Standard deviation (SD) values range from 1 to 1.397. Hair et al. (2010) recommended the range of Skewness from -1 to +1. The research skewness values ranged from -.681 to .460, within the recommended range from -1 to +1 by Hair et al. (2010). According to Brown (2013), the kurtosis values ranged from -3 to +3. In this research, the kurtosis values went from -1.248 to 1.276, an acceptable range. The list of values is presented in the following Table 4.28.

Table 4.38 Variables Distribution

Item coding	Minimum	Maximum	Mean	Standard. Deviation	Skewness	Kurtosis
QLS1	1	5	2.97	1.397	-.158	-1.335
QLS2	1	5	3.14	1.254	-.234	-1.016
QLS3	1	5	3.14	1.235	-.300	-.899
PFPL1	1	5	2.40	1.241	.459	-.913
PFPL2	1	5	3.12	1.227	-.217	-.998
PFPL3	1	5	2.93	1.163	-.080	-.844
PFPL4	1	5	3.12	1.180	-.312	-.802
PFPL5	1	5	3.40	1.251	-.552	-.702
PFPL6	1	5	3.07	1.273	-.073	-1.021
FKM1	1	5	2.24	1.124	.460	-.828
FKM2	1	5	2.52	1.120	-.345	-.596
FKM3	1	5	2.58	1.122	.151	-.827
FKM4	1	5	2.75	1.203	-.037	-.927
FKMI1	1	5	2.54	1.313	-.224	-1.236
FKMI2	1	5	2.78	1.182	-.041	-.996
FKMI3	1	5	2.97	1.294	-.137	-1.075
FKMI4	1	5	2.95	1.370	-.106	-1.248
KMRL1	1	5	2.82	1.257	-.137	-1.132
KMRL2	1	5	3.15	1.156	-.354	-.789
KMRL3	1	5	3.18	1.182	-.417	-.722
KMRL4	1	5	3.07	1.128	-.263	-.667
KMRL5	1	5	3.11	1.178	-.268	-.725
KMRL6	1	5	3.36	1.186	-.461	-.542
AKMLS1	1	5	2.77	1.350	-.121	-1.418
AKMLS2	1	5	2.99	1.195	-.173	-1.007
AKMLS3	1	5	3.10	1.233	-.390	-.878
AKMLS4	1	5	3.22	1.223	-.389	-.782
AKMLS5	1	5	3.28	1.295	-.448	-.886

AKMLS6	1	5	3.38	1.306	-.466	-.877
RKMLP1	1	5	2.80	1.235	-.128	1.036
RKMLP2	1	5	3.10	1.106	-.155	.649
RKMLP3	1	5	3.36	1.157	-.487	.483
CED1	1	5	2.97	1.370	-.244	1.276
CED2	1	5	3.01	1.134	-.202	.695
CED3	1	5	3.01	1.162	-.251	.700
CED4	1	5	3.32	1.216	-.503	.603
CSF1	1	5	2.95	1.359	-.231	-1.242
CSF2	1	5	3.24	1.205	-.391	-.899
CSF3	1	5	3.35	1.158	-.528	-.519
CSF4	1	5	3.40	1.207	-.571	-.535
CSF5	1	5	3.38	1.261	-.510	-.710
CSF6	1	5	3.50	1.241	-.598	-.588
CSF7	1	5	3.41	1.234	-.460	-.695
CSF8	1	5	3.57	1.247	-.681	-.492
CIKMS1	1	5	2.79	1.309	-.144	-1.266
CIKMS2	1	5	3.09	1.158	-.286	-.840
CIKMS3	1	5	3.19	1.224	-.416	-.758
CIKMS4	1	5	3.21	1.211	-.386	-.757
CIKMS5	1	5	3.18	1.253	-.274	-.927
CIKMS6	1	5	3.29	1.212	-.454	-.671
CIKMS7	1	5	3.31	1.232	-.399	-.758
CIKMS8	1	5	3.48	1.283	-.571	-.706

4.7.4 Sample Size Adequacy

Adequate sample size is essential for factor analysis and several sample size recommendations (Skaik, 2014). Hair et al. (2010) recommended that the sample size be more than 100. Tabachnick and Fidell (2007) pointed out that it should be a minimum of 300 cases. Comrey and Lee (1992), cited in Skaik (2014), offer a rule of thumb for

considering sample size where “100-200 is poor”, “200-300 is fair”, “300-500 is good”, “500-1000” is very good and “more than 1000 is excellent.” Thus, the sample size of the present research, i.e.,1,060, is acceptable and perfect.

4.7.5 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of Sphericity

“Kaiser-Meyer-Olkin (KMO)” index determines data fitness for factor analysis. Kaiser put the following KMO values “0.90 to 1.00 marvelous; 0.80 to 0.89 meritorious; 0.70 to 0.79 middling; 0.60 to 0.69 mediocre; 0.50 to 0.59 miserable; and 0.00 to 0.49 unacceptable” (Kaiser, 1974). For a good sample, the value of this statistic must be larger than 0.5. From Table 4.29, it is apparent factor analysis is appropriate. Table 4.29 shows that the KMO value is 0.960, between 0.5 and 1.0, and the result is marvelous because the KMO value is between 0.90 and 1.00. There will be a correlation between variables and factor analysis if “Bartlett's Test” is significant. Here the approximate chi-square statistic is 30711.001 with 1326 degrees of freedom. This finding is significant at the 0.05 level. Also, the “Bartlett Test of Sphericity” has a p-value of 0.000, less than 0.05. Therefore, it means that items are significantly correlated, and there is no problem with the data for factor analysis.

Table 4.39 KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.960
Bartlett's Test of Sphericity	Approx. Chi-Square	30711.001
	Df	1326
	Sig.	.000

4.7.6 Factor Loading and Communalities

The table below shows that factor loading ranged from 0.406 to 0.852. According to Hair et al. (2010), an outset of 0.5 for factor loading is seen as significant. Thus, the researcher determined the factor loading of 0.5 accepted in the research findings. As seen, all the factor loadings exceeded the recommended outset value of 0.5. Only one item was loading below the recommended value, i.e., 0.406 (Table 4.30). So, the item was not deleted. The proportion of each variable's variance that the factors explain is communalities. If the communalities are low, the extracted variables may only account for a small portion of the variance, and more factors may be maintained to explain the variance better. The squared multiple correlations of the variables determine the initial values on the diagonal of the correlations of the variable matrix. The values in this column indicate the retained factors can explain each variable's variance in the extraction. High values are strongly represented in the common factor space, whereas low values are poorly represented (Rietveld & Van Hout, 1993). The table also showed the commonalities of variables extracted between 0.533 and 0.841 are between the ranges recommended by Nadiri (1970).

Table 4.40 Factor Loading and Communalities

Communalities			
Items coding	Factor loading	Initial	Extraction
QLS1	.625	1.000	.735
QLS2	.728	1.000	.811
QLS3	.733	1.000	.745
PFPL1	.612	1.000	.668
PFPL2	.612	1.000	.659
PFPL3	.708	1.000	.653
PFPL4	.698	1.000	.615
PFPL5	.573	1.000	.642
PFPL6	.667	1.000	.533

FKM1	.738	1.000	.741
FKM2	.852	1.000	.841
FKM3	.806	1.000	.780
FKM4	.740	1.000	.777
FKMI1	.696	1.000	.749
FKMI2	.718	1.000	.695
FKMI3	.702	1.000	.728
FKMI4	.695	1.000	.679
KMRL1	.570	1.000	.778
KMRL2	.630	1.000	.721
KMRL3	.655	1.000	.735
KMRL4	.751	1.000	.701
KMRL5	.755	1.000	.698
KMRL6	.740	1.000	.716
AKML1	.526	1.000	.813
AKML2	.580	1.000	.773
AKML3	.576	1.000	.779
AKML4	.631	1.000	.748
AKML5	.680	1.000	.760
AKML6	.664	1.000	.756
RKMLP1	.699	1.000	.697
RKMLP2	.504	1.000	.609
RKMLP3	.406	1.000	.590
CED1	.646	1.000	.748
CED2	.608	1.000	.724
CED3	.695	1.000	.734
CED4	.734	1.000	.754
CSF1	.612	1.000	.747
CSF2	.623	1.000	.724
CSF3	.722	1.000	.719
CSF4	.743	1.000	.720
CSF5	.753	1.000	.700

CSF6	.728	1.000	.696
CSF7	.705	1.000	.631
CSF8	.685	1.000	.648
CIKM1	.581	1.000	.714
CIKM2	.675	1.000	.700
CIKM3	.686	1.000	.667
CIKM4	.696	1.000	.637
CIKM5	.770	1.000	.668
CIKM6	.746	1.000	.670
CIKM7	.718	1.000	.609
CIKM8	.699	1.000	.606

4.7.7 Total Eigenvalues and Variance Explained

The Principal Component Analysis (PCA) approach was utilized to extract factors in this research. Table 4.30.1 shows ten components whose total is greater than 1.0 among the 52 components. For the rest of the components, the result is less than 1.0. The table presents the results of the factor extraction using PCA showing that the factor analysis of all the manifest variables provided ten principal components. The total percent of variance accounted for by ten factors was 70.655%, as seen in the following table.

Table 4.41 Total Eigenvalues and Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	20.100	38.654	38.654	20.100	38.654	38.654
2	2.780	5.346	44.000	2.780	5.346	44.000
3	2.612	5.024	49.023	2.612	5.024	49.023
4	2.146	4.126	53.150	2.146	4.126	53.150

5	1.953	3.757	56.906	1.953	3.757	56.906
6	1.903	3.659	60.565	1.903	3.659	60.565
7	1.518	2.918	63.483	1.518	2.918	63.483
8	1.472	2.831	66.315	1.472	2.831	66.315
9	1.169	2.248	68.563	1.169	2.248	68.563
10	1.088	2.091	70.655	1.088	2.091	70.655

Extraction Method: Principal Component Analysis.

4.7.8 Reliability Analysis

Finally, Cronbach's coefficient was utilized to determine the consistency of the variables employed in this research. The scores exceed the proposed by Malhotra (1999), the 0.6 minimum acceptable level for all constructs.

Table 4.31 shows the reliability analysis results for the Quality of the Library Services (QLS) variables. Cronbach's Alpha value for the construct is 0.842, considered as good. Moreover, the internal consistency of the values for the variables ranged from 0.686 to 0.827.

Table 4.42 Cronbach's Alpha for Quality of the Library Services

Cronbach's Alpha	No. of Items
0.842	3

Item coding	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
QLS1	6.28	5.283	.666	.827
QLS2	6.11	5.290	.806	.686

QLS3	6.11	5.988	.661	.823

Table 4.32 shows the reliability analysis results for the variables of Perception about the Facility and Performance of the Library (PFPL). Cronbach's Alpha value for the construct/factor is 0.842, considered good. Moreover, the internal consistency of the variable values ranged from 0.771 to 0.815.

Table 4.43 Cronbach's Alpha for Perception about the Facility and Performance of the Library

Cronbach's Alpha	No. of Items
0.842	6

Item coding	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PFPL1	15.63	21.357	.456	.815
PFPL2	14.91	19.608	.645	.774
PFPL3	15.10	19.889	.664	.771
PFPL4	14.91	20.304	.604	.783
PFPL5	14.63	20.162	.569	.790
PFPL6	14.96	20.164	.555	.794

Table 4.33 shows the reliability analysis results for Familiar with KM (FKM) variables. Cronbach's Alpha value for the construct/factor is 0.884, considered as good.

Moreover, the internal consistency of the values for the variables ranged from 0.818 to 0.881.

Table 4.44 Cronbach's Alpha for Familiar with KM

Cronbach's Alpha	No. of Items
0.884	4

Item coding	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
FKM1	7.85	9.592	.666	.881
FKM2	7.58	8.729	.833	.818
FKM3	7.52	9.033	.771	.841
FKM4	7.34	8.863	.724	.861

Table 4.34 shows the reliability analysis results for Familiar with KM Ideas (FKMI) variables. Cronbach's Alpha value for the construct/factor is 0.829, considered as good. Moreover, the internal consistency of the values for the variables ranged from 0.760 to 0.812. The table shows that the alpha value is greater than 0.05, which can be called reliable.

Table 4.45 Cronbach's Alpha for Familiar with KM Ideas

Cronbach's Alpha	No. of Items
0.829	4

Item coding	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
FKMI1	8.70	10.310	.667	.780
FKMI2	8.45	11.088	.656	.786
FKMI3	8.26	10.125	.710	.760
FKMI4	8.28	10.456	.601	.812

Table 4.35 shows the reliability analysis results for KM Relevance to Librarianship (KMRL) variables. Cronbach's Alpha value for the factor is 0.896, considered good. Moreover, the internal consistency of the values for the variables ranged from 0.867 to 0.884. The table shows that the alpha value is greater than 0.05, which can be called reliable.

Table 4.46 Cronbach's Alpha for KM Relevance to Librarianship

Cronbach's Alpha	No. of Items
0.896	6

Item coding	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
KMRL1	15.86	23.042	.698	.881
KMRL2	15.53	23.215	.763	.871
KMRL3	15.51	22.816	.783	.867
KMRL4	15.62	24.266	.675	.884
KMRL5	15.57	23.677	.697	.881

KMRL6	15.32	23.563	.701	.880

Table 4.36 shows the reliability analysis results for the variables of Advantages of Implementing KM for Library Services (AKML). Cronbach's Alpha value for the construct/factor is 0.929, considered excellent. Moreover, the internal consistency of the values for the variables ranged from 0.911 to 0.920. As shown in the table, the variables scored high-reliability values.

Table 4.47 Cronbach's Alpha for Advantages of Implementing KM for Library Services

Cronbach's Alpha	No. of Items
0.929	6

Item coding	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
AKML1	15.98	29.681	.767	.920
AKML2	15.76	30.486	.824	.913
AKML3	15.64	29.948	.839	.911
AKML4	15.53	30.551	.794	.916
AKML5	15.46	30.182	.767	.920
AKML6	15.36	29.918	.781	.918

Table 4.37 shows the reliability analysis results for the variables of Relevance of KM on Library Practice (RKMLP). Cronbach's Alpha value for the construct/factor

is 0.865, considered good. Moreover, the internal consistency of the values for the variables ranged from 0.765 to 0.855. As shown in the table, the variables scored high-reliability values.

Table 4.48 Cronbach's Alpha for Relevance of KM on Library Practice

Cronbach's Alpha	No. of Items
0.865	3

Item coding	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
RKMLP1	6.46	4.296	.747	.807
RKMLP2	6.16	4.639	.794	.765
RKMLP3	5.90	4.801	.692	.855

Table 4.38 shows the reliability analysis results for Contribution to the Education by Department (CED) variables. Cronbach's Alpha value for the construct/factor is 0.858, considered good. Moreover, the internal consistency of the values for the variables ranged from 0.795 to 0.842. The table shows, the variables scored high-reliability values.

Table 4.49 Cronbach's Alpha for Contribution to the Education by Department

Cronbach's Alpha	No. of Items
0.858	4

Item coding	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CED1	9.35	9.385	.659	.842
CED2	9.30	10.017	.765	.795
CED3	9.30	10.032	.736	.806
CED4	9.00	10.153	.667	.833

Table 4.39 shows the reliability analysis results for Critical Success Factors (CSF) variables. Cronbach's Alpha value for the construct/factor is 0.922, considered excellent. Moreover, the internal consistency of the values for the variables ranged from 0.908 to 0.917. The table shows the variables scored high-reliability values.

Table 4.50 Cronbach's Alpha for Critical Success Factors

Cronbach's Alpha	No. of Items
0.922	8

Item coding	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CSF1	23.87	48.814	.679	.917
CSF2	23.58	49.167	.765	.909
CSF3	23.47	49.405	.787	.908
CSF4	23.42	48.945	.779	.908
CSF5	23.44	49.200	.721	.913
CSF6	23.32	48.931	.753	.910

CSF7	23.41	49.689	.709	.914
CSF8	23.25	49.433	.716	.913

Table 4.40 shows the reliability analysis results for Challenges for Implementing KM (CIKM) variables. Cronbach's Alpha value for the construct/factor is 0.906, considered excellent. Moreover, the internal consistency of the variable values ranged from 0.891 to 0.899. As shown in the table, the variables scored high-reliability values.

Table 4.51 Cronbach's Alpha for Challenges

Cronbach's Alpha	No. of Items
0.906	8

Item coding	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CIKM1	22.74	45.825	.646	.899
CIKM2	22.44	46.155	.731	.892
CIKM3	22.34	45.347	.737	.891
CIKM4	22.32	45.824	.714	.893
CIKM5	22.35	45.899	.678	.896
CIKM6	22.24	45.487	.736	.891
CIKM7	22.22	46.046	.683	.895
CIKM8	22.05	45.579	.679	.896

4.8 CONFIRMATORY FACTOR ANALYSIS (CFA)

CFA was performed to verify the construct validity of the survey items in this research, which was conducted using SmartPLS 3. It refers to how effectively the concept explains its variables (Hair et al., 2010). To put it another way, construct validity is defined as a high level of correlation between elements inside a single construct.

4.8.1 Justification for Using SmartPLS 3

This research employed SmartPLS 3 for the hypothesized model testing for the following reason. PLS-SEM is a more reliable method for analyzing data with non-normal distributions. Data normality is not a requirement in SmartPLS 3 (Beebe et al.,1998). It uses standardization procedures to convert non-normal data into data that follows the central limit theorem. PLS-SEMs provide an easy-to-use visual interface that allows researchers to investigate correlations between observable and latent variables in a complicated model while also performing several robustness assessments (Memon et al., 2021). Additional methods, such as enhanced bootstrapping, are included in the software to aid in the understanding and modeling of composite-based models (Hair et al., 2022). The measurement of model invariance is not the main emphasis of this study's analysis. Instead, the focus is on the factors influencing KM implementation in Bangladeshi public university libraries. According to Sosik et al. (2009), using latent variable scores is critical for examining the underlying link between the latent variables. According to Henseler et al. (2009), PLS is appropriate for complicated models with many latent variables. The current research uses many latent variables and has a somewhat complicated model.

4.8.2 Hypothesized Model and Modeling Strategy

The CFA model of productivity values assumes that nine factors can explain the responses to the questionnaire items. In this case, the nine factors are the quality of the library services, facility and performance, critical success factor, familiarity with KM,

challenges of KM implementation, KM practice, department contribution, relevance of KM in the library and the advantages of KM for library service.

Confirmatory modeling strategy, competing models' approach, and model creation strategy are the three types of modeling strategies. Each of these three approaches to modeling (Hair et al., 2010) takes a somewhat different approach. As the name says, the confirmatory technique is the most straightforward strategy. The researcher defines a single model consisting of a collection of relationships and uses SEM to evaluate the model's suitability. Put another way, looking for evidence that the model matches the data. Second, testing various models, i.e., alternative models, through overall model comparisons is central to the competing model's strategy. The optimal model that might reflect the data collected would emerge from evaluating all models, which is far more potent than a test of a single model. The last method is the model development strategy, starting with the fundamental model framework and progressing through the adequacy and reasonableness of strengthening the framework through structural or measurement model adjustments. It begins with a model developed based on theoretical judgment and practically evaluated using SEM (Hamid et al., 2011). The confirmatory technique was used in this research.

4.8.3 Measurement and Structural Models

SmartPLS 3.0 was utilized to assess the measurement and structural models for PLS-SEM analysis. Using SmartPLS, the data was transformed into an Excel CVS file to generate raw input for the application.

4.8.3.1 Assessment of the Measurement Model

Figure 4.1, the measurement model consists of an indicator and a path related to the latent variables they want to measure. According to Henseler et al. (2009), the goal of assessing the measurement model is to evaluate its reliability and validity and, consequently inner path estimations. The following tests are used to carry it out.

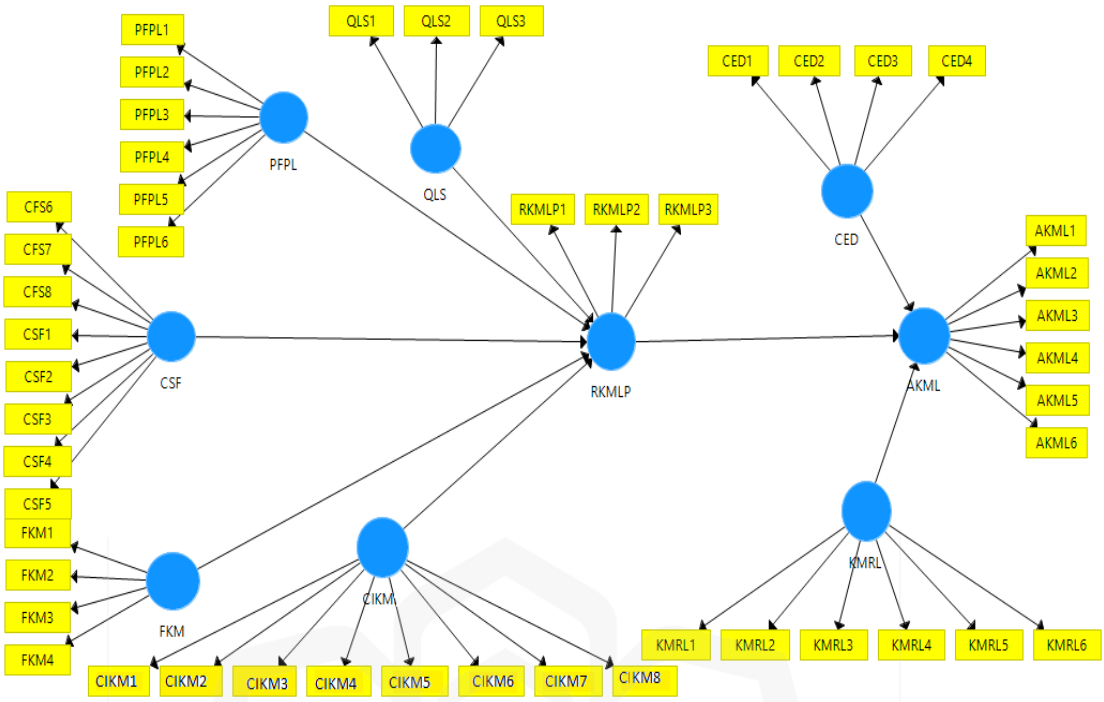


Figure 4.1 The Research Measurement Model

Notes: QLS (Quality of the Library Services), PFPL (Perceptions about the facility and Performance of the Library), CSF (Critical Success Factors), FKM (Familiarity with KM), CIKM (Challenges Implementing KM), RKMLP (Relevance of KM in Library Practice), CED (Contribution to the KM by Department), KMRL (KM Relevance to Librarianship), AKML (Advantages of KM for Library Service).

i. Measure the factor loading of each manifest variable, which should be greater than 0.4, to determine indicator reliability (Hair et al., 2010).

ii. Internal consistency reliability is determined by calculating composite reliability and Cronbach's alpha, which should be 0.7 and higher (Hair et al., 2010).

iii. Convergent validity is determined by calculating the AVE, which must be greater than 0.5 (Fornell and Larcker, 1981).

iv. Using Fornell and Larcker's (1981) criterion, discriminant validity is defined as the square root of the AVE for each construct exceeding the correlations between the construct and all other constructs (Henseler et al., 2009).

As shown in Table 4.41, examining the measurement model revealed a reliable and valid measurement model. All parameters were above the acceptable value of 0.6, indicating that the indications were reliable. The composite reliability and Cronbach's alpha values for the constructs were higher than the suggested value of 0.7, showing excellent internal consistency dependability. The AVE of the constructs was higher than the recommended value of 0.5, indicating sufficient convergent validity. The square root of the constructs' AVE values exceeded the constructs' correlations, and all indicators loaded higher on their constructs, showing adequate discriminant validity.

Table 4.52 Internal Consistency, Convergent and Discriminant Validity

Construct	Loadings	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance	√AVE
QLS1	0.868	0.845	0.857	0.906	0.763	0.873
QLS2	0.923					
QLS3	0.828					
PFPL1	0.608	0.818	0.844	0.868	0.525	0.724
PFPL2	0.816					
PFPL3	0.779					
PFPL4	0.731					
PFPL5	0.723					
PFPL6	0.670					
CSF1	0.782	0.923	0.928	0.936	0.648	0.805
CSF2	0.840					
CSF3	0.847					
CSF4	0.834					
CSF5	0.777					
CSF6	0.809					
CSF7	0.772					
CSF8	0.777					
FKM1	0.880	0.861	0.863	0.915	0.782	0.884

FKM2	0.917					
FKM3	0.855					
CIKM1	0.782	0.907	0.922	0.923	0.602	0.776
CIKM2	0.831					
CIKM3	0.825					
CIKM4	0.783					
CIKM5	0.721					
CIKM6	0.784					
CIKM7	0.734					
CIKM8	0.737					
RKMP1	0.888	0.866	0.867	0.918	0.789	0.888
RKMP2	0.913					
RKMP3	0.864					
CED1	0.841	0.862	0.874	0.905	0.706	0.840
CED2	0.874					
CED3	0.846					
CED4	0.797					
KMRL1	0.810	0.896	0.904	0.920	0.658	0.811
KMRL2	0.852					
KMRL3	0.869					
KMRL4	0.755					
KMRL5	0.782					
KMRL6	0.792					
AKML1	0.850	0.930	0.933	0.945	0.742	0.861
AKML2	0.885					
AKML3	0.895					
AKML4	0.857					
AKML5	0.833					
AKML6	0.846					

Discriminant validity was also tested using the criterion suggested by Fornell & Larcker (1981). The results of the tests are reported in Table 4.42. The final research measurement model is shown in Figure 4.2.

Table 4.53 Fornell & Larcker Criterion

	AKML	CED	CIKM	CSF	FKM	KMRL	PFPL	QLS	RKMP
AKML	0.861								
CED	0.672	0.84							
CIKM	0.649	0.558	0.776						
CSF	0.699	0.613	0.582	0.805					
FKM	0.483	0.443	0.358	0.402	0.885				
KMRL	0.634	0.588	0.502	0.549	0.417	0.811			
PFPL	0.515	0.489	0.453	0.489	0.373	0.487	0.724		
QLS	0.577	0.572	0.475	0.491	0.363	0.472	0.5	0.874	
RKMP	0.657	0.655	0.495	0.578	0.415	0.567	0.424	0.56	0.888

Note: Values in italic and bold represent the square root of AVE

Notes: QLS (Quality of the Library Services), PFPL (Perceptions about the Facility and Performance of the Library), CSF (Critical Success Factors), FKM (Familiarity with KM), CIKM (Challenges Implementing KM), RKMLP (Relevance of KM in Library Practice), CED (Contribution to the KM by Department), KMRL (KM Relevance to Librarianship), AKML (Advantages of KM for Library Service)

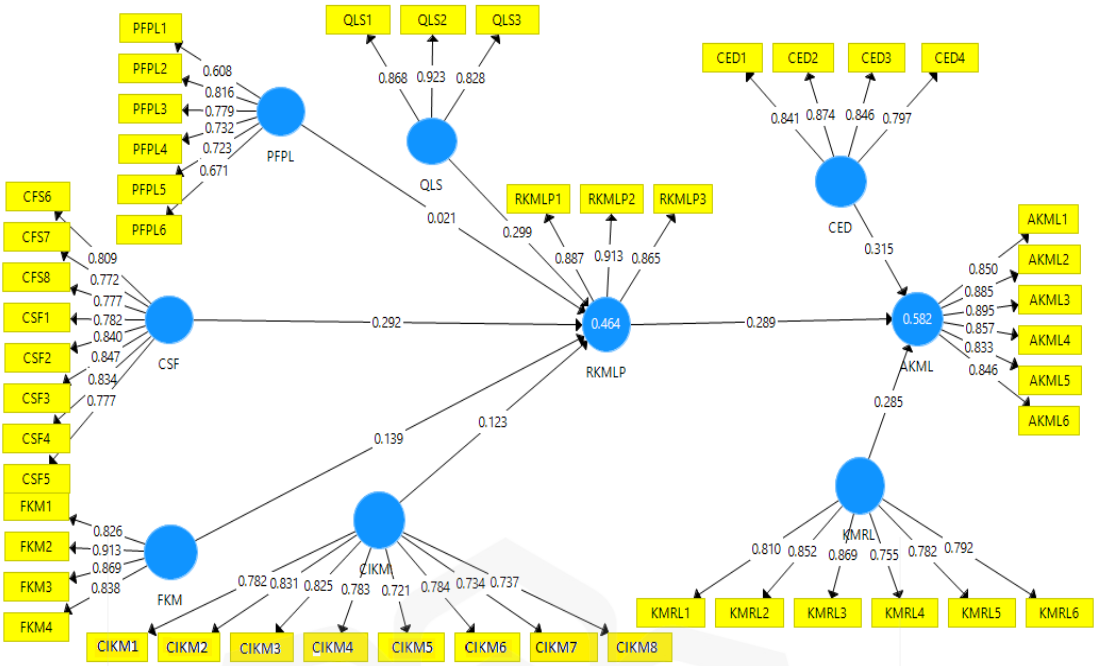


Figure 4.2 The Research Final Measurement Model

4.8.3.2 Assessment of the Structural Model

The purpose of assessing the structural model is to evaluate its validity and test the hypotheses. The structural model consists of the constructs, also known as the latent variable (Skaik, 2014), and the path that connects them, as shown in Figure 4.3. Path significance of the structural model is estimated by bootstrapping, a resampling technique. The bootstrap procedure produces t-values for each path in the model. The following tests are used to do this.

i. The coefficient of determination (R^2), which should be 0.01, 0.09, and 0.25, signifying small, medium, and large exploratory power, is calculated by evaluating the amount of explained variance of each latent variable (Mitchell et al., 2013).

ii. The path coefficient is calculated by calculating the path estimates and t-statistics, which should be 0.02, 0.15, and 0.35, respectively, to indicate modest, medium, and large associations (Henseler et al., 2009).

iii. Effect size (f^2) by measuring the relative impact of a particular exogenous latent variable on an endogenous latent variable through changes in the R^2 of the latent variable, which should be 0.02, 0.15, and 0.35 indicating small, medium, and large effect (Henseler et al., 2009), and

iv. Predictive relevance (Q^2) is determined by determining how successfully the model and its parameter estimates rebuilt observed values, which should be greater than zero (Chin, 2010).

Notes: QLS (Quality of the Library Services), PFPL (Perceptions about the Facility and Performance of the Library), CSF (Critical Success Factors), FKM (Familiarity with KM), CIKM (Challenges Implementing KM), RKMLP (Relevance of KM in Library Practice), CED (Contribution to the KM Education by Department), KMRL (KM Relevance to Librarianship), AKML (Advantages of KM for Library Service).

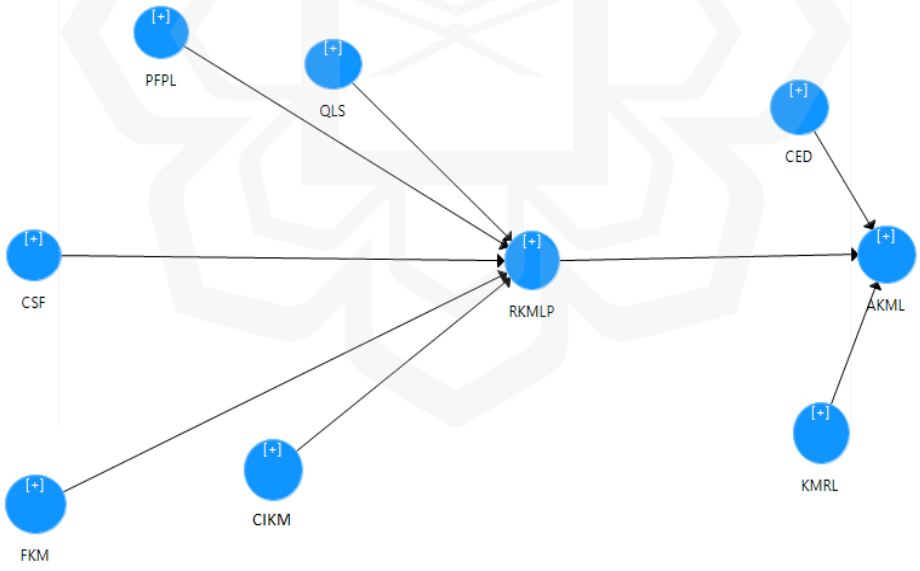


Figure 4.3 The Structural Research Model

As seen in Tables 4.43, 4.44, and 4.45 and Figure 4.4 below, analyzing the structural model demonstrated an adequate and valid model. According to Chin (1998), an R^2 value of 0.67 is regarded as significant, whereas values of 0.333 are medium, and values of 0.19 are weak. The R^2 values for AKML and RKMP were large, demonstrating strong explanatory power.

Collectively QLS (Quality of the library services), CSF (Critical success factor), FKM (Familiarity with KM), and CIKM (Challenges implementing KM) explained more than 46% variance in KM practice. At the same time, KM practice in the library explains more than 58% variance to KM implementation (Figure 4.43). The dependent variables' predictive relevance (Q^2) values were higher than the suggested value of zero, indicating that the model's predictive relevance was appropriate. A value less than 0.10 or 0.08 in SRMR and NFI values between 0 and 1(Hu & Bentler 1999) is considered a good fit. Table 4.44 showed the good fit of the model (SRMR=0.072; NFI=.786) because it is lower than Hu and Bentler's (1999) suggested value. The effect size (f^2) values were within the recommended values ranging from 0.001 to 0.119, demonstrating the independent variables' small and medium effect sizes.

Table 4.54 Coefficient of Determination and Predictive Relevance

Construct	R^2	Q^2
AKML	0.582	0.426
RKMP	0.464	0.358

Table 4.55 Model Fit

	Saturated Model	Estimated Model
SRMR	0.058	0.072
d_ULS	3.714	5.895
d_G	1.059	1.149
Chi-Square	5826.404	6057.954

NFI	0.793	0.785

Table 4.56 Effect Size

Path	f^2	Effect size
QLS -> RKMP	0.106	Medium
PFPL -> RKMP	0.001	Small
CSF -> RKMP	0.088	Small
FKM -> RKMP	0.028	Small
CIKM -> RKMP	0.017	Small
RKMP -> AKML	0.104	Medium
CED -> AKML	0.119	Medium
KMRL -> AKML	0.116	Medium

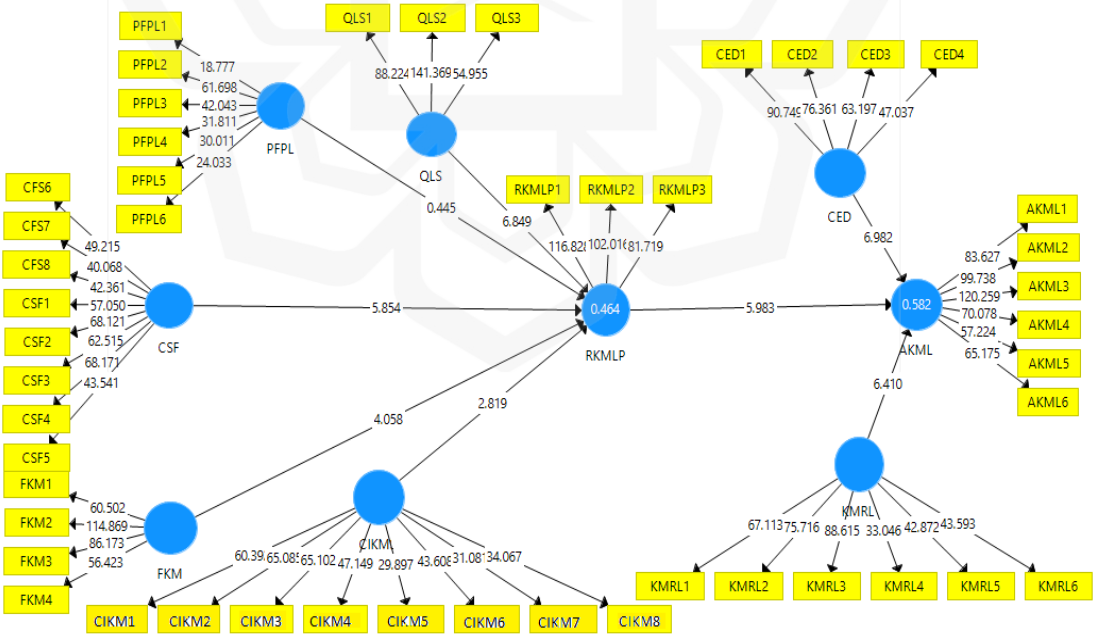


Figure 4.4 Research Final Structural Model

Notes: QLS (Quality of the Library Services), PFPL (Perceptions about the Facility and Performance of the Library), CSF (Critical Success Factors), FKM (Familiarity with KM), CIKM (Challenges Implementing KM), RKMLP (Relevance of KM in Library Practice), CED (Contribution to the KM Education by Department), KMRL (KM Relevance to Librarianship), AKML (Advantages of KM for Library Service).

4.9 HYPOTHESES TESTING

Path coefficients between latent variables are evaluated to test the proposed hypotheses and the structural model. A path coefficient value of at least 0.1 is required to account for a given impact within the model (Alnakhli, 2019; Hair et al., 2011; Wetzels et al., 2009). The present research used bootstrapping technique for hypothesis testing. It is a resampling technique and non-parametric procedure that allows for significant tests to be performed to analyze to prove the hypotheses. The result from the bootstrapping method gave three values, path coefficient (β), t, and p values. (β) has a standard value of - 1 and +1. A value approaching +1 indicates a stronger positive significant relationship, and a value of -1 indicates that the relationship is an increasingly strong negative relationship between the constructs (Abu Bakar et al., 2020). The t values used for a one-tailed test are 2.33, 1.645, and 1.28 for confidence levels of 99%, 95%, and 90%, respectively (Hair et al., 2017). For this study, a confidence level of 95% was used and the value of t = 1.645 was the relevant t value of reference. Any t value higher than 1.645 indicates that the relationship between the constructs is significant at the 95% confidence level, and the hypothesis for the relationship between the constructs is supported. Of these path coefficients in this model (Table 4.46), seven of the proposed hypotheses are supported, i.e. (H1, H3-H8), where H2 was not supported. At t-statistics values of 2.819 to 6.982, the path coefficients showed significant levels that surpassed the suggested value of 0.1 except for the H2. Supported hypotheses are significant at the level of 0.05, have signed in the expected directions, and possess a path coefficient value (β) ranging from 0.123 to 0.315 except H2. The result of the testing is explained below.

H1: Quality of the library service has a significant positive relationship with KM practice (β= 0.299; t-value= 6.849; p-value=0.000). Thus, H1 is supported.

H2: Facility and performance have a significant positive relationship with KM practice (β= 0.021; t-value= 0.445; p-value=0.656). So, H2 is not supported.

H3: Critical success factors with having a significant positive relationship with KM practice (β= 0.292; t-value= 5.854; p-value=0.000). Thus, H3 is supported.

H4: KM familiarity issues have a significant positive relationship with KM practice (β= 0.139; t-value= 4.058; p-value=0.000). So, H4 is supported.

H5: Challenges faced by the library has a significant relationship with KM practice (β= 0.123; t-value= 2.819; p-value=0.005). Therefore, H5 is supported.

H6: KM practices have a significant positive relationship with implementing KM (β= 0.289; t-value= 5.983; p-value=0.000). As a result, H6 is supported.

H7: Contributions of the department has a significant direct relationship for implementing KM (β= 0.315; t-value= 6.982; p-value=0.000). Thus, H7 is supported.

H8: KM relevance to librarianship has a significant direct relationship for implementing KM (β= 0.285; t-value= 6.410; p-value=0.000). Therefore, H8 is supported.

Table 4.57 Hypotheses Testing

Hypothesis	β	T-statistics	P-value	Result
H1: Quality of the library service -> KM practice	0.299	6.849	0.000	Supported
H2: Facility and performance of the library-> KM practice	0.021	0.445	0.656	Not supported
H3: Critical success factor -> KM practice	0.292	5.854	0.000	Supported
H4: Familiar with KM -> KM practice	0.139	4.058	0.000	Supported

H5: Challenges faced by the library -> KM practice	0.123	2.819	0.005	Supported
H6: KM practice -> KM implementation	0.289	5.983	0.000	Supported
H7: Department contribution-> KM implementation	0.315	6.982	0.000	Supported
H8: KM relevance to librarianship -> KM implementation	0.285	6.410	0.000	Supported

4.9.1 Mediation Analysis

Mediation testing determines whether a mediating variable genuinely mediates the relationship between two other variables (MacKinnon & Fairchild, 2009). The first variable is the independent variable, the second variable is the mediator, and the outcome variable is the dependent variable. This research model is characterized by containing seven independent variables (Quality of the library services, facility and performance of the library, critical success factor, familiarity with KM, challenges faced by the library, department contribution, KM relevance to librarianship), one mediator (KM practice), and one dependent variable (KM implementation). Mediation analysis was performed to assess the mediating role of KM practice on the linkage among five independent variables, i.e., service-based value, facility of the library, critical success factor, familiarity with KM, challenges faced by the library, and KM implementation. The first test was conducted without a mediator, and the second was conducted with the mediator. According to Guenzi et al. (2009) and Preacher and Hayes (2008), if the two tests are significant, the mediator variable is considered a partial mediator. Suppose the tests show that the direct relationship between the independent and dependent variables is no longer significant after the inclusion of the mediating variable. In that case, the mediating variable is considered a full mediator.

The test started with assessing the relationship quality of the library services, facility and performance of the library, critical success factor, familiarity with KM, and challenges faced by the library on KM implementation. The results showed that the quality of the library services, critical success factors, familiarity with KM, and

challenges faced by the library positively affect KM implementation. The facility and performance have no relation to KM implementation (Table 4.47). It was included in the link between independent and dependent variables to examine the mediating influence of KM practice. The result showed that KM practice positively influenced the KM implementation (β=0.289, t-value=5.983, and p-value=0.000).

Moreover, the results showed that the inclusion of mediation variable KM practice had reduced the beta value and t value of service value, critical success factor, familiarity with KM, and challenges faced by the library (Table 4.47). The table shows that KM practice in the library mediates the quality of the library services, familiarity with KM, critical success factors, and challenges faced by the library, and its mediation is partial. As in both tests (with the mediator and without the mediator), the dependent and independent variables are significant.

Table 4.58 Mediation Analysis

β, t-value, and p-value (Without mediator)				β, t-value, and p-value (Mediator and DV)			β, t-value, and p-value (With mediator)			
IV and DV	β,	t-value	p-value	β,	t-value	p-value	IV, mediator, and DV	β,	t-value	p-value
QLS -> AKML	0.299	6.849	0.000	0.289	5.983	0.000	QLS -> RKMLP -> AKML	0.086	4.905	0.000
PFPL -> AKML	0.021	0.445	0.656				PFPL -> RKMLP -> AKML	0.006	0.437	0.662
CSF -> AKML	0.292	5.854	0.000				CSF -> RKMLP -> AKML	0.084	3.669	0.00
FKM -> AKML	0.139	4.058	0.000				FKM -> RKMLP -> AKML	0.040	3.427	0.001
CIKM -> AKML	0.123	2.819	0.005				CIKM -> RKMLP -> AKML	0.035	2.460	0.014

Notes: QLS (Quality of the Library Services), AKML (Advantages of KM for Library Service) PFPL (Perceptions about the Facility and Performance of the Library), CSF (Critical Success Factors), FKM (Familiarity with KM), CIKM (Challenges Implementing KM), RKMLP (Relevance of KM in Library Practices)

4.10 QUALITATIVE FINDINGS

This research, a combination of quantitative and qualitative approaches, was used for data collection. Although the quantitative method was predominant, the qualitative method was used to understand the quantitative findings and explain them in detail. A purposive sampling method was used to select the participants. The participants were 11 in this semi-structured interview. The rationale for choosing these respondents for semi-structured interviews is based on Davenport and Prusak (1998). The claim was made that having professional expertise would give them a standpoint from which to examine and comprehend circumstances. The semi-structured interview questionnaire was prepared in English. The interviews were conducted from October 17 to December 7, 2021.

The data collected were analyzed by using content analysis. Content analysis is simply defined as the process of summarizing and reporting written data, i.e., the main content of data and its messages (Abbas, 2015). Content analysis was chosen for this research because it allowed the researchers to understand the actual situations of the libraries.

In addition, extracting meanings shows underlying the responses given by the interviewees. To identify the interviewee's responses, initially, they were given codes. Any details that identify them were removed from the writing as requested by the respondents. Qualitative data from the semi-structured interview was arranged in the following section according to the questions asked based on the research questions and factors of interest stated in chapter three, Table 3.11, to get insightful information from the interviewees. The findings are presented as follows.

4.10.1 Response Rate of Interviewees from Public University Libraries in Bangladesh

Out of 13, Librarian/Deputy Librarian/Assistant librarians, 11 were interviewed, giving a response rate of 84.6%. Table 4.48 shows the details of the semi-structured questionnaire distributed to the public university libraries in Bangladesh. Two interviewees did not reply because they thought their feedback would be repeated with other interviewees of their libraries.

Table 4.59 Response Rate of Interviewees

Sl No.	Name of the University	No. of semi-structured interview questionnaires distributed	No. of semi-structured interview questionnaires returned.	Response rate
1.	University of Dhaka	3	3	100%
2.	University of Rajshahi	2	2	100%
3.	Bangladesh University of Engineering and Technology	2	2	100%
4.	Sylhet Agricultural University	3	2	66.66%
5.	Jashore University of Science and Technology	3	2	66.66%
	Total	13	11	84.61%

4.10.2 Demographic Profile of the Interviewees

This section presents data collected from semi-structured interviews conducted with Librarians/Deputy librarian and Assistant librarians of five public university libraries in Bangladesh. The interviewees were questioned about their qualifications, job experience, years in the current position, library designation, and name. Below is a summary of all respondents interviewed (Table 4.49).

Table 4.60 Summary of the Respondents Interviewed

Name of the library	Designation	Educational qualification	Service experience and experience in the present position	No. of persons interviewed
DUCL	Librarian	PhD	26(05)	01
	Deputy librarian	MA	11(03)	01
	Assistant librarian	MA	08(03)	01
BUETCL	Deputy librarian	MA	22(02)	01
	Assistant librarian	MSS	24(08)	01
RUCL	Deputy librarian	MA	20(09)	01
	Assistant librarian	MSS	13(04)	01
JUSTCL	Librarian	MA, Med	20(01)	01
	Deputy librarian	MA	12(02)	01
SAUCL	Librarian	MA	25(10)	01
	Deputy librarian	MA	11(04)	01
Total				11

4.10.3 Reason for Staff Changes in the Library

In this section, interviewees were asked if their library changed their staff and the reason for the staff changes of these selected public university libraries in Bangladesh. There have been staff changes in the four universities in the last two years in all universities studied. Table 4.50 shows that all the libraries change their staff for various reasons. DUCL change its staff for retirement and recruitment purposes. BUETCL, RUCL, and JUSTCL change their staff due to the order of the higher authority. It was established during the data collection that RUCL changed staff due to the death of staff during the job. In addition, some got better jobs and left the library. So, the library recruited others to replace them. Only SAUCL did not change its staff among the five libraries in the last two years.

Table 4.61 Reason for Staff Changes

Name of the library	Staff changes in the last two years	Reason for changes
DUCL	Yes	Retirement and recruitment, promotion
BUETCL	Yes	Due to the order of the higher authority, some got better jobs and left the library
RUCL	Yes	Retired from the job, some are transferred to the library to other section, some are dying during their job
JUSTCL	Yes	Due to the higher authority decision
SAUCL	No	Not changes in the last two years

4.10.4 ICT Facilities at the Libraries

In section B of this research (Question number o, p, and q; Appendix B), the semi-structured interview questionnaire for the Librarian/Deputy librarians were asked about

the library's ICT facilities. Table 4.51 shows that the operation of the libraries is fully/partially automated and has a complete Wi-Fi/partial Wi-Fi connection. Universities also has internet facilities for staff to look up records in the library.

Table 4.62 ICT Facilities

Name of the library	Operation of the library	Internet facilities for staff for looking at records in the library	Wi-Fi facilities in the library
DUCL	Partial automated	Yes	Partial Wi-Fi
BUETCL	Automated	Yes	Full Wi-Fi
RUCL	Partial automated	Yes	Partial Wi-Fi
JUSTCL	Automated	Yes	Full Wi-Fi
SAUCL	Partial automated	Yes	Full Wi-Fi

4.10.5 Interviewees' Understanding of KM

In section C of the semi-structured interviews questionnaire (Question 1; Appendix B), the study sought to investigate the Librarian/Deputy librarian/Assistant librarians' understanding of the KM concept. They were expected to indicate their knowledge of the concept by providing their definition. Among the 11 interviewees, 10 provide KM definitions according to their point of view. Only one person did not provide any definitions but mentioned that he has a basic understanding of KM. It means Librarians/Deputy librarians and Assistant librarians in public university libraries in Bangladesh are familiar with the term KM (Table 4.52).

Table 4.63 Interviewee's Understanding of KM

"KM is organizing, maintaining, retrieving, and distributing relevant knowledge for future use."
"KM maintains the important knowledge for future growth and makes essential the knowledge available at the right time."
"KM is the process of identifying, organizing, storing, and sharing information within an organization."
"KM is one of the important practical understandings that help run the library smoothly and efficiently. In addition, it helps the acquisition, processing circulation, reference, and ICT management at the highest level."
"KM is a newly emerging interdisciplinary business model that can provide knowledge with the framework of an organization."
"KM is the collection of methods relating to the creation, sharing, using, and managing of the knowledge and information of an organization."
"KM is the collection of methods relating to creating, sharing, using, and managing the knowledge and information of an organization."
"KM is the process by which an institution gathers, organizes, shares, and analyzes its knowledge in a way that is easily accessible to its users."
"KM is the process of identifying, organizing, storing, and disseminating information within an organization. KM is the conscious process of defining, structuring, retaining, and sharing the knowledge and experience of employees."
"KM is the collection of methods relating to creating, sharing, using, and managing the knowledge and information of an organization. It refers to a multi-disciplinary approach to achieving organizational objectives by making the best use of knowledge."

4.10.6 Separate KM Department in the University

Section C (Question 2; Appendix B) of the semi-structured interview questionnaire sought to know whether their university has a separate KM department/discipline?

Interviewees were given two options to choose of them from the options, either "Yes" or "No." All the 11 respondents from the five university libraries replied that there was no KM department/discipline in their university.

In the following question (Question 3; Appendix B), interviewees were asked if there is a need to have a separate KM department/discipline? Respondents were also given two options to reply, i.e., "Yes" and "No." They also asked if they answered no, please state why there is no KM department/discipline. Among 11 interviews, nine replied that there needed a separate KM department/discipline, but two replied negatively (Table 4.53).

Table 4.64 Separate KM Department in the University

Name of the libraries	Response from the interviewees	Statement from the interviewees
DUCL	No	• Yes
BUETCL	No	• No, it is possible to provide KM-dependent services within existing infrastructure, including manpower. • No, it is a university of engineering, so there need not be a separate KM department.
RUCL	No	• Yes
JUSTCL	No	• Yes
SAUCL	No	• Yes

4.10.7 Would You Mention Whether the Library is Practicing KM?

Moreover, the study sought to investigate whether the library is practicing KM (Question 4; Appendix B) in these public university libraries in Bangladesh. The participants were expected to indicate if the activities were being practiced with a "Yes"

or “No” response. In addition, they also asked how they were practicing. From the participants’ responses, three libraries, i.e., DUCL, RUCL, and BUETCL, are practicing KM in their libraries, and JUSTCL and SAUCL are not practicing KM. The findings of this study show that librarians in Bangladesh are still learning about KM and its implications. They have been practicing KM (Table 4.54) or aim to do so soon in their libraries. They have mostly been active in KM by applying their talents in organizing and retrieving information in various sectors such as acquisition, processing, circulation, distribution, or creating intranets, institutional repositories, etc.

Table 4.65 Would You Mention Whether the Library is Practicing KM?

Name of the libraries	Statement from the interviewees	Coding
DUCL	• Yes, a library is a storehouse of relevant information and other reading materials. The library itself maintains and practices KM by acquiring, processing, classifying, and distributing institutional repositories to the users. • Yes, internship program, acquisition, sharing, collection of materials, digitization, OPAC, Repositories. • Yes, acquisition, classifying, cataloging, shelving, digitizing, and sharing.	• Acquisition, processing, • institutional repositories, • OPAC
BUETCL	• Yes, acquisition, processing, circulation, reference, and ICT. • Yes, the existing computer and information technology (IT) infrastructure, including the improved intranet, should be used to build the KM system.	• Acquisition, processing, circulation • ICT section, • Speedy internet connections

RUCL	• Yes, collecting new reading materials like books, CD, DVD (AV materials) and cataloging standard formats MARC21 and then open for the users	• CD, DVD, MARC21
JUSTCL	• No	
SAUCL	• No	

4.10.8 Plan to Implement KM at University Library in the Future

Moreover, the research sought to investigate whether the libraries have plans to implement KM at their university library in the near future (Question 5; Appendix B). The participants were asked if they were planning to implement KM at their university libraries, then responded with a "Yes" and, if not planning, replied with a "No" option. In addition, they have requested to explain how they would plan to implement it if their answer is "Yes." Table 4.55 revealed that all the university libraries except JUSTCL pointed out that they intended to implement KM at their university library soon and provided their opinion on how they implement KM in their libraries.

Table 4.66 Plan to Implement KM at the University Library

Name of the libraries	Statements of the interviewees	Coding
DUCL	• Yes, we are taking initiatives like arranging training programs and thus building and developing KM skills between the staff and personnel. • Yes, acquisition and sharing, collection of materials, digitization. • Yes, promoting and sharing knowledge among the users and staff also applied to the operational activities of the library.	• Arranging training programs, • Developing KM skills among the staff by KS

BUETCL	• Yes, we are improving acquisition service, ICT management, and reference and circulation service. • Yes, implement KM to enhance user satisfaction by applying the reference and circulation service section.	• Acquisition section • Improving reference and circulation service
RUCL	• Yes, by applying more technologies in different library fields, reducing manual systems, and employing skilled staff.	• Applying technologies • Employing skilled staff • Increase ICT facilities
JUSTCL	• No	• No plan
SAUCL	• Yes, by increasing and sharing knowledge among users and library staff. We have also planned to improve the ICT facilities, train manpower, create infrastructure facilities, etc. • Yes. Though, it is challenging for KM to be incorporated into the academic library environment due to its misunderstanding concept. But we have a plan to implement KM by improving the ICT facilities, training the manpower, sharing knowledge, creating infrastructure facilities, etc.	• KS, • Improving the ICT facilities • Skilled manpower

4.10.9 How Can KM Achieve the Best Output of the Library?

Moreover, the study sought to investigate how KM can play a role in achieving the best output of your library (Section C, Question 6; Appendix B) of the semi-structured interview for the Librarian/Deputy librarian and the Assistant librarian interview

schedule. Table 4.56 reveals that by organizing and sharing the relevant information, providing innovative service to the users, and expanding learning facilities applying ICT, KM can achieve the best output of their library.

Table 4.67 How Can KM Play a Role in Achieving Library's Best Output?

Name of the libraries	Statements of the interviewees	Coding
DUCL	• Through KM, a library can make the best use of its materials by organizing the most relevant information and sharing and distributing it to the appropriate users at the right time through the right channel. • Make essential services available to the users, play the role of librarian as cybrarian if needed, and enhance KM activities. • KM allows the library to continuously change how it functions and predicts and keeps up with future trends. It can improve and expand learning and facilitate the creation of new knowledge.	• Organizing and sharing relevant information. • Providing innovative service to the users. • Expand learning and facilitate creating knowledge.
BUETCL	• To achieve the best output in acquisition, processing, and ICT management system. • KM in terms of its relevance to the library so KM can improve critical areas of library services.	• Application of ICT • Improve key areas of library services.
RUCL	• Application of technology or automation will certainly reduce work hassle and save users' time.	• Reduce workload. • Application of ICT

JUSTCL	• KM is a procedure for sharing perspectives, ideas, experiences, and information to ensure that they are available in the right place at the right time to enable informed decisions and enhance efficiency by decreasing the need to relearn knowledge. • KM helps a library fast the services, coordinate library staff, and arrange library services.	• Quick library services, • Idea sharing, • Fulfilling the user demand using innovative service.
SAUCL	• KM can play a vital role in improving and expanding learning. Also, facilitate the creation of knowledge and storage, transformation, and knowledge dissemination. • KM can play a vital role in achieving the best output of my library by supporting the acquisition, storage, transformation, and knowledge dissemination, facilitating the creation of knowledge, and improving and expanding learning facilities.	• KS and dissemination, • Expand learning facilities

4.10.10 KM Section and Budget for KM in the Libraries

In this part of the semi-structured interview questionnaire, interviewees were asked to know is there was any KM section and budget for KM in the libraries. See Section C (Question 7 to 9; Appendix B) of the semi-structured interview schedule for Librarians/Deputy and Assistant librarians of the library. Table 4.57 reveals no KM sections in any of the libraries. The table below also shows that there is no budget allocation for KM in their libraries. This research affirmed that no formal KM programs were in place in these universities, but libraries resemble KM in their everyday work.

However, some interviewees stated that they are practicing KM in their libraries, but it was not formally adopted in these libraries. It is the management of explicit knowledge they have been doing for a long time. They also mentioned that they would soon have a plan for formal KM implementation in their libraries.

Table 4.68 KM Section and Budget for KM in the Libraries

Name of the libraries	KM sections in the library	Staff of KM section	Budget allocating for KM
DUCL	No	N/A	No
BUETCL	No	N/A	No
RUCL	No	N/A	No
JUSTCL	No	N/A	No
SAUCL	No	N/A	No

4.10.11 Knowledge Handled in the Library

In this part of the semi-structured interview questionnaire, interviewees were asked how knowledge is handled in the library/section in day-to-day duties. See Section D (Question 10; Appendix B) of the semi-structured interview schedule for the interviewees. The interviewees replied that they handled knowledge in the library by providing services to the users, acquiring new resources, library networking and resource sharing (RS), application of ICT, using library software, and cataloging library materials.

Table 4.69 Knowledge Handled in the Library in Day-to-day Duties

Name of the libraries	Statements of the interviewees	Coding
DUCL	• We deliver services to the users in time, acquiring new resources per users' needs. • Keeping library resources up to date, Sharing and maintaining solid bonds among users of other libraries • Providing information to the right user at the right time, institutional repository work is updated as per needed, organization of resources and helps to improve teaching and research, knowledge valued and shared by the staff's performance and knowledge. • Organizing and retrieving information, distributing to the users according to their needs	• Providing services to the users, • Acquiring new resources • Library networking and RS
BUETCL	• Knowledge is handled in a different section of the library and ICT management.	• Application of ICT
RUCL	• Books are cataloged by specific software, and the circulation process is also handled softly. Future plans are to digitize library repositories. Different sections are working separately but do not have a KM section.	• Cataloging library materials, • Using library software
JUSTCL	• Knowledge is the source of all information stored in the library. So, it is impossible to continue library service without knowledge and books being cataloged.	• Cataloging library materials
SAUCL	• Organizing, retrieving, and distributing information to the user's need.	• User service

4.10.12 Employee's Liberty to Visit and Access Information to the Different Sections of the Library

The question of this section is intended to know the employees have the liberty to visit and access information to the different sections of the library (Section D, Question 11; Appendix B) of the semi-structured interview schedule. All the university staff can visit and access information about the different sections of the library. Only DUCL employees have conditional access to the other area.

Table 4.70 Employee's Liberty to Visit and Access Information in the Library

Name of the libraries	Statements of the interviewees	Coding
DUCL	Employees do have access to some extent. Yes, but in some cases, it is restricted. Almost there is full access for library employees.	Conditional access
BUETCL	Yes, employees have the liberty to visit and access the information.	Liberty to visit
RUCL	Yes, the employees can access information in the different sections of the library.	Liberty to access information
JUSTCL	Yes, the staffs have the liberty.	Staffs have the liberty
SAUCL	Yes, the employees have the liberty to visit and access information about the different sections of the library.	Employees have the liberty

4.10.13 Information Retrieval in the Library

The question is intended to determine how the information is retrieved when needed in the library. See Section D (Question 12; Appendix B) of the semi-structured interview

schedule for the Librarian/Deputy librarian and Assistant librarian of the library. The representatives from the libraries mentioned that online public access catalog (OPAC) searches, searching libraries' full-text databases, through ICT, information is retrieved. Manual and verbal communication, using manual registrar and some cases using software or computer and document supply via network information is obtained. Also, information was retrieved from the e-resources center.

Table 4.71 How is the Information Retrieved in the Library?

Name of the libraries	Statements of the interviewees
DUCL	• OPAC, circulation services, Online services (Cyber center). • OPAC search, libraries full-text databases searching, the internet, and inter personnel communication. • OPAC, library repositories.
BUETCL	• Through ICT, manual and verbal communication.
RUCL	• Some cases use a manual registrar, and some instances use software or a computer. • Search the library OPAC, search the accession register, and search the library website.
JUSTCL	• Users can visit the library website, e-book, and direct visit the library for their information. • Online based and direct visit on the gathered knowledge on the shelves.
SAUCL	• OPAC, an institutional repository (IR), Full-text databases, locating items from bibliographic databases, document supply via a network, and data retrieved from an e-resources center.

4.10.14 Type of Knowledge the Library Gathers Most

The question is intended to determine what type of knowledge the library gathers most. See Section D (Question 13; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian and Assistant librarian of the library. According to the interviews, training, conference participation, purchasing, and the recruitment of new employees are the most typical ways public university libraries in Bangladesh obtain explicit information.

4.10.15 Apparatuses Used to Gather Explicit Knowledge in the Library

In this section, participants were asked which apparatuses their libraries use to gather explicit knowledge. Table 4.61 indicates that book selection tools like indexes, bibliographies, etc., are almost common in all libraries to gather explicit knowledge.

Table 4.72 Apparatuses Used to Gather Explicit Knowledge

Name of the libraries	Statements of the interviewees
DUCL	• Book selection tools like indexes and bibliographies, other references books, suggestions, recommendations, and complaints of the active library users, proceedings and manuals, documents • Book selection tools like indexes and bibliographies.
BUETCL	• ICT and long experiences. • Recorded and communicated.
RUCL	• Specific software, online subscription, sometimes from the users directly. • Book selection tools, bibliographies, index, demand, and recommendations from the users of the different departments or disciplines.

JUSTCL	• Encyclopedias, subjective dictionaries, newspapers, and journals.
SAUCL	• Index, bibliographies, and other reference sources.

4.10.16 How Does the Library Record Tacit Knowledge?

In this part of the semi-structured questionnaire (Question number 15), respondents were asked how they recorded tacit knowledge. Most of them replied that they recorded tacit knowledge by interview (recording), audio recorders (CD-DVD), formal and informal records, and integrated applications/audiovisual materials. In addition, personal wisdom and experiences are written down.

Table 4.73 Recording Tacit Knowledge

Name of the libraries	Statements of the interviewees
DUCL	• Interview (recording), audio recorders (CD-DVD), documentary, KS statistics, formal and informal records, integrated applications/audiovisual materials, filing
BUETCL	• In long experience, social interaction and capture employee's stories.
RUCL	• Tacit knowledge is stored by interviewing, recording and documentary.
JUSTCL	• Personal wisdom experiences are written down.
SAUCL	• Filing, audiovisual materials, etc.

4.10.17 Which Knowledge is Most Difficult to Preserve?

In this part of the semi-structured questionnaire (Question number 16), respondents were asked which knowledge is most challenging to preserve. All the interviewees from the five public university libraries mention that tacit knowledge is the most difficult to maintain.

4.10.18 KS Benefits for Library Users and Solved a Problem

In this part, the question intended to determine whether knowledge sharing (KS) provided any benefits for library users and solved a problem. See section D (Question 17; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian and Assistant librarian of the library. The interviewees claimed that KS benefits library users by solving problems, building a learning community, making decisions, improving user knowledge, and increasing library staff knowledge.

Table 4.74 KS Provided Benefits for Library Users

Name of the libraries	Statements of the interviewees	Coding
DUCL	• KS helps the most to solve any kind of problem of the users and makes the most out of it. • Better ways to find a solution to a specific problem; connect with professionals, build a learning community.	• Solving problems, • Building a learning community
BUETCL	• Yes. • Enabling better and faster decision-making.	• Decision making

RUCL	• Yes, it saves time and does a smooth operation. • KS helps solve any problem of the users and makes the best output.	• Saves time. • Solve problems
JUSTCL	• KS connects remote employees' and users' knowledge, collaborates with collective knowledge, finds better methods to do things, generates better user experiences, retains knowledge, and collaborates and builds collective knowledge. • As KS is a part of the KM process, it is exchanged among friends (users/readers) between organizations to improve their knowledge and skills.	• Create better user experiences, • Improving user knowledge
SAUCL	• Yes, KS is critical for library knowledge workers to raise innovation, increase productivity, and improve understanding.	• Increase knowledge of library staff

4.10.19 How Teamwork and Information Sharing are Improved among Professionals?

In this part of the semi-structured questionnaire (Question number 18), respondents were asked how teamwork and information sharing are improved among professionals. The interviewees stated that by arranging training programs, seminars, workshops, and KS with other organizations, teamwork and information sharing are improved among professionals by adopting KM systems.

Table 4.75 Teamwork and Information Sharing are Improved among Professionals

Name of the libraries	Statements of the interviewees	Coding
DUCL	• Through KM procedures and providing various training programs to develop information skills and thus making the best of it. • Information sharing with teamwork can lead to a workforce. New things can be quickly learned and implemented in real-time, automated, and retaining relevant knowledge is easy to capture by arranging seminars and workshops. • Teamwork and information sharing can improve customer service and facilitate idea generation and creativity by arranging training programs.	• Training programs • Seminar • Workshop
BUETCL	• Helps to acquire professional knowledge in more comprehensive depth by idea sharing. • Sharing of specialist expertise and improved organization agility.	• KS • Improved organizatio n awareness
RUCL	• By adopting KM systems, by making the friendly environment in the workstation. • Teamwork and information sharing can be improved among professionals through the KM procedures and providing various training.	• By adopting KM systems
JUSTCL	• Collaborating and building collective knowledge, building a community and learning culture, and connecting remote users to knowledge. • By arranging training, seminar, workshop.	• Arranging training • Seminar • Workshop

SAUCL	• Teamwork and information sharing improve customer service and facilitate idea generation by knowledge sharing. • Professionals improve teamwork and information sharing by exchanging data between organizations, people, and technologies.	• Information Sharing • KS with other organization

4.10.20 How is KM Applied to University Libraries?

The question is intended to find out how KM is applied to university libraries (Section E Question 19; Appendix B) of the semi-structured interview schedule. The respondents mentioned that the application of KM in university libraries should have a strategic plan including specific objectives, the role of librarians and areas of KM, and the purposes of KM practices for libraries should be defined before its implementation. Additionally, they stated that providing staff with training and learning opportunities for acquiring new information, broadening access to external knowledge resources through library networks, and encouraging a KS culture may aid in applying KM in Bangladesh's public university libraries. Additionally, they mentioned that providing training and learning opportunities to the employees to acquire new knowledge, extending access to external knowledge resources through library networks, and promoting knowledge sharing culture may help apply KM in the public university libraries in Bangladesh (Table 4.65).

Table 4.76 How is KM Applied to University Libraries?

Name of the libraries	Statements of the Interviewees
DUCL	• The application of KM in university libraries should have a strategic plan including specific objectives, the role of librarians, and areas of KM, purposes of KM practices for libraries should be defined before its implementation. • Providing staff with training and learning opportunities to help them acquire new skills, expanding access to external information resources through library networks, and encouraging a culture of knowledge sharing.
BUETCL	• Acquisition, processing, circulation, reference, and ICT management. • Reference services, KS, information networking.
RUCL	• By recruiting skilled employees, taking expert advice, adequate training programs, and joining seminars. • By following a proper system like acquisition, circulation, cataloging, and organizing international conferences, KM can be applied.
JUSTCL	• Building professional teamwork by engaging users in sharing what they know and learn with others. • We can apply KM to university libraries by categorizing KM, i.e., groupware, workflow, system, content and document management, institutional portals, e-learning, and planning.
SAUCL	• By improving the library infrastructure, providing personnel with training, learning opportunities to expand their knowledge, etc. • Improving the existing ICT facilities, access to knowledge resources through library network, improving the library infrastructure, training, and learning facilities to the staff for exploring new knowledge.

4.10.21 Strategy to Implement KM

The question is intended to find out what strategy will be implemented in the library for KM. See Section E (Question 20; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian of the library and Assistant librarian of the library. Table 4.66 shows that developing KM strategies and model plans, developing KM tools and technologies, introducing KM policy, implementing KM culture, and introducing KM courses will be the strategy to implement KM in their libraries.

Table 4.77 Strategy to Implement KM

Name of the libraries	Statements of the interviewees	Coding
DUCL	• Creating KM model plans, developing KM strategies, encouraging KS culture, and implementing more significant KM policy to make it count. • Creating KS culture, developing a strategic plan, developing a central repository, developing knowledge enabling tools and technologies, creating a knowledgeable learning environment • Implementing KM tools, providing KM training and seminar, and practicing proper KS.	• Developing KM strategies and model plan • Developing KM tools and technologies. • Introduced KM policy
BUETCL	• Through ICT. • Using ICT and developing KS culture.	• ICT and developing KS culture

RUCL	• First, to convince the higher authority to implement the process, arrange the system centrally. • Proper knowledge about KM, adequate training, and guidance for KM.	• Convince the higher management to implement the process • Formal training and guidance for KM.
JUSTCL	• Define the goal and objectives, develop a change management strategy, inventing and organize knowledge assets. • The strategies are convincing the higher authority, arranging training, developing all infrastructural facilities, and coordinating with ICT experts.	• Develop ICT and infrastructural facilities
SAUCL	• The implementation of KM culture in libraries and the information environment should be needed to introduce training and seminar, and KM courses are increasingly introduced in our university libraries. • Implementing KM culture and courses has increasingly been introduced to UG and PG programs in our university library.	• Implementation of KM culture • Introduced KM courses

4.10.22 KM Policy in the Library

In this section, participants were asked if there was any written KM policy in their organization. See Section E (Question 21; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian of the library and Assistant librarian of the library. The table found that none of the libraries have written KM policies in their

libraries. Only two participants mentioned the reason behind it (Table 4.67). These results show that KM policies and incentives systems have not received attention.

Table 4.78 KM Policy in the Library

Name of the libraries	Is there a written KM policy in your organization?	If not, please mention the reason behind it.
DUCL	No	• There is no KM policy in the library because there is no proper guideline about this. • Lack of initiative and overlook this critical issue
BUETCL	No	
RUCL	No	
JUSTCL	No	
SAUCL	No	

4.10.23 Potential Area of KM Application in the University Libraries

In this section, interviewees were asked which potential areas of KM application in the public university libraries in Bangladesh (Section E, Question 22; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian and Assistant librarian of the library. Most of the respondents mentioned that reference and information services, policy and decision making, knowledge transfer, knowledge use, service innovation, knowledge creation, etc., are the potential areas of KM application in the university libraries in Bangladesh (Table 4.68).

Table 4.79 Potential Area of KM Application in the University Libraries

Name of the libraries	Statements of the interviewees	Coding
DUCL	• Information sharing procedures among staff, Building a proper and rich knowledge resource. • Knowledge transfer, use, service innovation, knowledge creation. • Reference and information services, policy and decision making, technical and administrative services.	• Reference and information services • Technical and administrative services
BUETCL	• Through ICT management • The web-based knowledge database, electronic listserv.	• ICT Section
RUCL	• Different sections of the library • By knowledge recognition and information sharing procedures.	• Numerous section
JUSTCL	• Reference service.	• Reference service
SAUCL	• Reference and information service, technical and administrative services, policy, and decision making.	• Reference and information service

4.10.24 Adopt KM Practices to Enhance Library Performance

Moreover, the study investigated whether the public university libraries are ready to adopt appropriate KM in Bangladesh to enhance library performance. See Section F (Question 23; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian and Assistant librarian of the library. The participants' responses from Table 4.69 identified that all university libraries are ready to adopt

appropriate KM. DUCL is partially prepared to adopt it. RUCL is waiting for the decision of the higher authority. The table also indicated that BUETCL, JUSTCL, and SAUCL are ready to adopt KM practices fully in their libraries.

Table 4.80 Appropriate KM Practices to Enhance Library Performance

Name of the libraries	Statements of the interviewees	Coding
DUCL	• There is no doubt about that, but many things to consider adopting. • Yes, ready to adopt partial, not in full. • Yes.	• Ready to adopt partial
BUETCL	• Yes, ready to adopt. • Yes.	• Ready to adopt fully
RUCL	• Yes, but we need time. • There is no doubt about that but a lack of higher authority decisions.	• Need decision from the higher authority
JUSTCL	• Yes, ready to adopt.	• Ready to adopt appropriate KM practices
SAUCL	• Yes. • Yes, our library is ready to adopt appropriate KM practices to enhance library performance.	• Library ready to adopt appropriate KM practices

4.10.25 Meetings are Conducted Regarding New Concepts in the Library

Moreover, the study sought to investigate whether the discussions/meetings are conducted around new concepts and ideas in the library? See Section F (Question 24; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian and Assistant librarian of the library. The participants' responses from Table 4.70 identified that DUCL and BUETCL often conducted meetings. On the other side, RUCL shared its vision with higher authorities. In the case of JUSTCL, higher administration arranges meetings, seminars, etc., for improved library services. SAUCL library also organizes meetings around new concepts and ideas in their library based on the situation demand.

Table 4.81 Discussions/Meetings are Conducted in the Library

Name of the libraries	Statements of the interviewees	Coding
DUCL	• Yes, new concepts and ideas are discussed, newly adopted technologies, new resource acquiring, etc. • Yes, regularly, we do this. • Yes, like knowledge digitization and e-resources management.	• Often conduct
BUETCL	• We frequently conducted discussions or meetings. • It helps libraries solve day-to-day problems in a public forum between librarians.	• Often conduct
RUCL	• Not within staff but ideas shared with higher authority. • We discussed this with the higher authority.	• Idea shared with higher authority

JUSTCL	• Training, seminar, workshop. • University authority arranges training, seminars, meetings to improve their library facilities.	• The decision of the authority
SAUCL	• Yes, seminars and library meetings are conducted based on new concepts and ideas in our library.	• Depending on the situation

4.10.26 ICT Should be the Starting Point for the KM Plan

Moreover, the study sought to investigate that ICT should be the starting point for a KM plan. See Section F (Question 25; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian and Assistant librarian of the library. The interviewee's responses from Table 4.71 identified that almost all interviewees agreed with the statement, but one respondent of DUCL disagreed with the statement. He stated that a strategic plan and creating an appropriate environment and training should be a strategic point for a KM plan.

Table 4.82 ICT Should be the Starting Point for a KM Plan

Name of the libraries	Statement from the interviewees
DUCL	• ICT should be the starting point as today's world cannot be thought without ICT, and KM is not different in that sense. • No, because strategic planning and creating an appropriate environment and training should be strategic. • Yes.
BUETCL	• Yes.

	• Significance of new technologies implementation within KM, so ICT should be the starting in KM plan.
RUCL	• Yes. • Yes, ICT should be the starting point for KM implementation.
JUSTCL	• Yes.
SAUCL	• Yes, ICT should be the starting point for a KM plan. • I think it is impossible to implement KM without ICT facilities. Therefore, ICT should be the starting point for the KM plan.

4.10.27 Library Should Invest Heavily in ICT to Achieve KM Strategy Success

In this section F (Question 26; Appendix B), interviewees were asked that to achieve KM strategy success, and organizations should invest heavily in ICT? In all the interviewee's responses from Table 4.72, it is identified that almost all interviewees agreed that organizations should invest heavily in ICT to achieve KM strategy success.

Table 4.83 Library Should Invest Heavily in ICT to Achieve KM Strategy Success

Library Name	Statement from the interviewees
DUCL	• To implement KM and other technical and dynamic strategies in libraries, ICT is a must. • Yes, we consider ICT and required investment to achieve and succeed KM. • Yes.
BUETCL	• Yes. • KM's strategic operation plan is needed for strengthening ICT.

RUCL	• Yes. • Yes, an organization should spend on ICT.
JUSTCL	• Yes. • Authority is very cordial to invest in the ICT section to achieve any strategy success like KM.
SAUCL	• Strongly recommended that without investing heavily in ICT, KM strategy will not succeed.

4.10.28 ICT Infrastructures are Adequate to Provide Web-based KM Services

In this section F (Question 27; Appendix B), interviewees were asked whether the present ICT infrastructures are adequate to provide web-based KM library services. All the interviewee's responses from the table below identified that almost all interviewees agreed that the current ICT infrastructures are adequate to provide web-based KM library services. In contrast, some of them replied that they need to improve ICT infrastructures (Table 4.73).

Table 4.84 ICT Infrastructures are Adequate to Provide Web-based KM Services

Name of the libraries	Statement from the interviewees
DUCL	• Mostly it's enough, but there are lots of areas and scope to improve. • Yes, partly, not fully. • Not fully adequate, but fair enough.
BUETCL	• Yes.
RUCL	• Not enough, but it needs to improve ICT infrastructures.
JUSTCL	• Yes, almost sufficient ICT infrastructural facilities to provide web-based KM library services.

SAUCL	• Yes, present ICT infrastructures are adequate to provide web-based KM library services.

4.10.29 Looking for New Methods to Satisfy the Needs of Users and Come up With New Ideas/Services for Users.

Moreover, this research sought to investigate the library customer service/user care in public university libraries in Bangladesh. In question 28, section G, interviewees were asked that the university libraries are continuously looking for new methods to satisfy the needs of their users. Among the 11 interviewees, all of them replied yes, i.e., they are continuously looking for new approaches to meet the needs of their users. In question number 29, in the same section, they were also asked that the library often fast to come up with new ideas/services for library users. The table below shows that all the libraries often fast to come up with new ideas/services for users.

Table 4.85 Looking for New Methods to Satisfy the Needs of Users

Name of the libraries	Statement from the interviewees	Statement from the interviewees
DUCL	• Yes, we try to look for new methods.	• Yes, our library often fast to come up with new ideas/services for users of the library?
BUETCL	• Yes.	• Yes, our library implements new services from time to time for the users.
RUCL	• Yes.	• Yes.
JUSTCL	• Yes.	• Yes.
SAUCL	• Yes, we try to look for new methods to satisfy the needs of our users.	• Yes, our library often fast to come up with new ideas/services for library users.

4.10.30 Assessment of the Users/Readers' Satisfaction

This question sought to identify the assessment of the satisfaction of users/readers (Section G, Question 30; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian of the library and Assistant librarian of the library. Those that said “Yes” were then asked how they did it. Those who answered “no” to this question were also asked to explain why they did not evaluate the library's user/reader satisfaction.

Table 4.86 Does the Library Assess the Satisfaction of Users/Readers?

Name of the libraries	Statement from the interviewees	Coding
DUCL	• Yes, taking user feedback, keep complaining from the users, and consider user assessment regularly. • Yes, assess the frequency of library visits or use, measure user preferences to information sources, and section-based user performance. • Yes, by keeping a complaining system, taking user feedback, and enlisting user suggestions.	• Taking feedback from the users • Enlisting user suggestions
BUETCL	• No, lack of initiatives. • No, we are concentrating on the mediating role of customer relationship management.	• Lack of initiatives • Lack of concentration on customer relationship management

RUCL	• Yes, we are taking feedback from the users during orientation and library visits.	• Feedback from the users
JUSTCL	• Yes, users' feedback. • Yes, users/readers' feedback, i.e., comments about the library's services. Staff coordination is taken to assess users' satisfaction.	• User's feedback
SAUCL	• Yes, user feedback, taking complaints from the user, enlisting user suggestions.	• User feedback • Enlist user suggestion

4.10.31 Outstanding Method of Service Delivery in the Library

This question sought to find an excellent method of service delivery. All the interviewees replied positively that their libraries have an outstanding method of service delivery. See Section G (Question 31; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian and Assistant librarian of the library. Table 4.76 shows their opinion regarding this statement. The representatives from DUCL mentioned that yes, but there is scope to develop. Others also replied positively and mentioned the name of some services they are providing in their libraries, i.e., RFID system, online reference, KOHA software, online renewal system, library OPAC, etc.

Table 4.87 Method of Service Delivery

Library Name	Statement from the interviewees
DUCL	• Yes, but there is scope to develop. • Yes, but partial. • Yes.

BUETCL	• Yes, like automatic circulation by RFID system, online reference. • Yes.
RUCL	• Automatic circulation. • Online renewal system, library OPAC.
JUSTCL	• Automatic circulation using KOHA software.
SAUCL	• E-books, e-journals, OPAC search, automatic circulation.

4.10.32 Present Manpower is Adequate for Providing KM Services

In section G, question number 32, interviewees were asked whether the present manpower is adequate for providing KM services. The following table shows that in the DUCL, current staffing is enough, but there is a lack of skilled manpower in their library. Almost a similar type of feedback was given from RUCL. They replied that training is required for the staff to provide KM services. SAUCL said that it is difficult for present staff to provide KM services. BUETCL reacted negatively that current manpower is not adequate for delivering KM services. Only participants from the JUST library replied positively (Table 4.77).

Table 4.88 Present Manpower for Providing KM Services

Name of the libraries	Statement from the interviewees
DUCL	• Yes, but skilled manpower is not enough. • Manpower in number is good enough but needs a number of technologically sound manpower.
BUETCL	• No.
RUCL	• Yes, but we need to train for KM.
JUSTCL	• Yes.

SAUCL	• It is a little bit difficult to provide KM service in our library with existing staff.

4.10.33 KM Practices in the Library to Improve Library Performance

In question 33, Section G interviewees were asked whether the library's KM practices help improve library performance. The findings from the following table show that the interviewees replied positively that KM practices in the library help to improve library performance.

Table 4.89 KM Practices to Improve Library Performance

Name of the libraries	Statement from the interviewees
DUCL	• No doubt. • Yes absolutely.
BUETCL	• No doubt, KM practices improve library performance on a broader scale.
RUCL	• Yes.
JUSTCL	• Yes.
SAUCL	• Yes, we obviously think that KM practices in the library help to improve library performances and services.

4.10.34 Should a Library Spend on KM Initiatives?

This question sought to identify should a library spend on KM initiatives. See Section G (Question 34; Appendix B) of the semi-structured interview schedule for the Librarian/Deputy librarian and Assistant librarian of the library. All the respondents

agreed with the statements that libraries spend on KM initiatives. Table 4.79 indicates the comments from the interviewees.

Table 4.90 Should a Library Spend on KM Initiatives?

Name of the libraries	Statements from the interviewees	Coding
DUCL	• Of course, this expenditure should be counted as an investment. • Yes, because KM helps enhance decision-making capabilities, minimize the duplication of efforts, security against knowledge loss, and robust processing in library operations. • Yes, it is highly required to exercise KM in the library.	• Agreed
BUETCL	• Yes, manpower development, integrated library management software development, and innovative technical devices for library services. • KM influences the organization's performance directly and through the mediating valuable of human capital.	• Agreed
RUCL	• Yes. • Yes, and this expenditure should be continued for KM improvement.	• Agreed
JUSTCL	• A library should invest in a KM project since it improves the efficiency of an organization's decision-making abilities and helps to develop a more knowledgeable workforce. • To improve library services and to compete with the world.	• Agreed

SAUCL	• Yes, KM practices in any library help accelerate library performance and services. • In my opinion, every library should take the initiative to spend on KM. KM practices in any library help to accelerate the library performance and services.	• Agreed

4.10.35 Critical Success Factors for Implementing KM

In this section, interviewees were asked about the critical success factors of KM implementation in university libraries (Section H, question number 35 in Appendix B). This question sought to identify the critical success factors experienced by the Librarian/Deputy librarian and Assistant librarian of the respective libraries. The interviewees replied that tactful strategy for KM implementation, recruiting skilled staffing, and the continuous training program for staff and users are the critical success factors for implementing KM. Leadership, ICT infrastructure, training program, higher authority decision, budget, and lack of skilled manpower are the other critical success factors for implementing KM.

Table 4.91 Critical Success Factors for Implementing KM

Name of the libraries	Critical success factors identified by the interviewees
DUCL	• A tactful strategy, recruiting skilled manpower, and continuous training program for staff and users. • IT literate staff, library professionals' unwillingness to use technology, sharp and analytical mind, innovation and inquiring, creation flow and communication power. • KM tools, proper KM training, practicing a proper KM.
BUETCL	• Feedback from the users, especially in library services, and feedback from the library staff.

	• Organization culture and strategy, IT Infrastructure, practical and systematic measure process of KM.
RUCL	• Leadership, ICT infrastructure, training program, etc. • Higher authority decision, budget, skill manpower.
JUSTCL	• Unawareness of users, philosophy of the chief, lack of funds, interruption of power supply. • Lack of training facilities.
SAUCL	• Information system infrastructure, KM tools, and proper user training are necessary for implementing KM. • The success factor for implementing KM is that adequate information system infrastructure is necessary; KM tools and proper user training are needed.

4.10.36 Cultural Challenges for KM in the Library

In section H of interview question 36, the representatives from the library were asked about the cultural challenges of KM. Table 4.81 shows the cultural challenges of implementing KM in their library. From the table below, it is indicated that not being willing to share knowledge, lack of intention to cope with the new technology, lack of concept about KM, lack of initiatives to adopt KM tools, and lack of motivation to implement KM are the cultural challenges for KM that exist in the library.

Table 4.92 Cultural Challenges

Name of the libraries	Statement from the interviewees	Coding
DUCL	• Lack of willingness to be information literate, lack of training, and lack of competent manpower.	• Not willing to share knowledge

	• There is little intention to cope with the changes, a lack of encouragement to share knowledge and experiences, less mentoring as a team working habit, and a fair learning environment. • Materials of novice writers, not recognizing relevant information	• Lack of intention to cope with the new technology • Lack of trust in the new writers
BUETCL	• Lack of initiatives to adopt KM tools and less understanding about KM, less interest in staff members about KM perception. • KM adoption occurs on multiple levels and lacks KM's compelling purpose.	• Lack of concepts about KM • Lack of initiatives to adopt KM tools
RUCL	• Lack of skilled staff/manpower, need to convince higher authority, adequate funding. • Lack of willingness and training of the staff.	• Lack of skilled staff • Lack of fund
JUSTCL	• Lack of KM convincing purpose, KM is not just IT process and competency, overcoming the belief that knowledge is power.	• Lack of motivation to implement KM
SAUCL	• Not recognizing the relevant information materials of novice writers. • Each organization is different, and thus they face a unique challenge that must be overcome to become successful in adopting KM, such as not recognizing the relevant information.	• Lack of motivation to implement KM

4.10.37 Challenges for KM Implementation in the Library

In section H (Question 37; Appendix B), interviewees were asked whether the present ICT infrastructures are adequate to provide web-based KM library services. There are numerous challenges that public university libraries usually face in their quest to implement KM. However, all the participants agreed with the challenges of "lack of budget and user awareness," "Lack of trained staff," and "Obsolete technology," which are the challenges for KM implementation in the library. The participants also stated that KM strategies, carelessness of KM implementation, lack of proper knowledge about KM, and lack of employee motivation about KM are the other challenges to KM implementation in the library.

Table 4.93 Challenges for KM Implementation

Name of the libraries	Statement from the interviewees	Coding
DUCL	• Inadequate KM strategies, carelessness of KM implementation, lack of budget and user awareness, lack of advanced ICT implementation. • Making information easy to find, employee motivation. • Inadequately trained staff, lack of expertise and understanding of KM, lack of knowledge about ICT and tools.	• Inadequate KM strategies • Lack of user awareness strategies • Lack of a budget
BUETCL	• Inadequate budget related to ICT development which plays a vital role in KM achievement in the university library. • Obsolete technology, employee motivation.	• Lack of budget • Employee motivation.

RUCL	• Lack of user awareness, lack of proper knowledge about KM, authorities are reluctant to adopt the process. • Lack of budget, lack of professional workforce.	• Lack of user awareness • Authorities are reluctant to adopt the process. • Lack of budget
JUSTCL	• Obsolete technology, employee motivation, making information easy to find. • Unawareness of students and staff, philosophy of the chief, lack of coordination between ICT experts and library officers.	• Obsolete technology, • Employee motivation • Lack of awareness of students and staff
SAUCL	• Lack of trained staff, lack of employee motivation about KM, obsolete technology, lack of ICT knowledge and tools. • Lack of user awareness.	• Lack of skilled staff • Lack of employee motivation for KM • Obsolete technology

4.10.38 Findings from the Document Analysis

This section complements the research that will provide additional information about the library. Despite the absence of documents on KM policy, KM strategic plans and annual reports of the university have been analyzed to derive issues such as the libraries' extent to which explicit knowledge is produced/acquired and managed in the library. This section also highlighted the major sections of the library, total collections, prominent publishers/journals subscribed by the library, and the website address of the library. Therefore, document analysis was done only by the university's annual reports. In the annual report, there is a section where brief details of the library's information are provided. All the libraries have separate library buildings with different areas like

circulation, reading room, periodical, textbook, reference book, new arrival, digital library section, etc. The analysis of these documents is shown in the following table.

Table 4.94 Findings from the Document Analysis

Name of the libraries	Software used by the library	The major section of the library	Total Collections	Prominent publisher/journal subscription	Library website
DUCL	DULIS, KOHA	Administration, acquisition, processing, periodical, reprography, reference section, etc.	6,89,343	AGORA, HINARI, ARDI, OARE, Oxford Art Online, Sci-finder, Hein online academic core, Thompson Reuters EIKON, SAGE, Elsevier, Pearson, Taylor and Francis, Wiley online Books, Springer, Emerald e-book series world Scientific, etc.	library.du.ac.bd
BUETCL	KOHA	Administration, processing, periodical, IT, reference, book rental section, etc.	1,37,587	Elsevier (ScienceDirect), ASTM International Journals, EM International Journals, SPIE Digital Library, Springer, Wiley Inter Science, etc.	lib.buet.ac.bd
RUCL	KOHA	Administration, acquisition, processing, periodical, reading, lending, audio-visual section, etc.	3,60,981	Emerald, IEEE Xplore Digital Library, JSTOR, Springer, Taylor and Francis, Wiley Online Books, World Scientific, Pearson education, Sage knowledge, Oxford University Press, etc.	library.ru.ac.bd
JUSTCL	KOHA	Administration, acquisition, processing, periodical, reference section, etc.	16,500	IEEE Xplore Digital Library, JSTOR, Wiley Online Library, Emerald, Cambridge University Press, World scientific	just.edu.bd
SAUCL	KOHA	Administration, acquisition, processing, periodical, reference section, etc.	13,775	AGORA, HINARI, ARDI, OARE, Pearson Education India's e-books, Taylor and Francis e-book, E-resources of fisheries and agriculture, OXFORD Scholarship online, World Scientific e-books, TEEAL, etc.	www.sau.ac.bd

4.11 TRIANGULATION OF FINDINGS

The questionnaire survey results were used with semi-structured interviews conducted to explore the phenomenon of KM strategies and practices in public university libraries. To show some areas of convergence, the triangulation was converted into a matrix table. The matrix is presented in Table 4.84.

Table 4.95 Matrix Triangulation of Findings Across the Instruments of Data Collection

Research Questions	Outcomes from the Data Collection	
	Survey questionnaire	Semi-structured interviews
The main research question was: How can the KM model create service-based value for public university libraries in Bangladesh?	To answer this question, a proposed model was developed integrating with RQs. The proposed model gives broad guidelines for integrating KM practices and successfully implementing KM in the libraries (Section 5.5 and Figure 5.1). The model is general, and it would create a service-based value for public university libraries in Bangladesh. In addition, some questions were asked to support this research question that is considered key components of the model related to KM practice and implementation of public university libraries. The	For the benefit of public university libraries in Bangladesh, a research model was designed. (Section 5.5 and Figure 5.1) for details. From the semi-structured interviews, the present research found that through organizing and sharing the relevant information and expanding learning facilities by applying ICT, KM can play a role in achieving the best output of their library. The present research found that reference and information services, policy and decision making, knowledge transfer, knowledge use, service innovation, knowledge creation, etc., are the potential

	research found that users have a positive level of consent regarding the facility and performance of the library, KM's relevance to librarianship, and the advantages of KM for library service. At the same time, users have a moderate level of consent regarding the quality of the library services, the relevance of KM on library practice, and department contribution. The results showed that students of various departments have moderately low familiarity with KM. The present research also found that most of the users measured that KM meets the requirements of a library to achieve its goals by creating new knowledge. The hypothesis was tested from the data collected through a survey questionnaire from the active library users based on the proposed model. Among the eight hypotheses, seven were supported.	areas of KM application. Findings from the interviewee's responses indicate that all the university libraries are ready to adopt appropriate KM for the benefit of the library. The research found that all the libraries are continuously looking for new approaches to meet the needs of their users. The research also identified that almost all the interviewees agreed that ICT should be the starting point for a KM plan, and authorities should invest in ICT for KM implementation.
RQ2c: To what extent is KM practiced	The research also found that a reasonable number of the respondents replied positively	This research affirmed that no formal KM programs were in place in these university

in public university libraries in Bangladesh?	that they are aware of the library's KM practice. The user's familiarity with KM is moderately low. They learn about KM through courses provided by their department and independent study through research literature. Users also agreed that KM was an alternate name for information management, and it is a modern librarianship discipline.	libraries. It was established that libraries are doing some resemblance of KM in their everyday work. However, some interviewees stated that they are practicing KM in their libraries, but it was not formally adopted in these libraries. It is the management of explicit knowledge they have been doing for a long time. The present research found that university librarians, in general, are practicing knowledge creation/capture, KS, and knowledge application activities in the public university libraries in Bangladesh.
RQ3a. What are the critical success factors for implementing a KM at the public university libraries in Bangladesh?	Establishing a solid infrastructure for future development, continuous training programs, and utilizing technology accurately and organizational ICT structures are the critical success factors for designing and implementing a KM in public university libraries.	The present research found that tactful strategy for KM implementation, skilled manpower, a continuous training program for staff and users, leadership, ICT infrastructure, training program, etc., higher authority decision, budget, and lack of skilled manpower are the critical success factors of KM implementation in the public university libraries in

		Bangladesh. The present research also found that KS benefits library users by solving problems, building a learning community, making decisions, improving user knowledge, and increasing library staff knowledge. So, KS is another influential factor for KM implementation.
RQ4a: What are the challenges related to KM practice in public university libraries in Bangladesh?	Problems with organizational culture, lack of awareness, improper technology deployment, inadequate support from management, and feeling shy in nature of the employee to share knowledge are the challenges related to KM practice in public university libraries in Bangladesh.	Not willing to share knowledge, lack of intention to cope with the new technology, lack of concept about KM, lack of initiatives to adopt KM tools, and lack of motivation to implement KM are the cultural challenges for KM. This research identified numerous challenges that public university libraries usually face in their quest to implement KM. However, all the participants agreed with the challenges of lack of budget and user awareness, lack of trained staff, and obsolete technology, which are the challenges for KM implementation in the library.

4.12 CHAPTER SUMMARY

This chapter presents data analysis of the findings of data collected through a mix of survey questionnaires, interviews, and document reviews. The quantitative data analyses were presented with descriptive and inferential statistics using IBM®SPSS®. A total of 1,060 questionnaires were distributed among undergraduate (UG; honors) and postgraduate (PG; masters) students of the five public university libraries in Bangladesh. Out of 1,060 distributed questionnaires, 811 usable questionnaires were returned: giving a response of 81.1%. Data analysis was presented in two parts. The first part of the data analysis presented descriptive and inferential statistical analysis. Last part of quantitative data analysis, researchers used the partial least squares (PLS) method to analyze the proposed hypothesized research model and justify using this method. Five university libraries were studied: DUCL, RUCL, BUETCL, SAUCL, and JUSTCL, for collecting quantitative and qualitative data. The findings presented in this chapter are preceded by response rates and the profile of the libraries. The participants were 11 in this semi-structured interview. Data collected through interviews and document (annual report) reviews were interpreted through content analysis.

CHAPTER FIVE

DISCUSSIONS OF FINDINGS

5.1 INTRODUCTION

This chapter presents an overview of the research and the key findings from quantitative and qualitative results. The discussion of findings is based on the results of the data analysis presented in the previous chapter. The essential findings are explored concerning the research objectives and questions. This chapter is organized according to the research questions and, where applicable, interpreted using previous literature. This chapter discusses the research model and its benefits and summarizes the findings.

5.2 RESEARCH OVERVIEW

This research was carried out among 1,060 active users, and a total of 811 usable questionnaires were returned with a response rate of 76.5%. These 811 active users came from these university libraries: Central Library of University of Dhaka (DUCL), Central Library of University of Rajshahi (RUCL), Central Library of Bangladesh University of Engineering and Technology (BUETCL), Central Library of Sylhet Agricultural University (SAUCL) and Central Library of Jashore University of Science and Technology (JUSTCL).

Among the respondents, 546 (67.3%; N=811) were male, and 265 (32.7%; N=811) were female. The majority of the respondents, 423 (52.2%; N=811), were from 22-25 years. The research revealed that most of them were 2nd-year undergraduate students, i.e., 268 (33%; N=811). Many of the respondents replied that they visited the library for “reading books” 652 (80.4%; N=811). The findings from the research showed that most of the users used the library “every day” 377 (46.5%; N=811). Present research revealed that many of them, i.e., 694 (85.6%; N=811), have used the library for “1-5 years”. The research found that a total of 468 (57.7%; N=811) users who were

using the web-based services were using “ask-a-librarian services,” i.e., 111 (13.7%), followed by “Web OPAC” 93 (11.5%), “digital reference services” are used by 91 (11.2%). The research also found that the maximum number of students who used web-based services “rarely” was 232 (28.6%), followed by “sometimes” 142 (17.5%), and “usually” 73 (9%). The research findings showed that 343 (42.3%; N=811) did not use the web-based services provided by the library.

The present research also interviewed 11 Librarians/Deputy librarians and Assistant librarians of respected public university libraries as they hold the highest position at their university libraries. The pilot study was done to ensure that the participants did not feel any difficulty answering the questions and whether any essential aspects were left uncovered. Quantitative data from various sources were analyzed through IBM®SPSS®. Content analysis was used to assess qualitative data acquired through semi-structured interviews.

5.3 KEY FINDINGS FROM THE SURVEY QUESTIONNAIRE

In this section, the researcher answered research questions obtained from the survey questionnaire. The findings addressing the research questions are discussed below.

5.3.1 Main Research Question: How Can the KM Model Create Service-based Value for Public University Libraries in Bangladesh?

Key Findings: Answer this question; a proposed model was developed integrating with RQs. The proposed model gives broad guidelines for integrating KM practices and successfully implementing KM in the libraries (Section 5.5 and Figure 5.1). Before data collection and analysis, a complete literature search was conducted to identify that could illustrate the essential variables to the effective implementation of KM for creating service-based value. The proposed model shows guidelines for integrating KM activities and successfully implementing KM to create service value. Initially, a hypothesized model was developed, and the hypothesis was tested from the data collected through a survey questionnaire from the active library users based on the

model. In addition, some questions were asked to support the research question that is considered a vital component of the model, which is related to KM practice and implementation of the public university libraries for creating service value. Based on this statement, interviewed questions numbers 13, 14, 20, 21, 22, 23, 24, 27, 28, and 29 were asked to the users of the libraries to support the answer of the main research question (Appendix A). These questions also asked the users to know their opinion on whether KM can meet the requirements of the library and how KM can meet the needs to achieve the library's goals. The feedback from the users makes it easier to describe and build the model. The detailed discussions of findings are given below.

The research noted the following results when the users were asked about the quality of the library services on a 1-5 point Likert scale. The research found that a total of 370 (45.6%; N=811; Mean= 3.14) agreed and strongly agreed that the "Service of the library is very good." Many users, 363 (44.7%; N=811; Mean=3.14), also agreed and strongly agreed that "Staffs are actively involved in better library service." A total of 367 (45.3%; N=811; Mean=2.97) agreed and strongly agreed that the "Membership process to this library is easy." Overall, it can be said that the majority of this question's mean score above three indicates a moderate level of consent among the users regarding the quality of the library services.

The research noted the following results when the users were asked about the facility and performance of the library on a 1-5 point Likert scale. The highest number of respondents, 455 (56.1%; N=811; Mean=3.40), agreed and strongly agreed that the "Staffs are polite to users." A total of 351 (43.3%; N=811; Mean=3.12) agreed and strongly agreed that "Some of the staff's lack of experience." A total of 364 (47.9%; N=811; Mean=3.12) agreed and strongly agreed that "The operating time of the library is convenient to the users." Findings from the present research also revealed that a total of 317 (39.1%; N=811; Mean=3.07) agreed and strongly agreed that "Library staffs encourage users to effectively use library websites for research purposes." Whereas a total of 465 (57.3%; N=811; Mean= 2.40) disagreed and strongly disagreed that "There is a long waiting time in front of the reference desk." The research also revealed that "The staff knows about the latest technological developments" was disagreed and strongly disagreed by the maximum number of users, 287 (35.4%; N=811; Mean=2.93). Overall, it can be said that respondents have positive consent regarding the facility and

performance of the library. The facility and performance of the library depend on the deployment of the right staff in the right sections of the library. So, universities are advised to hire the best personnel with the appropriate skills, and human resource departments must place them in the proper divisions. This is because bad skills are inefficient and negatively impact performance. Personnel should be assigned to the appropriate department.

The research noted the following results when the users were asked about the user's familiarity with KM. Present research findings indicated that a total of 325 (41.1%; N=811; Mean=2.75) disagreed and strongly disagreed that the “Library needs to be conscious of critical success factors that would influence the implementation of KM.” A total of 378 (46.6%; N=811; Mean=2.58) disagreed and strongly disagreed with the “Relationship between KM familiarity issue and critical success factors.” A total of 413 (51%; N=811; Mean=2.52) disagreed and strongly disagreed with the “Relationship between KM familiarity issue and service value.” A total of 486 (60%; N=811; Mean=2.24) disagreed and strongly disagreed with their “Familiarity with KM.” The data gathered showed that many users have very low familiarity with KM because there are no KM departments at any university in Bangladesh.

The findings showed that most of the users, 347 (42.7%; N=811; Mean=2.78), disagreed and strongly disagreed with the statement that they became popular with KM through the “Expert bodies activities.” A total of 332 (40.9%; N=811; Mean=2.95) agreed and strongly agreed that the “Courses provided by my own department” make respondents popular with KM. A total of 314 (38.7%; N=811; Mean=2.97) agreed and strongly agreed that “Independent study, via academic/research literature” they became familiar with KM. A significant number of participants, 402 (49.5%; N=811; Mean=2.54), disagreed and strongly disagreed that the “Educational programs organized by different institutions, i.e., seminars, conference, workshops, training, etc.” they became familiar with KM. Overall, it can be said that mean values below three indicate a low assent rate among the users regarding their familiarity with KM. The research showed that the highest number of participants, 402 (49.6%; N=811; Mean=3.36) agreed and strongly agreed with the statement that “It is an allied field of study which tends to extend the librarianship scope” came as the major aspect of KM's relevance to librarianship, followed by the “KM is a modern librarianship discipline,”

i.e., 376 (46.4%; N=811; Mean=3.18). A total of 371 (45.8%; N=811; Mean=3.15) agreed and strongly agreed that “It is an alternate name for information management.” The present research also revealed that “KM is a management craze that gains attention for a short span of time” obtained the fourth position, i.e., 326 (40.2%; N=811; Mean=3.11). While "It is a contradictory idea dissimilar from librarianship" obtained the fifth position, i.e., 311 (38.3%; N=811; Mean=3.07). A total of 303 (37.4%; N=811; Mean=2.82) disagreed and strongly disagreed that “KM is a new perception for the LIS field.” Overall, it can be said that most of the mean values above three indicate a high rate of agreement among the users regarding the KM's relevance to librarianship.

From the research findings, out of 811 users, 482 (59.4%; N=811) of the respondents replied positively that KM meets the requirements of a library to achieve its goals. At the same time, 230 (28.4%; N=811) said they were not sure about the statement. In contrast, 99 (12.2%; N=811) replied negatively. It means that most of the users considered that KM meets the requirements of a library to achieve its goals.

The library users are the prominent patrons in university libraries and managing user knowledge is critical for providing novel services to user communities. Most of the respondents, 355 (43.8%; N=811), replied that KM meets the requirements of a library by creating new knowledge. More than one-fourth of them, 180 (22.2%; N=811), believed that by “Expand the access of knowledge for the users,” KM meets the requirements of a library, followed by “Accessing and retrieving knowledge from outer sources” 137 (16.9%; N=811). In comparison, only 86 (10.6%; N=811) replied that KM meets the requirements of a library by “Representing knowledge in databases, software, and others.”

The research revealed that among the respondents, many of them, i.e., 531 (65.5%; N=811), think that KM is interesting in library practice, whereas 280 (34.5%; N=811) responded negatively. It is clear from the results that KM practices in the library would be interesting for service improvement.

By proposing new approaches to address user requirements and coming up with creative library concepts, KM can impact library services. KM encourages innovation, which improves library services and meets the needs of users. The research distinguished the following results when the users were asked about the advantages of

KM for library service. The findings indicated that a total of 435 (53.6%; N=811; Mean=3.38) agreed and strongly agreed that “KM helps to get the innovative organization ideas” came as the main advantage of KM for library services. "KM can boost the overall performance and future prospects of the library" obtained the second-highest position, i.e., 420 (51.8%; N=811; Mean=3.28).

The result also revealed that a total of 384 (47.3%; N=811; Mean=3.22) agreed and strongly agreed that “KM will help turn a university library into an organization for learning factors for implementing KM.” While a total of 366 (45.1%; N=811; Mean=3.10) agreed and strongly agreed that “University libraries can be made more applicable to their affiliated universities by KM.” At the same time, a total of 329 (40.6%; N=811; Mean=2.99) agreed and strongly agreed that “The chances of duplication of work” can be minimized by KM's. In contrast, a total of 333 (41.1%; N=811; Mean=2.77) disagreed and strongly disagreed that “KM practice will add value to the output of the library and the service area.” All these findings ranked on the 1–5 point Likert scale. Most of the mean values above three indicate a high degree of agreement among the users regarding the advantages of KM for library service. The research distinguished the following results when the respondents were asked about the relevance of KM to library practice. The research identified a total of 412 (50.8%; N=811; Mean=3.36) agreed and strongly agreed that the “KM helps in enhanced service quality” of the library. A total of 306 (37.8%; N=811; Mean= 3.10) agreed and strongly agreed that the “Activities in a library's readers' service section, such as distribution of books, reference services are synonymous with the sharing of KM awareness.” A total of 290 (35.7%; N=811; Mean=2.80) disagreed and strongly disagreed that “An important ingredient of KM is the expertise of LIS specialists in librarianship.” Overall, it can be said that users have a moderate level of acceptance regarding the relevance of KM to library practice.

The research noted the following results when the participants were asked about the potential contribution of the various departments. Findings from the research reported that a total of 410 (50.6%; N=811; Mean=3.32) agreed and strongly agreed that the “Department of Management Information Systems” has the potential contribution to the education of KM. A total of 291 (35.9%; N=811; Mean=3.01) agreed and strongly agreed that the “Department of Computer Science and Engineering” has

the potential contribution to the education of KM. A total of 290 (35.8%; N=811; Mean=3.01) agreed and strongly agreed that the "Department of Organization Strategy and Leadership" has the potential contribution to the education of KM. The present research also found that a total of 367 (45.3%; N=811; Mean=2.97) agreed and strongly agreed that the "Department of Information Science and Library Management" also has a potential contribution to the establishment of education for KM. Generally, it can be said that users have a moderate level of consent regarding all these departments' contributions to KM education.

5.3.2 RQ2b: To What Extent Users' Demographics are Associated with Users' Characteristics, Awareness, and KM Familiarity Issues?

Key Findings: The results of Mann–Whitney test found statistically significant differences between gender and their ratings on personal characteristics for "How frequently do you use your library?" (Mann–Whitney U = 55742.500, $p < 0.05$). These findings showed that female users (Mean rank=468.65) are the frequent visitors of the library than male users (Mean rank=375.59). "Have you used the web-based services of the library?" (Mann–Whitney U=62644.500, $p<0.05$). These results also revealed that female users (Mean rank=442.61) used the web-based library service more than male users (Mean rank=388.23). "Are you aware of any KM practice in your library?" (Mann–Whitney U=58153.000, $p<0.05$). This finding showed that female users (Mean rank=459.55) are more aware of KM practice than male users (Mean rank=380.01). Significant differences were not found between gender and personal characteristics "Why do you visit the library?" (Mann–Whitney U=72006.500, $p> 0.05$), "How many years have you been using the library?" (Mann–Whitney U = 71177.000, $p > 0.05$), "How often do you use the above web-based services?" (Mann–Whitney U = 21628.000, $p > 0.05$), "Do you share knowledge with your friends or classmates?" (Mann–Whitney U = 72142.000, $p > 0.05$), "How much familiarity with KM?" (Mann–Whitney U = 69906.500, $p > 0.05$).

The results of the Kruskal-Wallis H found that the statement "How much Familiarity with KM" (Chi-square=38.719; Df=4; $P < 0.05$), and "Do you find KM as interesting in library practice" (Chi-square=18.118; Df=4; $P < 0.05$) has a significant

difference from the current study level. These findings mean that respondents with a relatively high level of education had more familiarity with KM (Mean rank=434.45 for 3rd-year students; Mean rank=474.26 for 4th-year students; Mean rank=454.8 for master's students). The findings also showed that respondents with a lower level of education showed KM as interesting in library practice (Mean rank=404.42 for 1st-year students; Mean rank= 440.00 for 2nd-year students and Mean rank=401.17 for 3rd-year students) but not so between the rest of the current study level categories. The findings also revealed that no significant difference was found between "Do you share knowledge with your friend or classmates?" (Chi-square=4.415; Df=4; $p > 0.05$) and "Are you aware of any KM practice in your library?" (Chi-square=2.286; Df=4; $p > 0.05$) with the current study level.

Similarly, the findings also showed that the statement "How much Familiarity with KM" (Chi-square=38.719; Df=4; $P < 0.05$) and "Do you find KM as interesting in library practice" (Chi-square=18.118; Df=4; $P < 0.05$) has a significant difference from the current study level. These findings mean that respondents with a relatively high level of education had more familiarity with KM (Mean rank=434.45 for 3rd-year students; Mean rank=474.26 for 4th-year students; Mean rank=454.8 for master's students). The findings also showed that respondents with a lower level of education showed KM as interesting in library practice (Mean rank=404.42 for 1st-year students; Mean rank= 440.00 for 2nd-year students and Mean rank=401.17 for 3rd-year students) but not so between the rest of the current study level categories. The research findings also revealed that no significant difference was found between "Do you share knowledge with your friend or classmates?" (Chi-square=4.415; Df=4; $p > 0.05$) and "Are you aware of any KM practice in your library?" (Chi-square=2.286; Df=4; $p > 0.05$) with the current study level.

5.3.3 RQ2c: To What Extent is KM Practiced in Public University Libraries in Bangladesh?

Key Findings: In reality, the answer to the RQ2c was obtained from the interviewees' feedback, who was the representative of the library (Appendix B). In the survey questionnaire, questions number 15,16,17,18,19, 25, and 26 (Appendix A) were also

asked to support the findings of RQ2c from the interviewees. Libraries must produce creative and implementable ideas based on their knowledge to provide new and innovative services to their user communities (Islam, 2016). Therefore, the university library needs to connect users in their service process and accept the changes as prospects by adopting KM.

The research found that among the respondents, a total of 535 (66%; N=811) know about explicit knowledge. The research also identified that more than half of the respondents, i.e., 453 (55.9%; N=811), responded positively that they knew about tacit knowledge.

A total of 406 (50.1%; N=811) respondents replied that libraries disseminate the captured knowledge to the user through the traditional library system, followed by publication 184 (22.7%). At the same time, 121 (14.9%) of them mentioned that their library disseminated the captured knowledge through newsletters. The remaining 100 (12.3%) respondents replied that publishing in the website library shares the captured knowledge.

The maximum number of respondents, i.e., 668 (82.4%; N=811), replied positively that knowledge would bring benefits to the library. It means that most users believed that using knowledge would get significant benefits to the library. The research found that many respondents, i.e., 551 (67.9%; N=811), shared their knowledge with others. The majority of those who shared knowledge with others, i.e., 204 (25.2%; N=811), shared knowledge sometimes. It means that users have a positive tendency to share knowledge with their friends and classmates. Present research reported that most users, i.e., 521 (64.2%; N=811), shared their knowledge through conversation. While 128 (15.8%) of them shared their knowledge through meetings, followed by chat 86 (10.6%). The research also found that a reasonable number of the respondents, 333 (41.1%; N=811), replied positively that they are aware of the KM practice in the library. In contrast, 249 (30.7%; N=811) responded negatively that they are not aware of KM practices and 229 (28.2%; N=811) said they were not sure about the KM practice in the library.

5.3.4 RQ3a: What are the Critical Success Factors for Implementing a KM in Public University Libraries?

Key Findings: The research noted the following results when the users were asked about the critical success factors. The highest number of participants, 493 (60.7%; N=811; Mean=3.57), agreed that "Establishing a solid infrastructure for future development" is the most important critical success factor for public university libraries in Bangladesh. This research also found that a total of 469 (57.8%; N=811; Mean=3.50) agreed and strongly agreed that "Knowledge storage and capturing" is the second crucial critical success factor for implementing KM in the public university libraries in Bangladesh. Where "Organizational ICT structure," i.e., 444 (54.8%; Mean=3.40; N=811) and "Organizational culture," i.e., 432 (53.2%; N=811; Mean=3.38) are considered as the 3rd and 4th critical success factors by the users. A total of 429 (52.9%; N=811; Mean=3.35) agreed and strongly agreed that "Utilizing technology accurately" was considered another success factor, followed by "Respecting user's demand," i.e., 422 (52%; N=811; Mean=3.41).

Employees would need new skills in all library sections. Therefore, training is crucial if reengineering is to be successful in libraries. However, most librarians have been found to depend on their academic training, and academic training is the basis of the information and skills they use in the library environment. The present research also revealed that a total of 420 (51.8%; N=811; Mean=3.24) agreed and strongly agreed that "Continuous training programs" are another critical factor for implementing KM.

If an organization's leadership is supportive, KM is easier to spread within the organization. This research showed that 351 (43.3%; N=811; Mean=2.95) agreed and strongly agreed that "Leadership" is considered a critical success factor for KM implementation in the library by the users. Overall, it can be said that most of the mean values above three indicate a high rate of agreement among the users regarding the critical success factors.

5.3.5 RQ4a: What are the Challenges Related to KM Practice in Public University Libraries in Bangladesh?

Key Findings: The research indicated the following results about the challenges related to KM practice. The present research showed that the highest number of participants, 461 (56.8%; N=811; Mean=3.48), agreed and strongly agreed that "Lack of awareness" is the key challenge for implementing KM in public university libraries. So, employees' awareness and proper technology deployment are necessary for KM practices and implementation. This research also revealed that a total of 401 (49.5%; N=811; Mean=3.29) agreed and strongly agreed that "Improper technology deployment" is another important challenge for KM practices. While "Losing information from employee's resignation and retirement" 398 (49%; N=811; Mean=3.31) is another significant challenge for KM practice in public university libraries. The research found that a total of 378 (46.6%; N=811; Mean=3.21) agreed and strongly agreed that "Feeling shy in nature of the employee to share knowledge" is another significant challenge of KM practices. "Inadequate support from management" 376 (46.4%; N=811; Mean=3.19) is another challenge mentioned by the users. "Don't find KM process as interesting" 367 (45.2%; N=811; Mean=3.18) is another barrier to KM implementation in public university libraries declared by the users.

This research also revealed that a total of 349 (43.1%; N=811; Mean=3.09) agreed and strongly agreed that "Problems with organizational culture" are also considered another challenge by the users. While a total of 298 (36.7%; N=811; Mean=2.79) agreed and strongly agreed that "Unwillingness to explore the difficulties" associated with KM were deemed minor challenges for implementing KM in the public university libraries in Bangladesh. All these findings ranked on a 1-5 point Likert scale. These are key challenges in the KM practices from the user's point of view.

5.4 KEY FINDINGS FROM THE SEMI-STRUCTURED INTERVIEW

According to the study questions, the qualitative findings for the semi-structured interview questions are discussed in the sections below.

5.4.1 Main Research Question: How can the KM Model Create Service-based Value for Public University Libraries in Bangladesh?

Key Findings: Answer this question; the model was developed by integrating with RQs. The proposed model gives broad guidelines for integrating KM practices and successfully implementing KM in the libraries (Section 5.5 and Figure 5.1). Also, questions number 06, 22, 23, 27, 28, 29, 30, and 33 were asked to support the main research question (Appendix B). These questions were asked to the interviewees to know their intention to KM implementation in the library and whether they think that KM can enhance and improve library performance and help achieve the best output of the library. Also, these questions were asked to bear in mind that the interviewees would find some factual information regarding KM implementation issues. The answer to these questions assists in describing the proposed model integrating with RQs. The key findings are given below.

In libraries, it is critical to manage the knowledge of both library personnel and users. It creates new knowledge and an atmosphere conducive to developing new or enhanced tools and library services for user groups. To accomplish this, libraries must promote collaboration and interaction among personnel, employees, and users. The present research findings identify that through organizing and sharing the relevant information, providing innovative service to the users, and expanding learning facilities applying ICT, KM can help them gain the best results from their library. The present research also found that reference and information services, policy and decision making, knowledge transfer, knowledge use, service innovation, knowledge creation, etc., are the potential areas of KM application in the university libraries in Bangladesh.

Findings from the interviewee's responses indicate that each university library is prepared to implement the necessary KM for the benefit of the library. In comparison, DUCL is prepared to adopt partially. At the same time, RUCL is waiting for the decision of the higher authority. The research also indicated that BUETCL, JUSTCL, and SAUCL are ready to adopt KM practices fully in their libraries. It is hoped that KM will aid in delivering services, which is an important goal for university libraries. The importance of KM in public libraries in a developing country like Bangladesh cannot be overstated. The research found that all the libraries are continuously looking for new approaches to meet the needs of their users. They also replied that the library often fast

to come up with new ideas/services for library users. The findings from the research also showed that the interviewees reacted positively that KM practices in the library help improve library performance.

The research identified that almost all the interviewees agreed that ICT should be the starting point for a KM plan. Though, one respondent disagreed with the statements. He stated that a strategic plan and creating an appropriate environment and training should be a strategic point for a KM plan. All interviewees' responses from the research agreed that organizations should invest heavily in ICT to achieve KM strategy success. This research revealed that the interviewees agreed that KM techniques and practices in the library aid in improving library performance.

5.4.2 RQ2a: How did the Public University Libraries in Bangladesh Adopt the KM Practices?

Key Findings The representatives from the libraries mentioned that online public access catalog (OPAC) searches, searching libraries' full-text databases, through ICT, information is retrieved. Manual and verbal communication, using manual registrar and some cases using software or computer and document supply via network information is obtained. Also, information was retrieved from the e-resources center of the library. According to the interviewees, training, conference participation, purchasing, and recruiting new employees are the most typical ways public university libraries in Bangladesh obtain explicit knowledge. The present research found that book selection tools like indexes, bibliographies, etc., are almost common in all libraries to gather explicit knowledge.

Tacit knowledge improves the delivery and efficiency of services. Universities must use tacit knowledge since it aids in forming new knowledge through processes such as integration, combination, invention, and creativity, which leads to better decision-making. The research also revealed that they recorded tacit knowledge by interview (recording), audio recorders (CD-DVD), formal and informal records, and integrated applications/audiovisual materials. In addition, personal wisdom and experiences are written down.

Present research revealed that all the university libraries except JUSTCL indicated that they intended to implement KM at their university library soon and provided their opinion on adopting KM practices in their libraries. The interviewees from DUCL said that they are taking initiatives like arranging training programs and thus building and developing KM skills between the staff and personnel. They also mentioned that they want to adopt KM practices by digitizing various sections in the libraries, training the employee, and preparing KM policy. They also adopted the KM by promoting and sharing knowledge among the users and staff regarding KM and applied ICT to the operational activities of the library. The interviewees of BUETCL stated that they want to adopt KM practices by improving acquisition service, ICT management, and reference and circulation service in the library. Interviewees from RUCL replied that by applying more technologies in different sections, reducing manual systems, and employing skilled staff. Interviewees from SAUCL said that it is challenging for KM to be incorporated into the academic library environment due to misunderstandings concept of KM among the staff. They also mentioned that they have a plan to implement KM by improving the ICT facilities, training the staff, sharing knowledge, creating infrastructure facilities, etc.

5.4.3 RQ2c: To What Extent is KM Practiced in Public University Libraries in Bangladesh?

Key Findings: From the interviews, it was found that librarians at the managerial levels understood KM. These findings mean Librarians/Deputy librarians and Assistant librarians in public university libraries in Bangladesh are familiar with the term KM. KM is an indispensable practice for organizational knowledge. This research also showed that librarians in Bangladesh are still learning about KM and its implications. Though, out of five libraries, three are practicing KM in their libraries, according to the participants' responses.

Moreover, they have primarily been practicing KM or planning to implement KM practice in their libraries soon. They have used their expertise to organize and retrieve information in many sectors such as acquisition, processing, circulation, dissemination, intranet construction, and institutional repositories. Because of the

variability in user demand and changing patterns of academic libraries to gather, store, analyze and disseminate information, the importance of KM in academic libraries is gradually increasing. Most academic librarians are familiar with KM and highly aware of KM and KM techniques. The study affirmed that no formal KM programs exist in these universities.

It was established from the research that libraries are doing some resemblance of KM in their everyday work. Some interviewees stated that they practiced KM in their libraries though it was not formally adopted in these libraries. They have been doing the management of explicit knowledge for quite some time. The current research discovered that university librarians in Bangladesh are engaged in knowledge creation/capture, knowledge exchange, and knowledge application activities. So, it is also advisable that if KM practices and strategies could be applied formally by public university libraries in Bangladesh, they could be benefitted from the competitive library market.

Knowledge storage is an essential activity because it provides an organization with the basis on which decisions are made based on the preserved and stored content. Written policies aid in establishing standards and can also motivate employees to produce, share and retain information. This research revealed that none of the libraries had written KM policies. Two interviewees mentioned no KM policy in the library because there is no proper guideline and overlook this critical issue.

The research findings also revealed no KM sections in any of the selected public university libraries in Bangladesh. From the interviewee's responses, it is also found that there is no budget allocation for KM in their libraries. The librarians have planned to implement KM at their university library soon.

The findings also revealed that all the university libraries, except JUSTCL, pointed out that they have intended to implement KM at their university library in the future and provided their opinion on implementing KM in their libraries. The researcher feels that KM policies and incentive schemes will be implemented in these libraries soon, as many of them responded that they have aimed to implement KM in the future. Interviewees also mentioned that the application of KM in university libraries should have a strategic plan including specific objectives, the role of librarians and areas of

KM, and the purposes of KM practices for libraries should be defined before its implementation.

Furthermore, they stated that providing staff with training and learning opportunities for acquiring new information, broadening access to external knowledge resources through library networks, and encouraging a KS culture may aid in implementing KM in Bangladesh's public university libraries. The present research showed that developing KM strategies and model plans, developing KM tools and technologies, introducing KM policy, implementing KM culture, and introducing KM courses will be the strategy to implement KM in their libraries. It is advisable for the employees of the public university libraries to use simple, low-cost, and minimum training requirements KM techniques and technologies to implement KM. So, they can adopt any combination at the initial stage to tackle their issues.

5.4.4 RQ3a. What are the Critical Success Factors for Implementing a KM at the Public University Libraries in Bangladesh?

Key Findings: The present research found that tactful strategy for KM implementation, recruiting skilled manpower, a continuous training program for staff and users, leadership, KS, ICT infrastructure, training program, higher authority decision, and budget are the critical success factors of KM implementation in the public university libraries in Bangladesh. Various investigations have also backed up this point of view. The present research also found that KS provided benefits for library users by solving problems, building a learning community, making decisions, improving user knowledge, and increasing library staff knowledge.

5.4.5 RQ3b: Is the Present Manpower Adequate for Providing KM Services?

Interviewees of the present research were asked whether the present manpower is adequate for providing KM services. The research showed that in the DUCL, current staffing is enough, but there is a lack of skilled manpower in their library. Almost a similar type of feedback was given from RUCL. They replied that training is required

for the staff to provide KM services. SAUCL said that it is difficult for present staff to provide KM services. BUETCL reacted negatively that current manpower is not adequate for delivering KM services. Only participants from the JUST library replied positively. Finally, it is concluded that all the libraries need sufficient staffing to provide KM services.

5.4.6 RQ4a: What are the Challenges Related to KM Practice in Public University Libraries in Bangladesh?

Key Findings: User demands are changing significantly in the digital environment. So, service innovation is vital to libraries as well. Most academic institutions across the country are wrestling to get the most out of their information system. Indeed, there is no single road map for libraries interested in using more informed decision-making to improve performance. The RQ4a deals with the challenges related to KM practice in public university libraries in Bangladesh. The present research found that not being willing to share knowledge, lack of intention to cope with the new technology, lack of concept about KM, lack of initiatives to adopt KM tools, and lack of motivation to implement KM are the cultural challenges for KM. This research identified numerous challenges that public university libraries usually face in their quest to implement KM. However, all the participants agreed with the challenges of lack of budget, user and staff awareness, lack of trained staff, and obsolete technology, which are the challenges for KM implementation in the library.

Another obstacle for KM practices in public university libraries is a lack of KS culture. The interviewees also stated that inadequate KM strategies, carelessness of KM implementation, lack of proper knowledge about KM, and lack of employee motivation about KM are the other challenges to KM implementation in the library.

5.4.7 RQ4b: How Would the KM Practices be Adopted in the Future as Planned by the Public University Libraries in Bangladesh?

Key Findings: The research found that the public university libraries want to adopt KM practices in Bangladesh through a strategic plan including specific objectives, the role of librarians, and identifying the areas of KM practice in the library. Additionally, they stated that providing staff with training and learning opportunities for acquiring new information, broadening access to external knowledge resources through library networks, and encouraging a KS culture may aid in applying KM in Bangladesh's public university libraries. They also mentioned that providing training and learning opportunities to the employees to acquire new knowledge, extending access to external knowledge resources through library networks, and promoting KS culture may help apply KM in the public university libraries in Bangladesh. Interviewees also stated that KM strategies and model plans, developing KM tools and technologies, introducing KM policy, implementing KM culture, and introducing KM courses will be the strategy to implement KM in their libraries.

5.5 DISCUSSION OF FINDINGS

KM is beneficial not only to library administration and staff but also to library users. A well-functioning team of librarians with the necessary abilities and skills would provide better service to library patrons (Daland, 2016). Likewise, Rehman et al. (2019) stated that all work procedures in an organization produce performance. More employee performance leads to greater efficiency, resulting in higher added-value efficiency in the organization. From the questionnaire survey, the research found that users have a positive level of consent regarding the facility and performance of the library, KM's relevance to librarianship, and advantages of KM for library service. Oyedokun et al. (2018) found that KM is highly relevant to librarianship. They also stated that KM is an avenue that offers an opportunity for portfolio expansion and curriculum enrichment for LIS professionals. Previous studies (Tan, 2016; Abbas, 2015; Jain, 2014b) also found that knowledge is shared among users by using diverse instruments together with brainstorming, storytelling, training, workshops, seminars, chat, conversation, and

information sessions with the staff and the users of the library, etc. The research revealed that users have a moderate level of consent regarding the library services' quality and the relevance of KM to library practice. This finding somewhat supports the results of Islam et al. (2015). They claimed that the usage and use of KM in Library and Information Science (LIS) provide increased access to information resources and services and enhanced professional knowledge of information professionals. The results showed that students of various departments have moderately low familiarity with KM. Koloniari and Fassoulis (2017) found that most LIS students are familiar with KM. The finding from the research supports Baghdadabad (2008) that students of different departments understand KM as the LIS department. The present research also found that respondents have positive consent regarding the various department contribution to KM education. In their study, Koloniari and Fassoulis (2017) found that most respondents feel the LIS department should oversee KM.

Similarly, Koloniari and Fassoulis (2017) revealed that LIS students know about KM through curricula, literature, conferences, workshops, and seminars. From the quantitative findings, the research found that many respondents replied positively that they are aware of the KM practice in the library. They learn about KM through courses provided by their department of independent study through research literature. Users also agreed that KM is an alternate name for information management, and it is a modern librarianship discipline. However, Siddike and Munshi (2012) showed that many information professionals had initially learned about KM from literature, but none had taken a KM course. KM is a trendy topic in the information technology (IT) literature. According to Siddike and Munshi (2012), the "Department of Information Science and Library Management (ISLM)" of DU and RU has implemented a course on KM to provide knowledge on KM among the students. The present research also found that most users measured that KM meets the requirements of a library to achieve its goals by creating new knowledge. The finding from the research supported the findings of Nazim and Mukherjee (2013). They claimed that KM could benefit the libraries' operations and services. They also stated that KM could help academic libraries become more relevant to their universities by reducing the likelihood of duplication of effort. Koloniari and Fassoulis (2017), in their study, revealed that implementing KM in academic libraries may improve the operations and services of the libraries. Their study participants agreed that KM could help the libraries' overall

performance and prospects. IT is crucial to implementing KM in an organization because it helps disseminate organized knowledge (Lin et al., 2014). According to Nazim and Mukherjee (2013), offering training and learning opportunities for employees to acquire new knowledge and develop competencies is essential. Similarly, Martin et al. (2013) stated that LIS professionals were early adopters of IT. However, like others, they still have difficulty catching up with tools to address this new dimension of knowledge.

KM in libraries promotes the relationship between libraries, libraries and users, strengthening knowledge and quickening knowledge flow (Hamid et al., 2007). It is recognized that KM increases library operational effectiveness and supports service innovation through improved internal and external KS and new knowledge in the library environment (Koloniari & Fassoulis, 2017; Islam et al., 2015). The Nonaka and Takeuchi theory underlines the KM activities such as "knowledge identification," "acquisition," "development," "sharing," "preservation," and "application of knowledge" (Nonaka & Takeuchi, 1995). KM practices turn ideas into action and achieve objectives (Sarrafzadeh et al., 2006). According to Branin (2004), knowledge generation, acquisition, organization, storage, transfer, sharing, and retention are KM activities. The digital revolution has significantly impacted library practices in collecting, organizing, storing, retrieving, and disseminating information globally over the last few decades (Islam et al., 2011; Roknuzzaman et al., 2009). Islam et al. (2015b) found that KM would be beneficial and incredibly beneficial for the academic library in service innovation. They stated that incorporating various factors of KM practices and overcoming those factors would lead to creation and innovation in academic libraries, with new service outcomes that are also supported by the present research findings. From the semi-structured interviews, the current research found that through organizing and sharing the relevant information and expanding learning facilities by applying ICT, KM can play a role in achieving the best output of their library.

According to Nazim and Mukherjee (2013), most respondents from India's central university libraries agree that KM can be integrated into reference and information services. They also reported that technical services, planning, decision-making, and library administration were mentioned by the respondents as other potential KM practice areas in academic libraries. Nazim and Mukherjee (2011) and

Koloniari and Fassoulis (2017) came up with similar results in their study. They also found that the libraries' potential areas of KM implementation are reference and information services, policy and decision making, and knowledge transfer. The present research found that reference and information services, policy and decision making, knowledge transfer, knowledge use, service innovation, knowledge creation, etc., are the potential areas of KM application. Findings from the interviewee's responses indicate that all the university libraries are ready to adopt appropriate KM for the benefit of the library. The research found that all the libraries are continuously looking for new approaches to meet the needs of their users. The research also identified that almost all the interviewees agreed that ICT should be the starting point for a KM plan, and authorities should invest in ICT for KM implementation.

To study KM, it is essential to know the concept of knowledge that is the source of power for KM practices in the organization (Rahim, 2006). The present research found that Librarians/Deputy librarians clearly understand the concept of KM, which will be helpful for KM implementation in public university libraries in Bangladesh. A similar study by Hamid and Nayan (2005) on KM in academic libraries revealed that most respondents clearly understand the KM concept. In their research, Islam et al. (2015) stated that different participants communicated their understanding of KM from their points of view, even though their core understanding was nearly the same.

From the qualitative findings, this research affirmed that no formal KM programs are in place in any of the universities. It was established that libraries are doing some resemblance of KM in their everyday work. Some interviewees stated that they practiced KM in their libraries though it was not formally adopted in these libraries. In essence, they have been managing explicit information for a while now. Similarly, according to Shathi (2019), university libraries in Bangladesh's Chittagong divisions do not systematically or formally harness and control their KM activities. She also stated that KM is not considered essential to the library's purpose and goals. These findings are congruent with a previous study by Nazim and Mukherjee (2013), which investigated KM practices in Indian university libraries. In India, they found that fewer libraries have implemented KM practices. They also stated that their procedures extended beyond typical document management. Library professionals believe that professional education and training programs, a community of practices, IT, and KS are

important KM tools for academic libraries (Nazim & Mukherjee, 2013). Human resources are robust tacit knowledge storage systems, and universities must maintain them for continuity and growth (Murumba et al., 2020). According to Nonaka and Takeuchi's (1995) model, explicit and tacit knowledge are two different types of knowledge. Universities can best use the tacit resources that have their collections (Murumba et al., 2020).

The current research discovered that university librarians in Bangladesh are gathered explicit and tacit knowledge and engage in knowledge creation/capture, knowledge exchange, and knowledge application activities. The research found that there is no KM policy for public university libraries in Bangladesh. However, a KM policy and supporting KM infrastructure and enablers to handle KM practices affect successful implementation. Written policies serve as binding contracts between individuals, the organization, and the stakeholders (Chigada, 2014; Ngulube, 2003).

In their work, Siddike and Islam (2011) highlighted various critical success factors that are highly important for fostering KM in libraries, including staff, KM administration structure, KM strategy, IT, organizational culture, etc. Sarawanawong et al. (2009) identified several critical success factors, i.e., organizational culture, leadership, organizational ICT structure, training programs, KS, etc., for KM implementation in the library. Jain (2014a) discovered that in a survey of knowledge management (KM) practice among academic personnel at the University of Botswana, leadership and management support increased the success of KM efforts in an organization. From the questionnaire survey, the present research identified that establishing a solid infrastructure for future development, continuous training programs, utilizing technology accurately, and organizational ICT structure are the critical success factors for designing and implementing a KM in public university libraries. According to Migdadi (2009), any effort within an organization needs strong leadership to succeed. An organization's culture is required so that workers can trust each other more easily to share information, collaborate, and learn (Mahmood et al., 2020; Lee & Choi, 2003). According to Lu et al. (2006), utilizing everyone's capacity for information transfer to the fullest extent is a requirement for knowledge capture. Without creating conflict, knowledge must be captured, and success will give the organization a competitive advantage.

According to Suppiah and Sandhu (2011), organizational culture plays a significant role in KM activities and KS. Employees eager to share their knowledge, notwithstanding upper management's orders, benefit from organizational culture (Kucharska & Wildowicz, 2017). The findings are also consistent with past studies. Paudel (2019) revealed that organizational culture, IT, leadership, KM strategy, and inspiration are the impelling factors for the success of KM in the organization. Koloniari et al. (2015) identified that the organization's KM strategy, culture, and structures are the most important critical success factors of educational libraries in Greek. From the qualitative findings, the present research found that tactful strategy, recruiting skilled manpower, a continuous training program for staff and users, leadership, ICT infrastructure, training program, higher authority decision, budget, and lack of skilled manpower are the critical success factors of KM implementation in the public university libraries in Bangladesh. The present research also found that KS benefits library users by solving problems, building a learning community, making decisions, improving user knowledge, and increasing library staff knowledge. So, KS is another influential factor for KM implementation. The questionnaire survey identified that problems with organizational culture, improper technology deployment, inadequate support from management, and feeling shy in nature of the employee to share knowledge are the challenges related to KM prac¬tice in public university libraries in Bangladesh. These findings are consistent with Chandrasegaran et al.'s (2013) findings. They stated that successful KM adoption would not be sustained over time without top-level commitment. Similarly, Batista and Quandt (2017) said that one of the primary obstacles to KM implementation is a lack of commitment from top management. This result of the study authenticates the statement of Suni (2016). She identified several cultural barriers in the academic library, such as lack of motivation, willingness to share knowledge, lack of trust, etc.

Similarly, Shathi (2019) found that a lack of awareness of KM is the major challenge in the libraries in the Chittagong division in Bangladesh. Dlamini (2017) identified several challenges in implementing KM in Swaziland. He found that "constant budget decline," "inadequate staff training," "limited expertise in KM," "lack of sharing knowledge environment," etc., affect the implementation of KM in the libraries of Swaziland. Similarly, Mostofa and Islam (2015) revealed various challenges for library professionals in implementing KM in university libraries, i.e., "limited

expertise and lack of clear guidelines," inadequate staff training, etc. In addition, Islam et al. (2014) identified that "lack of awareness" is another barrier to implementing KM. Also, Jain (2012) reported that "constants budget decline" was the significant challenge in implementing KM in the SADC (Southern African Development Community) countries. From the semi-structured interviews questionnaire, the research identified that not being willing to share knowledge, lack of intention to cope with the new technology, lack of concept about KM, lack of initiative to adopt KM tools, and lack of motivation to implement KM are the cultural challenges for KM. This research identified numerous challenges that public university libraries usually face in their quest to implement KM. However, all the participants agreed with the challenges of lack of budget and user awareness, lack of trained staff, and obsolete technology, which are the challenges for KM implementation in the library. These findings also align with Islam et al.'s (2014) study. They identified that lack of awareness is an essential obstacle to implementing KM. When knowledge is shared among an organization's personnel, it improves its effectiveness and allows other social engagement, which is beneficial to knowledge generation and organizational learning (Abualqumboz et al., 2017; Wang et al., 2014). Similarly, Verma and Jayasimha (2014) reported that employees have no time for KM, lack of understanding of KM and its benefits, inability to measure the benefits of KM, lack of skill in KM techniques, and organization's processes are not designed for KM. In addition, they also reported that lack of funding for KM, lack of incentive/rewards to share knowledge, and lack of commitment from top-level management are some challenges for KM implementation in the organization.

5.6 RESEARCH MODEL FOR PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH

The significant contribution of this research is to a model of KM to show how the model can create service value for libraries. Based on the literature review, the research questions and findings, and the hypothesis this research came up with, propose the following model (Figure 5.1). In Bangladesh, there are 46 public universities. All these universities are public and self-governing (UGC, 2020). Every university library has its library collections to serve its users. Users' demands are formed based on sufficient

resources, services, facilities, and the library's performance. The quality of the library services, resources, and facilities can meet the users' expectations (Islam et al., 2022). No library in the world is self-sufficient to fulfill its users' expectations without other libraries' support (Rahman, 2006). Every library faces a complex problem in how it consistently disseminates information in real-time to its user community and the availability of knowledge in all places. Bangladesh's university libraries are no exception in this regard. They need each other's help to effectively serve their patrons and library services (Rahman & Islam, 2020). The libraries are run according to their own set of rules and regulations. Their collections, service system, technology, manpower, space, library hours, library policy, and other features were created to benefit the library patrons at their parent university.

Finally, the above model has been suggested based on the answers to the research questions from the active users and interviewees of the selected public university libraries. Also, the model was developed by reviewing related literature and formulating a hypothesis. This model also served as a conceptual model in this research. The proposed model responds to concerns raised during the study, i.e., attention should be given to influencing variables. These variables must be addressed and fixed to start KM practices in public university libraries in Bangladesh. The proposed KM model improves library performance and user satisfaction and establishes service-based value in libraries. Justification of the model is given first in the following section 5.5.1. A detailed explanation of the model is shown in section 5.5.2.

5.6.1 Justification for the Model

Library services have altered in the twenty-first century, and university libraries and their users have also changed. Libraries in the present century involve KM for both employees and users and increasing user involvement in services can help libraries adapt to change management (Islam, 2016). However, libraries have had a difficult time managing their knowledge. The difficulties are exacerbated by the lack of a straightforward model for managing organizational knowledge. Every organization has its own set of organizational knowledge, and it is up to its employees to efficiently

handle it. Also, each organization is distinct in its knowledge resources; it should manage its knowledge straightforwardly, beginning with explicit and tacit knowledge management (Ologbo & Nor, 2015). Despite the relevance of KM to libraries, there is no straightforward KM model for public university libraries in Bangladesh to demonstrate how KM implementation might improve library service value. The suggested model shows how libraries can improve service by implementing KM practices and formal KM implementation to respond to the issues. This paradigm is helpful because it unifies the interactions between the various aspects of proper KM implementation in libraries. The model is built using data from prior studies and findings from this study's library users and librarians. This model uses each component or variable that libraries must examine before beginning KM practices and formal KM implementation. Finally, this model was presented simply. As a result, libraries may use this model as a blueprint for generating the service value of the library. This model varies from other KM models. It demonstrates a simple way to manage acquired knowledge in the library through KM and how it can improve its service and increase user satisfaction.

5.6.2 Steps of the Proposed Model

The model describes the factors that must be addressed to implement KM practices in libraries in the first sequence. The elements that influence the direct impact of KM implementation in the library are discussed later. In the final sequence, it is demonstrated that if KM practices and implementation are correctly managed, the serviced–based value for libraries may be improved. This step encompasses all the library's KM practices and implementation activities.

The proposed model comprises several key elements in the present research, i.e., quality of the library services, facility and performance, users and staff's familiarity with KM, critical success factors, challenges to KM practices in university libraries, various department contributions, KM relevance to librarianship, and findings of all elements which offer service value in library services. All these components were derived from the main research question and RQs in this research. Considering the

library as a system, the model will work on the following three steps and lead to creating service value. The details are given below.

5.6.2.1 Step One

Today, the library manages many collections and provides services and facilities to its patrons. To argue that a library could provide customer happiness when dealing with or borrowing library goods. Libraries must manage the gained knowledge from multiple sources in the early stages of KM practice. According to Nonaka and Takeuchi (1995), tacit knowledge is more valuable in an organization since it can be used and utilized in innovation and creative processes, providing value to goods and services. Explicit and tacit knowledge are also generated at public university libraries in Bangladesh. By managing the explicit and tacit knowledge produced and acquired by university libraries, users and employees can conveniently access them when they need them. If libraries codify and store knowledge in their database, this documented and codified knowledge can be used again. It would also reduce knowledge loss and speed up the learning process for new employees (Chipeta, 2018; Dewah & Mutula, 2016). So, the management of explicit and tacit knowledge is considered the first step in the model. The overall purpose of KM is to make maximum use of the knowledge that already exists in a library, leading to increased working efficiency and better library services. The findings of this research support the use of KM to create service value for the library. Libraries must accept users' knowledge demands and map internal and external knowledge that will help them become more efficient. Library personnel's tacit knowledge is discovered by interacting with one another, receiving user feedback, and making necessary changes.

5.6.2.2 Step Two

The second step of the model refers to the libraries' action, which helps assess how the library can lead to creating service value for the libraries by KM practice and formal

KM implementation. So, in the first phase of the second step, this research investigated the quality of the library services, facility and performance of the library, and users' and librarians' familiarity with KM, which is essential for KM practices in the university libraries in Bangladesh. The second phase of the model investigated the critical success factors and challenges. These factors (Critical success factors and challenges) are necessary for the successful establishment of every system in the libraries, not only for KM implementation. Critical success factors should be identified for practicing KM in the library, and the libraries should overcome challenges. The details of this step are given below.

i. Quality of the library services: The ultimate purpose of KM is to provide users with a variety of high-quality services to promote knowledge, exchange of knowledge, usage, and development. Libraries are primarily user-oriented institutions (Islam et al., 2015). Therefore, analyzing user registration records during the membership process in the library, circulation, interlibrary loan, commonly requested reference queries, and the use of e-journals and digital resources, among other things, might yield information about each user (Kumar, 2019). Imaginative library staff can help meet the user demand that drives novel service approaches by leveraging the positive effects of KM. As a result, KM promotes the library's improved service quality, generating positive publicity. In their study, Rafi et al. (2020a) found that the KM positively affects library services. They also noted that once all performance criteria are integrated into the KM, library performance improves automatically, and academic resource and service functions are built. From the questionnaire survey, the research found a significant relationship between the quality of the library service and KM practices (β= 0.299; t-value= 6.849; p-value=0.000). Therefore, the quality of the library services with KM practice can contribute to implementing KM in the library.

ii. Facility and performance: Librarians must always be pleasant, kind, and act courteously, patiently, and tactfully to the users. During user care, they must appropriately give the user their full attention (Kumar, 2019). If the library improves its facilities and service performance, users will obtain more information with less effort, and university authorities will save money and

labor (Rahman & Islam, 2020). In their study, Jemal and Zewdie (2021) reported that academic staff perceived that existing KM practices enable them to achieve the organization's performance. In this phase, the model exposes that the library facility associated with KM practice can implement KM in the library. However, the findings of this research revealed interesting facts where facility and performance do not support KM practice (β= 0.021; t-value= 0.445; p-value=0.656). The questionnaire survey found no relation between facility and performance and KM practices. From the findings, it might think that the facility and performance of the library will not support KM practices in university libraries. Still, the researcher believes that the facility and performance of libraries must be stranded for adopting any modern technology in the library.

iii. Familiarity with KM: With the support of the KM process, KM aids in determining the library's direction to improve the quality of its service. So, it has been discovered that users' familiarity and awareness issues with KM can contribute to KM practice through KM implementation in public university libraries in Bangladesh. Knowledge from users is used to describe concepts and recommendations that the library could use. Librarians have many ways of knowing and degrees of comprehension of KM. Most librarians have focused on a deep understanding of KM. This study also revealed that while librarians are aware of KM, they also require further training to function in a KM context. The familiarity of KM among librarians and users provides an added value to the library and its parental institution (Krishnamurthy & Balasubramani, 2013). The research found that libraries assess users' satisfaction by taking feedback from the users. So, the libraries can arrange a session with users on how modern technology can be implemented to increase the service value of the library. From the questionnaire survey, the research also found a significant relationship between users' familiarity with KM and KM practices (β= 0.139; t-value= 4.058; p-value=0.000). It is also found that users are familiar with KM, but their understanding is low. Therefore, by promoting and raising awareness of KM amongst the library users, libraries can benefit from KM.

iv. Critical success factors: The second phase of the model investigated to identify the critical success factors and challenges to KM practices. Paudel (2019) stated that a maximum of the KM researchers indicated that organizational culture, IT, leadership, KM strategy, and inspiration are the impelling factors for the success of KM in the organization. Chourides et al. (2003) recognized several critical success factors for fruitful KM application in an organization: strategy, human resource management (HRM), IT, quality, and marketing. Similarly, Koloniari et al. (2015) identified that "KM strategy, culture, and structures of the organization" are the most important critical success factors of educational libraries in Greek. Leadership, IT, strategy and purpose, measurement, organizational infrastructure, processes and activities, motivational aids, resources, training and education, human resources, and management are among the eleven critical success factors identified and analyzed by Wong and Aspinwall (2005) when adopting KM. From the questionnaire survey, the research found a significant relationship between the critical success factors and KM practice (β=0.292; t-value=5.854; p-value=0.000). From the questionnaire survey and semi-structured interviews, the research identified that establishing a solid infrastructure for future development, continuous training programs, and utilizing technology accurately tactful strategy for KM implementation, recruiting skilled staffing, leadership, and higher authority decision are the critical success factors for KM practices in Bangladesh.

v. Challenges for KM practices: The second phase of this model also investigated the challenges to KM practices. The implementation of KM in academic libraries is highly problematic for librarians. KM is not simple to create and deploy; there are various obstacles to overcome (Maligat et al., 2020). Library professionals identified several challenges when adopting KM into academic library procedures. The significant challenges discussed in LIS literature include "a lack of skills and competencies, reluctance of library professionals to accept change, misunderstanding of KM concepts, a lack of knowledge sharing culture, a lack of incentives or rewards for innovation and knowledge sharing, top management commitment, a lack of

collaboration, and a lack of resources" (Mostofa & Islam, 2015; Nazim & Mukherjee, 2011; Roknuzzaman et al., 2009). The research found a significant relationship (β=0.123; t-value=2.819; p-value=0.005) between the challenges and KM practice from the questionnaire survey. From questionnaire survey and semi-structured interviews, the present research identified that problems with organizational culture, lack of user and staff awareness, improper technology deployment, lack of budget, lack of trained staff, and obsolete technology are the challenges for KM practices in public university libraries in Bangladesh.

5.6.2.3 Step Three

The third step of this model refers to the KM implementation and possible benefits of formal KM implementation, which lead to creating services value in public university libraries together with the first and second steps. In the first phase of the final stage, the model shows that KM practices are related to formal KM implementation. The model also indicates that department contribution and KM relevance to librarianship are also needed for KM implementation in the last step. The details of step three are given below, with possible benefits and impacts.

i. KM implementation: According to Ngulube (2003), the presence of a KM policy and supporting KM infrastructure and enablers to handle KM practices affects the chance of successful KM implementation. The nature of knowledge practice mediates the relationship between tangible knowledge assets and their implementation (Abbas, 2015). The questionnaire survey found that KM practice positively influenced KM implementation (β=0.289, t-value=5.983, and p-value=0.000). The research shows that KM practice in the library mediates the quality of the library services, familiarity with KM, critical success factors, and challenges faced by the library. One of the most valuable options for university libraries is improving their services and becoming more relevant to their parent institutions (Thanuskodi, 2010). So, this is especially true in nations like

Bangladesh, which are experiencing tremendous economic growth. It will take a strong vision from the top administration for any library to succeed in implementing KM. KM can be made more accessible with the help of IT systems. To design effective KM, libraries should collaborate with IT, professionals, and others. Libraries with limited funding and staff should implement KM by utilizing the management structure and technologies in place today. With effort, KM will boost library operating efficiency and, later, the library's ever-growing service value (Kumar, 2019). If the KM practices are successfully done, then libraries move towards formal KM implementation in the library. The present research found no KM policy, no separate KM sections, and no budget in the public university libraries in Bangladesh. If the public university libraries want to implement KM properly, they need a KM policy, a separate KM section in the library, and financial support from the higher authority.

ii. Contribution of various departments: LIS experts' current skills and abilities are insufficient to play a meaningful role in KM; hence, they must learn new ones. (Roknuzzaman & Umemoto, 2009; Sarrafzadeh, 2008). In university libraries, employee interaction among different departments (Management Information Systems, Computer Science and Engineering, Department of Organization Strategy and Leadership, and Information Science and Library Management) might help the libraries set up modern technology and assist them in performing daily operational activities better sharing their knowledge. For example, if a library is committed to implementing KM, the libraries need IT and ICT facilities, and which sections will be relevant for the application of KM. These departments then can assist the libraries in making better decisions regarding this. The questionnaire survey also found that these departments can contribute to KM implementation (Mean score ranged from highest 3.32 and lowest 2.97). According to Koloniari and Fassoulis (2017), information management skills are the most important contribution LIS experts can give to libraries for KM success. They indicate that service innovation refers to creating new ideas and attempting to put such ideas into reality. LIS departments can develop these competencies by expanding their curricula in libraries. It will help new technology-based

services to increase users' satisfaction in the organization (Tiwari, 2013; Sarrafzadeh, 2008). Husain and Nazim (2013) divide the essential KM skills for LIS practitioners into three categories: people-centered skills, skills linked to organizational management, and IT skills. KM requires the collaboration of various departments. Therefore, various departments can contribute to implementing KM in the libraries. From the questionnaire survey, the research found that there was a direct significant relationship between department contributions and KM implementation (β= 0.315; t-value= 6.982; p-value=0.000). All departments must work closely with library staff and university communities to improve the latest technology-based services.

iii. KM relevance to librarianship: KM's goal is to help the organization realize its mission. As a result, all components of an organization (including libraries) must work together to ensure that KM contributes to achieving the library's objective and has relevancy with librarianship. Adopting this KM viewpoint may help LIS professionals address user needs while keeping the organization's goals in mind. KM could help them become more integrated into their parent groups (Sarrafzadeh et al., 2006). From the questionnaire survey, the research found a direct significant relationship between KM relevance to librarianship and KM implementation (β= 0.285; t-value= 6.410; p-value=0.000). So, KM's relevance to librarianship is related to the KM implementation in the public university libraries in Bangladesh.

5.6.3 Probable Benefit from the Proposed Model

As per the proposed model, the effective implementation of KM benefits in public university libraries relies on recognizing the universities' influential factors and critical challenges. The expected benefits from the model would be as follows.

1. The proposed model is intended to guide university libraries in Bangladesh to develop and implement KM policies and practices.

2. This model would be effective for a long time for sustainable library management systems of public university libraries.
3. All acquired knowledge would be preserved appropriately and retrieved by users and employees when required.
4. Accessibility to the information would be ensured by proper management of the library materials.
5. To identify how this model help to create service value for the libraries.
6. To recognize the critical success factors and key challenges to implementing KM in the libraries.

Furthermore, from the perspective of a developing country like Bangladesh, the model will help understand and anticipate the study phenomena on KM.

5.6.4 Impact of the Model (Serviced–based value)

In libraries, service value refers to the production of new ideas and the attempt to put such ideas into practice. It could be new technology-related better services or other continuing efforts to increase users' happiness (Islam, 2016). In this research, "serviced-based value" also refers to the library's ability to provide users with services that satisfy their needs and exceed their expectations (Jerome et al., 2017). Users' satisfaction with either the knowledge they have gotten from libraries or the excellent service they have received from libraries during their needs will determine the success of service value. The library's products and services must all contribute to a high level of user satisfaction. If this is not the case, they will not enjoy library use and services. As a result, libraries must sustain their user satisfaction by developing and implementing initiatives to increase user satisfaction. Library knowledge inputs are critical to the success of new library services. According to Nonaka and Teece (2001), knowledge is a strategic asset that allows one to gain a competitive advantage and achieve long-term success. So, libraries need to utilize better services to obtain competitive advantages. The library must present and share gathered information with users to create service value by making it available and helpful within the libraries to anyone who wants to utilize it.

Finally, it can be said that this model shows building blocks for the success of KM practices and implementation, which will lead to creating service value for the libraries. All the components of this research model are not yet formally tested in the present research. It needs more study to test it in the public university libraries of Bangladesh. Then the model would be more effective and functional. Present and future scholars are invited to try this model in Bangladesh. If the proposed model concept is implemented, library users at Bangladesh's public universities will profit even more. The following tables show the benefits area by application of the model.

Table 5.1 Benefits Area from the Model (Adapted from Toszewska-Czerniej, 2015)

Benefits Area	Illustration
Library	A unique organizational culture that enables easy access to knowledge assets, exchange and codification of documents, KS, processing and implementation of knowledge, improvements in internal communication, reducing costs, increasing creativity and innovation, and investing in employee development.
Employees	Development of competencies, more accessible access to sources of knowledge, decision-making, creation of value for the organization, increases employee self-esteem, builds a positive environment among the staff, and increases the staff's competitiveness.
Users	Creating service value, better meeting the user needs, faster perception of users' needs, creating new knowledge and services of the library, creating a positive image of the library, and user care.

5.7 SUMMARIZATION OF THE RESEARCH FINDINGS

Table 5.2 summarizes the research objectives, questions, hypotheses, and significant quantitative and qualitative findings.

Table 5.2 Summarization of the Research Findings

Research Objectives	Research Questions	Results of Hypothesis	Major Quantitative Findings	Major Qualitative Findings	Conclusions
The main objective of this research was to propose a KM model for creating service-based value for public university libraries in Bangladesh.	The main research question was: How can the KM model create service-based value for public university libraries in Bangladesh?	H1 supported: the quality of the library services has significant relationship on KM practice (β= 0.299; t-value= 6.849; p-value=0.000). H2 not supported: facility and performance have no impact on KM practice (β= 0.021; t-value= 0.445; p-value=0.656). H4 supported: KM familiarity issues has significant relationship with KM practice (β= 0.139; t-value= 4.058; p-value=0.000).	To answer this question, a proposed model was developed integrating with RQs. The proposed model gives broad guidelines for integrating KM practices and successfully implementing KM in the libraries (See section 5.5 and Figure 5.1). The hypothesis was tested from the data collected through a survey questionnaire from the active library users based on the proposed model. The model is general, and it would create a service-based value for public university libraries in Bangladesh. In addition, some questions were asked to support this research question that is considered key components of the model related to KM practice and implementation of the public university libraries. The research	Section 5.5 and Figure 5.1 show the details answers to this question. From the semi-structured interviews, the present research found that through organizing and sharing the relevant information and expanding learning facilities by applying ICT, KM can play a role in achieving the best output of their library. The present research also found that reference and information services, policy and decision making, knowledge transfer, knowledge use, service innovation, knowledge creation, etc., are the potential areas of KM application. Findings from the interviewee's responses indicate that all the university libraries are ready to adopt appropriate KM for the benefit of the library. The research found that all the libraries are continuously looking for new approaches to meet the needs of their users. The research also identified that almost all the interviewees agreed that ICT should be the starting point for	The findings had answers to the main research question

		H7 supported: department contribution (β= 0.315; t-value= 6.982; p-value=0.000) has significant relationship for implementing KM. H8 supported: KM relevance to librarianship has a direct significant relationship (β= 0.285; t-value= 6.410; p-value=0.000) for implementing KM.	found that users have a positive level of consent regarding the facility and performance of the library, KM's relevance to librarianship and the advantages of KM for library service. At the same time, users have a moderate level of consent regarding the quality of the library services, the relevance of KM on library practice, and department contribution. The results showed that students of various departments have moderately low familiarity with KM. The present research also found that most of the users measured that KM meets the requirements of a library to achieve its goals by creating new knowledge.	a KM plan, and authorities should invest in ICT for KM implementation.	
RO1: To explore the existing models of KM implemented by the university libraries.	RQ1a: What are the existing models of KM implemented by university libraries? RQ1b: To what extent is the KM model being implemented at university libraries as reported in previous research works? RQ1c: How were the existing models of KM implemented at university libraries?			In this research, different frameworks of KM have been extracted from literature reviews in chapter two and under sections 2.11.	The findings had answers RQ1a, RQ1b, and RQ1c
RO2: To examine current formal KM practices at public university libraries in Bangladesh.	RQ2a: How did the public university libraries in Bangladesh adopt the KM practices? RQ2b: To what extent users' demographics are associated with users' characteristics,	H6 supported: KM practices has significant relationship for implementing KM (β= 0.289; t-value= 5.983; p-value=0.000)	The research also found that a reasonable number of the respondents replied positively that they are aware of the library's KM practice. The user's familiarity with KM is moderately low. They learn about KM through courses provided by their department and independent study through research literature. Users also agreed that KM was an alternate name for information	This research affirmed that no formal KM programs were in place in these universities. It was established that libraries are doing some resemblance of KM in their everyday work. However, some interviewees stated that they are practicing KM in their libraries, but it was not formally adopted in these libraries. They have long been engaged in the administration of explicit knowledge. The present research found that university librarians, in general, are	The findings had answers RQ2a, RQ2b and RQ2c

	awareness, and KM familiarity issues? RQ2c: To what extent is KM practiced in public university libraries in Bangladesh?		management, and it is a modern librarianship discipline.	practicing knowledge creation/capture, KS, and knowledge application activities in the public university libraries in Bangladesh. The research found that they are taking initiatives like arranging training programs and thus building and developing KM skills between the staff and personnel, digitizing various sections in the libraries, including KM policy, etc. The research also revealed that by applying ICT to the operational activities of the library, improving ICT management, reference, and circulation service in the library, and increasing IT facilities, the libraries could adopt the KM practices in their libraries.	
RO3: To examine the critical success factors for the KM implementation at the public university libraries in Bangladesh.	RQ3a: What are the critical success factors for implementing a KM at the Public university libraries in Bangladesh? RQ3b: Is the present manpower adequate for providing KM services?	H3 supported: Significant relationship exists between critical success factors with KM practice (β= 0.292; t-value= 5.854; p-value=0.000).	Establishing a solid infrastructure for future development, continuous training programs, and utilizing technology accurately and organizational ICT structures are the critical success factors for designing and implementing a KM in Public university libraries.	The present research found that tactful strategy for KM, recruiting skilled manpower, a continuous training program for staff and users, leadership, ICT infrastructure, training program, etc., higher authority decision, budget, and lack of skilled manpower are the critical success factors of KM implementation in the public university libraries in Bangladesh. The present research also found that KS benefits library users by solving problems, building a learning community, making, improving user knowledge, and increasing library staff knowledge. So, KS is another influential factor for KM implementation. Present research identified that all the libraries need adequate manpower for providing KM services.	The findings had answers RQ3a and RQ3b
RO4: To identify the challenges related to KM	RQ4a: What are the challenges of KM practice faced by the public	H5 supported: Significant relationship between challenges	Problems with organizational culture, lack of awareness, improper technology deployment, inadequate support from	Not willing to share knowledge, lack of intention to cope with the new technology, lack of concept about KM, lack of initiatives to adopt KM tools, and	The findings had answers RQ4a and RQ4b

practices at the public university libraries in Bangladesh and provide suggestions for overcoming these problems.	university libraries in Bangladesh? RQ4b: How would the KM practices be adopted in the future as planned by the public university libraries in Bangladesh?	faced by the library with KM practice (β= 0.123; t-value= 2.819; p-value=0.005).	management, and the employee's shyness to share knowledge are the challenges related to KM practice in public university libraries in Bangladesh.	lack of motivation to implement KM are the cultural challenges for KM. However, all the participants agreed with the challenges of lack of budget and user awareness, lack of trained staff, and obsolete technology, which are the challenges for KM implementation in the library.The interviewees mentioned that the public university libraries adopt KM practices in Bangladesh through a strategic plan including specific objectives, the role of librarians, and identifying the areas of KM practice in the library. Additionally, they stated that providing staff with training and learning opportunities for acquiring new information, broadening access to external knowledge resources through library networks, and encouraging a KS culture may aid in applying KM in Bangladesh's public university libraries.	

5.8 CHAPTER SUMMARY

The results and analyses of the information gleaned from the survey, and semi-structured interviews were reported in chapter five. Five university library was studied, i.e., “Central Library of University of Dhaka (DUCL), Central Library of University of Rajshahi (RUCL), Central Library of Bangladesh University of Engineering and Technology (BUETCL), Central Library of Sylhet Agricultural University (SAUCL), and Central Library of Jashore University of Science and Technology (JUSTCL)” for collecting quantitative and qualitative data. It was interesting to note that the interviewees believed that there is a connection between KM and the improved service performance of the library. The libraries studied found they do not have formal KM sections and KM policies. The present research also found that KS provided benefits for library users by solving problems, building a learning community, making decisions, improving user knowledge, and increasing library staff knowledge. So, KS is an important, influential factor for KM implementation. Problems with organizational culture, improper technology deployment, inadequate support from management, and feeling shy in nature of the employee to share knowledge are the challenges related to KM prac¬tice in public university libraries in Bangladesh. This finding would aid the public university libraries and offer current knowledge to the other Bangladeshi libraries and developing countries globally. In addition, there is a need to organize a policy that is useful for public university libraries in Bangladesh.

CHAPTER SIX

CONCLUSION

6.1 INTRODUCTION

In this chapter, the researcher presents the contributions and implications, recommendations, limitations, conclusion, and future research scope after providing a complete and systematic discussion of the research findings following the research objectives and literature review. It starts with the contributions and implications of the research. The following sections of this chapter give recommendations based on the research questions and findings. The chapter concludes with a discussion of the current research's limits and the scope of future research.

6.2 CONTRIBUTIONS AND IMPLICATIONS

This is the first research conducted in Bangladesh investigating the role played by KM implementation in creating serviced-based value in university libraries. In addition, the study findings would contribute significantly to the body of literature available on the subject in the context of Bangladesh. The following section describes the research contributions and implications.

6.2.1 Contributions

This research would be an excellent addition to the application of KM in the library of Bangladesh. Present research can be considered a baseline in the context of public university libraries in Bangladesh that would open new prospects of consideration for future researchers. Previous KM literature mainly focused on the KM idea, the role of LIS professionals in KM, and the value of KM in libraries, but research on KM practices and the development of a strategic KM model for developing countries in libraries is

absent (Abah et al., 2022). It is to be expected that a KM model for public university libraries in Bangladesh's viewpoint would be ground-breaking as such a model has not yet been developed in Bangladesh. This gap is addressed and filled by the main research purpose. Previous studies also have not clearly identified how knowledge is handled in the libraries and whether the university libraries are practicing formal KM or not. RO2 fills this gap by examining the current formal KM practices in public university libraries in Bangladesh. Prior studies of KM in LIS have barely investigated how critical success factors and challenges influence the KM practices in the university libraries. To fill these gaps, the present research examined the critical success factors and challenges for KM practices in public university libraries in Bangladesh by fulfilling this gap. Present research is intended to fill this entire gap, and that makes this research original.

6.2.2 Implications

Knowledge embodies a vital need for organizations' competitive improvement in a world of global competition. Transforming information into knowledge is becoming increasingly important for competitiveness, decision-making, and the development of new services (Farnese et al., 2019). Libraries are essential parts of education because they are knowledge repositories. Libraries in the twenty-first century are placing a greater emphasis on providing services that enable individuals to access knowledge and information from various sources (Marouf, 2017). Similarly, Bangladesh attempts to adapt to the global change through the revolution of its education system, which is not possible without libraries. So, an effective effort on KM practices at the university and its libraries is needed to transform the educational system and globalization (Akter & Banik, 2019). So, this research's managerial and practical implications for university libraries in Bangladesh are multiple.

This research is timely as it may have an advantage for successful KM application in the university libraries of Bangladesh. This research also showed the present-day status of KM in public university libraries and its challenges both from the librarian's and users' points of view. First, the research offers a better understanding of knowledge, KM, their definitions, outcomes, and relations to each other. The research

findings will provide Bangladeshi librarians with the necessary knowledge that will enable them to respond to constraints and support the management of knowledge within their institutions. Implementing KM in public university libraries may improve research output, user satisfaction, and curriculum development issues for Bangladeshi universities that are launching new departments.

The research findings demonstrated that library users have moderately low familiarity with KM and lack awareness. This research supports the importance of KM practices by employees and users' understanding of public university libraries in Bangladesh to enhance service innovation and performance. So, the authority needs to take this issue seriously and make more familiar with the library users regarding KM and its benefits as active users are the heart of the university libraries.

Therefore, the practical implication of this study is the contribution of KM to improving library services. The library's efficiency will improve due to KM practices. The vital success elements listed can be used as a checklist for organizations to address while implementing KM. Therefore, this will ensure the most critical challenges and elements during the design and implementation phases. On a more practical level, the higher authority may select new employees by looking for staff members who are familiar with KM. In order to assist employees and library users who have negative views regarding KM and KS in changing those attitudes, higher management can also set up training programs for them. The research found that some of the staff lack of technology deployment experience. The training programs also should be arranged for them to adopt the technology.

In addition, this research shows librarians how to create an appropriate environment for KM initiatives in the libraries. So, they can manage all the knowledge by implementing KM, which helps them generate service value to achieve better results. The advantages of KM techniques, which can raise competence, staff performance, creativity, and user happiness, should be acknowledged by librarians. This research will give several strategic options and a model for the future success of various LIS sectors within Bangladesh and other developing countries to identify the barriers and prospects presented by the start of KM in their libraries.

While the users know about KM and are aware of its benefits for their day-to-day tasks, they are more likely to learn and contribute to organizational knowledge governance (Akhavan & Zahedi, 2014). According to the study participants, continued training of employees and users was a critical factor for the successful implementation of KM. Therefore, library authorities must arrange seminars, symposiums, and orientation sessions to improve the service and user feedback. In the opinion of a library professional, the results of this research may be beneficial to the library service by identifying the maximum operational KM capability that might enhance their performance. Developing a standardized written KM policy can help establish a formal KM practice. A written policy would aid in establishing norms that encourage employees to generate, share, and retain knowledge (Sirorei & Fombad, 2019).

Therefore, this would enable both users and staff to benefit from the latest technology implementation. In terms of policy, the outcomes of this research can potentially affect the formation of KM policy in Bangladesh's public university libraries. According to the findings, the libraries must establish guidelines for promoting and enhancing KM. KM policy will give instructions, processes, and standards for efficient KM in the libraries regarding skills, staffing, equipment, and infrastructure.

6.3 RECOMMENDATIONS

The research questions and their results were the foundation for the recommendations offered in the following sections. University libraries are the most important institutions for raising a better generation. A well-informed individual is an asset to the country. Books are simple things that can provide a person with a wealth of information. The library can follow the KM process, which would greatly assist them in delivering better services to their users. This study makes the following recommendations for improving KM practices and implementation in Bangladesh's public university libraries.

6.3.1 Recommendations for Librarians of the Public University Libraries in Bangladesh

i. KM practices and implementation: Present research found that there are no formal KM practices in the public university libraries in Bangladesh. The research also established that libraries are doing some resemblance of KM in their everyday work. Though some interviewees stated that they are practicing KM in their libraries, it was not formally adopted in these libraries. It is explicit knowledge management, which they have been doing for a while. Therefore, in order to get benefits, libraries should adopt a formal KM policy to enhance their services of the libraries.

ii. Critical success factors: The research identified that establishing a solid infrastructure for future development, continuous training programs, and utilizing technology accurately, tactful strategy for KM implementation, recruiting skilled staffing, leadership, and higher authority decision are the critical success factors for KM practices in Bangladesh. The critical success factors are not only within the limits of the librarians but also outside the control of the librarian. So, librarians need to be outward-looking to ensure all the patrons are involved in increasing the success of KM initiatives.

iii. Challenges to KM implementation: There are several difficulties in KM implementation. After identifying the challenges, they should collaborate to find alternative solutions and make KM successful in achieving the library's goals. The present research also identified several challenges (lack of budget, user and staff awareness, lack of trained staff, and obsolete technology, etc.) for formal KM implementation in the library, which should be overcome by consulting and assisting the higher authority.

iv. KM section in the library: Different divisions or sections dealing with specific work can be found as a better KM implementation in a library or other institution. It is vital because various forms of institution-related work must be completed separately. Acquisition, processing, circulation, reference, and various additional departments make up a library, depending on its management and other activities. However, present research found no section in the public university libraries dealing with KM. KM is critical for the library and involves various processes that must be maintained by

library personnel. Establishing a division or section to handle the job and improve the KM process will benefit.

v. Creating awareness among staff and users: The libraries need to take the initiative that users are coming to the library and aware of the modern technology and services. KM is critical for any company, but notably libraries. The first step is to raise employee and user awareness of the value of KM. The research found that lack of awareness among users and staff is a major obstacle to KM implementation in public university libraries in Bangladesh. Employees will be more aware of the KM process and appreciate its value if they are well informed. The KM approach can help the library become a better service center for users by creating awareness among the library patrons.

vi. Knowledge sharing (KS) culture: The culture of sharing information with colleagues will improve the effectiveness of the KM process. When employees share their knowledge with others, the institution's atmosphere changes dramatically. So, collaborative KS should be introduced in the libraries. The present research also found that KS can solve various problems in the libraries and helps with decision-making.

vii. Recording essential knowledge: Whenever someone gives a library-related lecture, the person in charge of the KM department must record it for future use. Scholars may visit the public university libraries, a seminar or conference may be held there, and the libraries should record the knowledge.

viii. Friendly atmosphere in the library: It is not always possible for an institution's management to be pleasant to its employees. People can share their expertise through KS. As a result, the library authorities should create a welcoming environment within the library so that employees will not be afraid to contribute creative ideas or knowledge that comes to mind.

ix. Networking facilities in the library: Networking is a broad concept. Employees using the internet, making the website profitable, updating it regularly, posting important alerts, improving staff coordination, and so on are examples of networking. The research also found that all the universities

are not fully wifi supported. So, the library's networking facilities should be increased for users and staff.

6.3.2 Recommendations for Higher Authority

i. Patronization: Patronization is necessary for the growth of every organization. As a result, parent organizations need to take KM seriously and set aside enough money to maintain the necessary KM infrastructure at Bangladesh's public university libraries.

ii. Training: The library can set up specific training programs because KM is a heterogeneous field with few well-versed personnel. Adopting and implementing KM is not easy for a library to achieve. Employees can benefit from training. From the questionnaire survey 318 (39.2%) of the participants agreed, and 102 (12.6%) strongly agreed that continuous traning is critical success factor for KM implementation. The interviewees also mentioned that KM implementation in public university libraries in the Bangladesh training program is required. As a result, a training program should be implemented by top management to improve library services.

iii. Budget for KM implementation: Present research found that there is no budget for KM implementation in the libraries. Therefore, the higher authority needs to allocate a sufficient budget for their libraries for KM implementation.

iv. Structure of the organization: To optimize the utilization of information and knowledge at the public university libraries, the library should strengthen the existing KM environment and information technology (IT). Alternatively, the library should increase the value and application of organizational learning. Recognizing knowledge and information as organizational assets necessitates library involvement; in this way, the library's service value will be strengthened.

v. Support of ICT tools: ICT can create a collaborative learning environment that encourages faculty and students to use university libraries more frequently. The interviewees also mentioned that ICT should be the starting

point of KM, and universities need to invest heavily in ICT in public university libraries in Bangladesh. The library should leverage collaborative and interactive workspaces like wikis and blogs to locate and share specific knowledge and skills. So, the top management needs to come forward to support the ICT facilities in their respective university libraries.

The recommendation made in this research is helpful for university authorities and administration for KM implementation. These are just some primary steps to implement the KM in Bangladesh's public university libraries effectively. So, there is a need for strategic decision-making, policy formulation, and plans to improve the library sector in Bangladesh.

6.4 CLOSING REMARKS

The conclusions drawn from this research are based on both quantitative and qualitative approaches. The quantitative portion is reflected in the statistical section, while the qualitative part is reflected in the descriptive section. Research questions directed the presentation of results. KM is beneficial to both libraries and their personnel and library patrons. From the quantitative findings, the research found that users have a positive level of consent regarding the facility and performance of the library, KM's relevance to librarianship, and the advantages of KM for library service. The research found that a satisfactory number of the respondents replied that they are aware of the library's KM practice, but their familiarity with KM is moderately low. The research findings from "Mann–Whitney U" tests showed that female users are frequent visitors and used the web-based library service more than male users. They are more aware of KM practice than male users. The "Kruskal–Wallis" tests also showed that users with a relatively high level of education had more familiarity with KM. PLS-SEM techniques were used to test the research hypotheses. Out of eight hypotheses, seven were supported. This research has revealed no doubt about the vital role of the KM practices and implementation for the betterment of library services. However, many KM issues must be carefully examined before effectively implementing KM in public university libraries. The simple way for successful KM implementation may be summarized as

KM policy, clear organizational strategy, the appropriate knowledge of KM, essential components, and obstacles. The survey conducted at the public university libraries revealed that the organization needs logistics support from the authorities for KM implementation. Librarians improve employees' knowledge creation capacity by applying KM in the libraries.

Considering the qualitative findings of this research, it is realized that a skilled workforce and expertise are required for effective KM implementation in their libraries. Although outdated skills may serve as a starting point for KM in university libraries, they are insufficient. As a result, there is a need for LIS professionals to develop additional competencies for KM practice in university libraries. As libraries in the twenty-first century continue to develop, LIS professionals will need to be aware of and use artificial intelligence, data analytics, and other skill sets that will bring value to KM in the coming years. This research aimed to examine and discover KM practices in public university libraries in Bangladesh. This research also showed that librarians in Bangladesh are still learning about KM and its implications. Though, out of five libraries, three of them are practicing KM in their libraries.

Moreover, they have primarily been practicing KM or planning to implement KM practice in their libraries soon. The purpose of selecting, acquiring, organizing, storing, and disseminating information in the library is similar to KM practice (Oyedokun et al., 2018). So, the librarians of public university libraries have used their expertise to organize and retrieve information in many sectors such as acquisition, processing, circulation, dissemination, and institutional repositories. The research identified and discussed the critical success factors (Leadership, ICT infrastructure, training program, higher authority decision, and skilled manpower) to implement KM. The present research also identified the key challenges (lack of user awareness, lack of trained staff, obsolete technology) for implementing KM. It has also been considered that the library sector is undeveloped in Bangladesh, which needs to improve to build a digital Bangladesh. The present research contributes to understanding the obstacles to KM implementation in public university libraries in Bangladesh. The research reported that the public university libraries adopt KM practices in Bangladesh through a strategic plan including specific objectives, the role of librarians, and identifying the areas of KM practice in the library. Furthermore, this study is designed to provide higher-level

decision-makers in libraries with a cause to promote KM. Therefore, this would encourage collaboration and better use of current information to improve performance and maintain competitiveness.

Additionally, users and staff would feel encouraged to create and share their knowledge and expertise. A more profound grasp of the value of KM is critical for all sorts of organizations' workflows, regardless of the services they deliver. Because knowledge generation, exchange, and usage are at the heart of what universities do. The value of KM should be more apparent to them than to other organizations. The present research finally proposed a model for public university libraries in Bangladesh. The model showed that the successful implementation of KM in libraries depends on classifying the quality of the library services, critical success factors, user's familiarity with KM, KM relevance to librarianship, and the potential contribution of various departments.

Based on the findings and discussion, it can be concluded that all the users and interviewees have recognized the importance of KM by distinguishing the critical success factors and challenges of practicing KM in public university libraries in Bangladesh. In brief, the following outcomes are obtained from the research findings: An emergent model of KM for public university libraries; present status of KM practices, critical success factors and challenges for KM implementation; and a set of guidelines that will help to adopt KM for university libraries are the major findings of the research. This finding would aid the public university libraries and offer current knowledge to other Bangladeshi libraries and developing countries globally. In addition, the present research would help organize a policy useful for public university libraries in Bangladesh.

6.5 LIMITATIONS

This research has a few limitations, like other research. However, the limitations did not affect the findings of the present research. The research assessed only the selected public university libraries in Bangladesh. Ideally, it should have been conducted in all public university libraries in Bangladesh and their affiliated colleges. Other types of

higher educational institutions, like private universities in Bangladesh, were excluded from this research due to the time and cost limitations. The population was limited to Librarians/Deputy/Assistant librarians and students of five public university libraries in Bangladesh for qualitative data collection. Top management of the university administration was also not included due to their busy schedule. Only active library users were selected for a sample of the research for quantitative data collection. Another limitation was that respondents might not feel comfortable providing an answer that presented themselves as unfavorable complexion.

6.6 FUTURE RESEARCH SCOPE

In the future, research work will be focused on exploring how KM influences service innovation in libraries. Furthermore, how KM can contribute to service changes in the library and how the overall performance of the library is improved. The cost of implementing KM in the library was also not considered. Therefore, new methods will concentrate more on mapping the existing well-developed KM models to library service requirements, standards, and implementation costs. It would promote transforming knowledge systems into frameworks for learning activities and learning material. KM and service integration can only be effective if researchers from several disciplines collaborate.

The study was concentrated on only five out of 46 public universities in Bangladesh. Future research should be conducted in the remaining other public universities to learn about the KM strategies, practices, and challenges these libraries face.

Hence further studies can be done in other educational sectors like, higher secondary and private universities in Bangladesh. Also, further studies can correlate KM which may deal with other KM critical success factors at other public university libraries. This attempt will widen the research area and give a better glimpse of the use of KM and its actual results in university libraries in Bangladesh.

The present research used a survey method for data collection. It would be beneficial to undertake further research using different methodologies for data

collection to consider different perspectives of KM in public university libraries in Bangladesh.

Future research on KM in academic research institutes could adopt the model proposed by the present research to test and determine the applicability and suitability of its variables in similar studies.

The researchers expect that the experiences and ideas shared here will considerably boost the chances of success by opening new pathways for future researchers, resulting in advances in library services.

REFERENCES

Abah, M., Asiedu, N. K., & Dei, DeGraft J. (2022). Knowledge management strategies in libraries: A systematic review. *Library Philosophy and Practice*. Retrieved from https://digitalcommons.unl.edu/libphilprac/6779.

Abbas, K. D. (2015). *Knowledge management strategies and practices in Nigerian agricultural research institutes* (Doctoral dissertation, University of KwaZulu-Natal,Pietermaritzburg).Retrievedfromhttps://researchspace.ukzn.ac.za/bitstream/handle/10413/12995/Abbas_Kabiru_2015.pdf?sequence=1&isAllowed=y.

Abowitz, D. A., & Toole, T. M. (2009). Mixed method research: Fundamental issues of design, validity, and reliability in construction research. *Journal of Construction Engineering and Management, 136*(1), 108-116.

Abu Bakar, M.Z., Ayub, S.H., & Kamarudin, N.Y. (2020). The mediating role of entrepreneurship education on the relationship between entrepreneurial attitude and entrepreneurship intention. *ASEAN Entrepreneurship Journal, 6*(2), 8-15.

Abualqumboz, M., Reid, I., Papalexi, M., & Bamford, D. (2017*). Can knowledge be retained in informal organisational networks?* In 18th European Conference on Knowledge Management (ECKM 2017). Academic Conferences and publishing limited.

Acheampong, E. A. (2014). *Knowledge management in public sector organisations: Developing a practice framework for Ghana* (Doctoral dissertation, University of Bolton). Retrieved from https://core.ac.uk/download/pdf/301020668.pdf.

Agarwal, N. K., & Islam, M. A. (2020). Looking for knowledge management in library and information science research. *Global Knowledge, Memory and Communication, 69*(8/9), 697-716. Retrieved from https://doi.org/10.1108/GKMC-01-2020-0001.

Ahmad, K. (2017). The perspective of library and information science (LIS) professionals toward knowledge management in university libraries. *Journal of*

Information & Knowledge Management, 16(2), 1750015. Retrieved from http://dx.doi.org/10.1142/S021964 9217500150.

Ahmad, K., JianMing, Z., & Rafi, M. (2019). Assessing the literature of knowledge management (KM) in the field of library and information science. *Information Discovery and Delivery, 47*(1), 35–41.

Aithal, A., & Aithal, P. S. (2020). Development and validation of survey questionnaire experimental data: A systematical review-based statistical approach. *Munich Personal RePEc Archive.* Retrieved from https://mpra.ub.uni-muenchen.de/103996/.

Akhavan, P., & Zahedi, M.R. (2014). Critical success factors in knowledge management among project-based organizations: A multi-case analysis. *IUP Journal of Knowledge Management*, *12*(1), 20-38.

Akhavan, P., Jafari, M., & Fathian, M. (2006). Critical success factors of knowledge management systems: A multi-case analysis. *European Business Review*, 1-16.

Akter, K. M., & Banik, S. (2019). Knowledge management practices of universities in Bangladesh: Lecturers' perception. *Journal of Accounting Research, Organization and Economics, 2*(1), 54-62.

Alavi, M., & Leidner, D.E. (2001). Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly, 25*(1), 107–136.

Algahtani, K. (2019). *Knowledge management practices in the kingdom of Saudi Arabia public sector organisations.* (Doctoral thesis, University of Wolverhampton). Retrieved from https://wlv.openrepository.com/bitstream/handle/2436/622796/Algahtani_PhD_Thesis.pdf?sequence=1&isAllowed=y.

Alhamoudi, S. A. (2010). *Strategic knowledge management system in public sector in Saudi Arabia: an adaptation of the balanced scorecard* (Doctoral dissertation, Department of Strategy and Business Systems, University of Portsmouth). Retrieved from https://core.ac.uk/download/pdf/40026957.pdf.

Aliba, B. (2008). *Knowledge management in research organisations: A knowledge audit* (Master's thesis, University of Cape Town). Retrieved from https://open.uct.ac.za/handle/11427/14703.

Alkatheeri, A. (2018). *An investigative study on the relationship between organizational factors and knowledge management effectiveness in UAE public organizations: The case of Abu Dhabi* (Doctoral dissertation, University of Wolverhampton). Retrieved from https://wlv.openrepository.com/bitstream/handle/2436/622073/Alkatheeri_PhD%20Thesis.pdf?sequence=1&isAllowed=y.

Almudallal, A. W., Bakri, N., Muktar, S. N., & El-Farra, M. M. (2016). Implementing knowledge management in the Palestinian public sector institutions: Empirical study on the presidency of the Palestinian government. *International Review of Management and Marketing*, *6*(4S), 101-107.

Alnakhli, H.Q. (2019). *Better, busier, or stressed out? Exploring social media induced technostress in a sales context*. (Doctoral thesis, University of Texas, Arlington). Retrieved from https://rc.library.uta.edu/uta-ir/handle/10106/28079.

Alosaimi, M. (2016). *The role of knowledge management approaches for enhancing and supporting education* (Doctoral dissertation, Université Panthéon-Sorbonne-Paris). Retrieved from https://www.theses.fr/2016PA01E064.

Alshahrani, A. (2018). *Critical success factors of knowledge management in higher education institutions: A comparative study between Western Sydney University in Australia and King Fahd Security College in Saudi Arabia* (Doctoral dissertation, Western Sydney University). Retrievedfromhttps://researchdirect.westernsydney.edu.au/islandora/object/uws:46765/datastream/PDF/view.

AL-Shawabkeh, A., & Tambyrajah, A. (2009). *Knowledge management in Jordanian banks. International Journal of Knowledge, Culture and Change Management, 9*(9). 105-124.

Alshehri, A., & Cumming, T. M. (2020). Mobile technologies and knowledge management in higher education institutions: Students' and educators' perspectives. *World Journal of Education, 10*(1).

Amarakoon, L., & Kumari, S. (2013). Information literacy and higher education: With special reference to University of Bolton, Academic Centre Sri Lanka. Conference: Information management in a multi-literacy environment: *Proceedings of the NILIS Research Sympolsium.*

Anand, A., & Singh, M. D. (2011). Understanding knowledge management: A literature review. *International Journal of Engineering Science and Technology, 3*(2).

Anwar, S., Nasrullah, M., & Hosen, M. J. (2020). COVID-19 and Bangladesh: Challenges and how to address them. *Frontiers in public health*, *8*, 154.

Arrau, G. P. (2015). Knowledge management in the context of developing countries: The case of Chile. In *European Conference on Knowledge Management*.

Asante, E., & Ngulube, P. (2020). Critical success factors for total quality management implementation and implications for sustainable academic libraries. *Library Management, 41*(6/7), 545-563. Retrieved from https://www.emerald.com/insight/content/.

Asher, H. B. (1984). *Theory building and data analysis in the social science.* Knoxville: University of Tennessee Press.

Atanda, A. D., Owolabi, K. A., & Ugbala, P. C. (2021). Professional competence and attitudes of library personnel towards digital services in selected university libraries in Nigeria. *Digital Library Perspectives, 37*(3), 209-222. Retrieved from https://doi.org/10.1108/DLP-08-2020-0076.

Babbie, E., & Mouton, J. (2001). *The practice of social research.* South Africa: Oxford University Press.

Baghdadabad, A. H. (2008). *The implications of knowledge management for library and information science education: A mixed-method investigation* (Doctoral dissertation, RMIT University). Retrieved from https://core.ac.uk/download/pdf/15621618.pdf.

Bagheri, R., Hamidizadeh, M. R., & Sabbagh, P. (2015). The mediator role of KM process for creative organizational learning case study. *Vine, 45*(3), 420–445. https://doi.org/10.1108/VINE-06-2014-0039.

Bagorogoza, J. (2015). *Knowledge management and high performance: The Uganda financial institutions model for HPO* (Doctoral thesis, Tilburg University). Retrieved from https://pure.uvt.nl/ws/portalfiles/portal/9019234/Bagorogoza_Knowledge_24_11_2015.pdf.

Baker, T. L. (1994). *Doing Social Research* (2nd ed.). New York: McGraw-Hill Inc.

Batista, F. F., & Quandt, C. (2017) *Effectiveness of knowledge management implementation: An analysis of Brazilian Regulatory Agencies*. 18th European Conference on Knowledge Management. ECKM 2017. Barcelona, Spain.

Beebe, K. R., Pell, R. J., & Seasholtz, M. B. (1998). Chemometrics: A practical guide. Wiley-Interscience.

Bello, A. A. (2018). Knowledge management in academic libraries: Trends, issues and challenges. *World Journal of Research and Review, 6*(2), 20-25.

Bhatt, G. D. (2001). Knowledge management in organizations: Examining the interaction between technologies, techniques, and people. *Journal of Knowledge Management, 5*(1), 68-75.

Bircham, H. (2003). The impact of question structure when sharing knowledge. *Electronic Journal of Knowledge Management, 1*(2), 17-24.

Bolisani, E., & Bratianu, C. (2018). The elusive definition of knowledge. In E. Bolisani, C. Bratinau (Eds.), *Emergent Knowledge Strategies: Strategic Thinking in Knowledge Management* (pp. 1-22). Cham: Springer. http://doi.org/ 10.1007/978-3-319-60656_ 1.

Branin, J. (2004). Knowledge management in academic libraries: Building the knowledge bank at the Ohio State University. *Journal of Library Administration. 39*(4), 41-56.

Brooks, R. (2022). Difference between information management and knowledge management. Retrieved from https://blog.netwrix.com/2020/01/21/information-management-vs-knowledge-management.

Bryman, A. (2016). *Social research methods* (5th ed.). New York: Oxford.

BUET (2020). History of Bangladesh University of Engineering and Technology. Retrieved from https://ce.buet.ac.bd/history/.

Carter, N, Bryant-Lukosius, D, DiCenso, A, Blythe, J, & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncol Nurs Forum, 41*(5), 545-7. Retrieved from http://dx.doi.org.libezproxy.open.ac.uk/10.1188/14.ONF.545-547.

Cepeda-Carrion, I., Martelo-Landroguez, S., Leal-Rodríguez, A. L., & Leal-Millán, A. (2017). Critical processes of knowledge management: An approach toward the creation of customer value. *European Research on Management and Business Economics*, *23*(1), 1-7.

Cerchione, R., & Esposito, E. (2017). Using knowledge management systems: A taxonomy of SME strategies. *International Journal of Information Management.* Retrieved from Doi: 10.1016/j.ijinfomgt.

Chandrasegaran, S. K., Ramani, K., Sriram, R. D., Horváth, I., Bernard, A., Harik, R. F., & Gao, W. (2013). The evolution, challenges, and future of knowledge representation in product design systems. *Computer-Aided Design, 45*(2), 204-228.

Chigada, J. (2014). *The role of knowledge management in enhancing organisational performance in selected banks in South Africa* (Doctoral dissertation, University of South Africa). Retrieved from https://uir.unisa.ac.za/handle/10500/14332.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295–336). Lawrence Erlbaum Associates Publishers.

Chin, W. W. (2010). How to Write Up and Report PLS Analyses. In V. Esposito Vinzi, W. W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of Partial Least Squares: Concepts, methods and applications* (pp. 655-690). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-32827-8_29.

Chipeta, G. T. (2018). *Knowledge sharing strategies in university libraries of Malawi* (Doctoral dissertation, University of KwaZulu-Natal). Retrieved from https://researchspace.ukzn.ac.za/handle/10413/15890.

Choo, C. W. (1998*). The knowing organization: How organizations use information to construct meaning, create knowledge, and make decisions*. New York: Oxford University Press.

Chourides, P., Longbottom, D., & Murphy, W. (2003). Excellence in knowledge management: An empirical study to identify critical factors and performance measures. *Measuring Business Excellence, 7*(2), 29.

Cohen, L., Manion, L., & Morrison, K. (2007). Research methods in education. London: Routledge.

Comrey, A. L., & Lee, H. B. (2013). *A first course in factor analysis*. Psychology press.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.

Cristea, D.S., & Căpażîna, A. (2009). Perspectives on knowledge management models. *Economics and Applied Informatics, 15*(2), 355–366.

Daily Prothom-Alo. (2020). *Think twice before reopening educational institutions*. Retrieved from https://en.prothomalo.com/opinion/editorial/think-twice-before-reopening-educational-institutions.

Daland, H. (2016). Managing knowledge in academic libraries. Are we? Should we? *Liber Quarterly, 26*(1).

Dalkir, K. (2005). *Knowledge management in theory and practice.* Elsevier-Butterworth Heinemann: Oxford.

Dalkir, K. (2011). Knowledge management in theory and practice (2nd ed.). USA: The MIT Press.

Davenport, T. H. (1994). Saving IT's soul: Human centered information management. *Harvard Business Review, 72*(2), 119-131.

Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know.* Boston, USA: Harvard Business School Press.

Dawadi, S., Shrestha, S., & Giri, R. A. (2021). Mixed-methods research: A discussion on its types, challenges, and criticisms. *Journal of Practical Studies in Education, 2*(2), 25-36. Retrieved from: https://doi.org/10.46809/jpse.v2i2.20.

De Beer, J., Brysiewicz, P., & Bhengu, B. R. (2011). Intensive care nursing in South Africa. *Southern African Journal of Critical Care, 27*(1), 6-10.

De Jong J. P., & Vermeulen, P. A. (2003). Organizing successful new service development: A literature review. *Management Decision, 41*(9), 844–858.

Debowski, S. (2006). *Knowledge management*. Sydney: John Wiley & Sons.

Dei, D. G. J., & Walt, T. B. (2020). Knowledge management practices in universities: The role of communities of practice. *Social Sciences & Humanities Open, 2*(1), 100025.

Dei, D.G. J. (2021). Perspectives of knowledge management systems implementation. *Library Philosophy and Practice.* Retrieved from https://digitalcommons.unl.edu/libphilprac

Dewah, P., & Mutula., S.M. (2016). Knowledge retention strategies in public sector organisations: Current status in Sub-Saharan Africa. *Information Development, 32*(3), 362-376.

Dhamdhere, S. N. (2015). Importance of knowledge management in the higher educational institutes. *Turkish Online Journal of Distance Education, 16*(1), 162-183.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Dlamini, L. E. (2017). *The role of librarians in knowledge management (KM): An exploratory study of academic libraries for public/state owned colleges in*

Swaziland. [Paper presentation]. IFLA 2017: Knowledge management satellite conference.

Donate, M. J., & Sánchez De Pablo, J. D. (2014). The role of knowledge-oriented leadership in knowledge management practices and innovation. *Journal of Business Research, 68*(2), 360-370.

Drucker, P. F. (1993). *Post-capitalist society.* New York, NY: Harper Collins.

DU (2021). University of Dhaka. Retrieved from https://www.du.ac.bd.

Duffy, N. (1999). Benchmarking knowledge strategy. Jooste, D. & Whittaker, L. (Eds.), *In Leveraging knowledge for business performance 1999: Knowledge in action.* WITS Business School, Johannesburg.

Earl, M. J. (2001). Knowledge management strategies: Toward a taxonomy. *Journal of Management Information Systems, 18*(1), 215-242.

Ekore, J. O. (2014). Impact of key organizational factors on knowledge transfer success in multinational enterprises. *Management, 19*(2), 3-18.

Farnese, M.L., Barbieri, B., Chirumbolo, A., & Patriotta, G.(2019). Managing knowledge in organizations: A Nonaka's SECI model operationalization. *frontiers in Psychology*. Retrieved from https://doi.org/10.3389/fpsyg.2019.02730.

Fernandez, I. B. C., & Sabherwal, A. (2004). *Knowledge management challenges, solutions, and technologies*. New Jersey: Pearson Education, Inc.

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. Sage.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39–50. Retrieved from https://doi.org/10.2307/3151312.

Gao, T., Chai, Y., & Liu, Y. (2018). A review of knowledge management about theoretical conception and designing approaches. *International Journal of Crowd Science, 2*(1).

Gefen, D., Straub, D., & Boudreau, M. (2000). Structural equation modeling and regression: Guidelines for research practice. *Communications of the Association for Information Systems, 4*(1).

Gerbin, A., & Drnovsek, M. (2020). Knowledge-sharing restrictions in the life sciences: personal and context-specific factors in academia–industry knowledge transfer. *Journal of Knowledge Management, 24*(7), 1533-1557.

Gill, A. (2009). Knowledge management initiatives at a small university. *International Journal of Educational Management, 23*(7).

Girard, J., & Girard, J. (2015). Defining knowledge management: Toward an applied compendium. *Online Journal of Applied Knowledge Management, 3,* 1-20.

Gliem, J. A., & Gliem, R. R. (2003). *Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. Midwest Research-to-Practice*. Conference in Adult, Continuing, and Community Education.

Gottschalk, P. (2005). *Strategic knowledge management technology*. Charleston: Idea Group Publishing.

Goyal, M., & Sharma, P. (2014). Reengineering library from semi-digital to digital library: A case study. *International Journal for Research in Applied Science and Engineering Technology, 2*(8), 18-24.

Guenzi, P., Johnson, M., & Castaldo, S. (2009). A comprehensive model of customer trust in two retail stores. *Journal of Service Management, 20,* 290-316. Doi: 10.1108/09564230910964408.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate Data Analysis (7th ed.). Pearson: New York.

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Thousand Oaks, CA: Sage Publications.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice, 19*(2), 139-152.

Hamid, M.R.A., Mustafa, Z, Idris, F., Abdullah, M., & Suradi, N.R.M. (2011). Measuring value-based productivity: A Confirmatory Factor Analytic (CFA) approach. *International Journal of Business and Social Science*, *2*(6).

Hamid, S., & Nayan, J.M. (2005). Preliminary study of knowledge management in a library: A case study of the national library of Malaysia, Proceedings of International Conference of Library (ICOL 2005).

Hamid, S., Nayan, J. M., Bakar, Z. A., & Norman, A. A. (2007). *Knowledge management adoption and implementation readiness: A case study of the National Library of Malaysia*. Library & Information Science Unit, Faculty of Computer Science & Information Technology, University of Malaya.

Hannan Mia, M.A., & Hasan, N. (2016). Impact of knowledge management on organizational performance : An exploratory study in Bangladesh. *Bangladesh Journal of MIS*, *7*(7), 1-21.

Harbo, K., & Hansen, T. V. (2012). Getting to know library users' needs — experimental ways to user-centred library innovation. *Liber Quarterly*, *21*(3/4), 367–385.

Hayes, S. C., Levin, M. E., Plumb-Vilardaga, J., Villatte, J. L., & Pistorello, J. (2013). Acceptance and commitment therapy and contextual behavioral science: Examining the progress of a distinctive model of behavioral and cognitive therapy. *Behavior Therapy*, *44*(2), 180-198. Retrieved from http://doi.org/10.1016/j.beth.2009.08.002.

Henning, E., Rensburg, V. W., & Smit, B. (2004*). Finding your way in qualitative research*. Pretoria: Van Schaik.

Henseler, J., Dijkstra, T., Sarstedt, M., Ringle, C., Diamantopoulos, A., Straub, D., Ketchen, D., Hair, J., Hult, T., & Calantone, R. (2014). Common beliefs and reality about PLS comments on Rönkkö and Evermann. *Organizational Research Methods, 17*, 182-209. Retrieved from http://dx.doi.org/10.1177/1094428114526928.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In *Advances in International*

Marketing|Adv. Int. Mark. (Vol. 20, pp. 277-319). (Advances in International Marketing). Emerald Publishing Limited. https://doi.org/10.1108/S1474-7979(2009)0000020014.

Hoq, K. M. G., & Akter, R. (2012). Knowledge management in universities: Role of knowledge workers. *Bangladesh Journal of Library and Information Science, 2*(1), 92–102.

Hossain, M. N., & Ahmed, S. M. Z. (2020). Use of scholarly communication and citation-based metrics as a basis for university ranking in developing country perspective. *Global Knowledge, Memory and Communication*, *69(*6/7), 461-482. Retrieved from https://doi.org/10.1108/GKMC-09-2019-0112.

Hsu, C.Y., Chang T., Chen, Y.T., & Chang, Y.T. (2013). Critical success factors for the assessment and selection of labor dispatch companies. *Journal of Global Business Management*, 9(1), 53-63.

Hu, L.-t., & Bentler, P. M. (1999). Cut off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1–55. Retrieved from https://doi.org/10.1080/10705519909540118.

Husain, S., & Nazim, M. (2013). Concepts of knowledge management among library & information science professionals. *International Journal of Information Dissemination and Technology, 3*(4), 264-269.

Ichijo, K., von Krogh, G., & Nonaka, I. (1998). Knowledge enablers. *Knowing in firms: Understanding, managing and measuring knowledge*. Retrieved from**:** https://dx.doi.org/10.4135/9781446280256.n8.

Igbinovia, M. O., & Ikenwe, I. J. (2017). Knowledge management: Processes and systems. *Information Impact: Journal of Information and Knowledge Management, 8*(3), 26-38.

Iqbal, A., Latif, F., Marimon, F., Sahibzada, U. F., & Hussain, S. (2018). From knowledge management to organizational performance: Modelling the mediating role of innovation and intellectual capital in higher education. *Journal*

of Enterprise Information Management, *32*(1), 36-59. Retrieved from https://doi.org/10.1108/JEIM-04-2018-0083.

Islam M. A., & Ikeda, M. (2014). Convergence issues of knowledge management in digital libraries: Steps towards state-of-the-art digital libraries. *VINE: The Journal of Information and Knowledge Management Systems*, *44*(1), 140-159.

Islam M. A., Agarwal, N. K., & Ikeda, M. (2014). Library adoption of knowledge management using web 2.0: A new paradigm for libraries. *International Federation of Library Associations and Institutions*, *40*(4), 317–330.

Islam M. A., Agarwal, N. K., & Ikeda, M. (2015a). Conceptualizing value co-creation for service innovation in academic libraries. *Business Information Review*, *32*(1), 45–52.

Islam M. A., Agarwal, N. K., & Ikeda, M. (2015b). Knowledge management for service innovation in academic libraries: A qualitative study. *Library Management*, *36*(1/2), 40–57.

Islam, M. A., Agarwal, N. K., & Ikeda, M. (2017). Effect of knowledge management on service innovation in academic libraries. *International Federation of Library Associations and Institutions*, 1–16.

Islam, M. S., Kunifuji, S., Hayama, T., & Miura, M. (2011). E-learning in LIS education: An analysis and prediction. *Library Review*, *60*(7), 544–559.

Islam, M., Islam, M., Munshi, M.N., & Haider, M.S. (2022). An effective digital safeguarding system in university libraries: A model Plan. *Data and Information Management*, *6*(1), 1-10. Retrieved from https://doi.org/10.2478/dim-2021-0012.

Islam, M.A. (2016). *Knowledge Management for innovation in academic libraries services* (Doctoral dissertation, School of knowledge science, Japan Advanced Institute of Science & Technology).

Islam, N., Islam, S., & Razzak, A. (2020). Problems of knowledge management practices in libraries and information centres of Bangladesh. *International Federation of Library Associations and Institutions*, *46*(1), 34–51.

Islam, S. (2013). Library digitization in Bangladesh: A developing country perspective. *Research Journal of Library Sciences, 1*(1), 2–9.

Islam, S., Siddike, A. K., Nowrin S., & Naznin, S. (2015). Usage and applications of knowledge management for improving library and information service in Bangladesh. *Journal of Information & Knowledge Management, 14*(3), 50-52.

Jacobson, M. (2020). *The 11 factors of successful knowledge management implementation*. Bloomfire. Retrieved from https://bloomfire.com/blog/the-11-factors-of-successful-knowledge-manag ement-implementation/.

Jafari, M., Fathian, M., Jahani, A., & Akhavan, P. (2008). Exploring the contextual dimensions of organization from knowledge management perspective. *VINE: The Journal of Information and Knowledge Management Systems, 38*(1), 53-71.

Jain, P. (2012). An empirical study of knowledge management in university libraries in SADC Countries. Retrieved from https://www.researchgate.net/publication/221926778.

Jain, P. (2013). Knowledge management in academic libraries and information centres: A case of university libraries. *Journal of Information & Knowledge Management, 12*(4), 1350034.

Jain, P. (2014a). Knowledge management in academic libraries in developing countries: A case of Southern Africa. *Affrika: Journal of Politics, Economics and Society, 4*(1-2), 7-37.

Jain, P. (2014b). *A survey of knowledge management practice among academic staff at the University of Botswana.* [Paper presentation] at 25th Australasian Conference on Information Systems (ACI), held in Auckland, New Zealand, 8-10 December.

James, M. M., & John, N. (2018). A study to assess the opinion of students' regarding the choice of library as their preferred learning space in a selected college of nursing in New Delhi. *International Journal of Nursing & Midwifery Research, 5*(4), 31-35. Retrieved from https://doi.org/10.24321/2455.9318.201844.

Jemal, S., & Zewdie, S. (2021). Role of knowledge management on organizational performance, case of Jimma university in Ethiopia. *Journal of International Business and Management*. Retrieved from https://rpajournals.com/jibm.

Jerome, I., Nkiko, C., & Ifeakachuku, O. (2017). Value-added service to academic library users in 21st century: Using competitive intelligence approach. *Library Philosophy and Practice (e-journal)*. Retrieved from https://digitalcommons.unl.edu/libphilprac/1570/.

John, W. B., & James, V. K. (2007). *Research in education*. Prentice-Hall of India Private Limited; New Delhi.

Jumoke, A. O. (2018). *Knowledge management capability in nursing care performance in selected teaching hospitals in south-west, Nigeria.* (Doctoral dissertation, University of KwaZulu-Natal). Retrieved from https://researchspace.ukzn.ac.za/xmlui/bitstream/handle/10413/16495/Ajanaku_Olateju_Jumoke_2019.pdf?sequence=1&isAllowed=y.

JUST (2021). Jashore University of Science and Technology. Retrieved from https://just.edu.bd/.

Kabir, S.M.S. (2016). Basic guidelines for research: An introductory approach for all disciplines. Retrieved from https://www.researchgate.net/publication/32584699.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*, 31–36. Retrieved from https://doi.org/10.1007/BF02291575.

Kakhki, K. M., Modiramani, P., Aminpour, F., Sadeghi-Gourji, S., & Ebrahimzadeh, E. (2021). The dance of knowledge management strategies in libraries: The case of the libraries of the Iranian universities of medical science. *Journal of Librarianship and Information Science, 53*(1), 181-202.

Kanwal, S., Nunes, M. B., & Arif, M. (2019). Knowledge management practice in South Asian higher education institutions. *International Federation of Library Associations and Institutions*, 1–13.

Karemente, K., Aduwo, J. R., Mugejjera, E., & Lubega, J. (2009). Knowledge management frameworks: A review of conceptual foundations and a KMF for IT-based organizations. *Strengthening the Role of ICT in Development*, *35*.

Kendall, K., & Kendall, J. (2008). *System Analysis and Design* (8th ed.). New Jersey: Prentice Hall.

Khan, M., & Kamal, M. (2015). Total quality management (TQM) for improving quality service in university libraries: A conceptual view. *Daffodil International University Journal of Business and Economics, 9*(1), 151-159.

Khanal, L., & Raj P. S. (2017). Knowledge management, employee satisfaction and performance: Empirical evidence from Nepal. *Saudi Journal of Business and Management Studies.* Retrieved from http://scholarsmepub.com.

Kinyua, G. A., Muathe, S., & Kilika, J.M. (2015). Effect of knowledge conversion and knowledge application on performance of commercial Banks in Kenya. *International Journal of Education and Research, 3*(10).

Kline, P. (2013). *Handbook of Psychological Testing*. Routledge. Retrieved from https://doi.org/10.4324/9781315812274.

Knox, K. (2019). Knowledge management: A human attribute. *ICICKM 2019 16th International Conference on Intellectual Capital Knowledge Management & Organisational Learning*, 202.

Koloniari, M., & Fassoulis, K. (2017). Knowledge management perceptions in academic libraries. *The Journal of Academic Librarianship, 43*(2), 135-142.

Koloniari, M., Vraimaki, E., Fassoulis, K., Zenelaj, I., & Kourniotis, X. S. (2015). A study of KM critical success factors in Greek academic libraries. *International Journal on Integrated Information Management, 2*(2), 1-12.

Komanyane, K. (2010). *Knowledge management practices in the public sector in Botswana* (Doctoral dissertation, University of the Western Cape). Retrieved from https://etd.uwc.ac.za/handle/11394/1747.

Konting, M. M., Kamaruddin, N., & Man, Nor, A. (2009). Quality assurance in higher education institutions: Exit survey among Universiti Putra Malaysia graduating students. *International Education Studies, 2*(1) 25-31.

Kordab, M., Raudeliuniene, J., & Meidute-Kavaliauskiene, I. (2020). Mediating role of knowledge management in the relationship between organizational learning and sustainable organizational performance. *Sustainability, 12*, 1-20.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607-610.

Krishnamurthy, V., & Balasubramani, R. (2013). *Awareness of knowledge management among librarians: A Study.* National conference on reaching out to users through technology (ROUTE-2013), 13-15 March 2013, Chennai.

Kristensson, P. (2019). Future service technologies and value creation. *Journal of Services Marketing, 33*(4), 502–506.

Krogh, G. V., & Roos, J. (1995). *Organizational epistemology*. London: Macmillan Press.

Kucharska, W., & Wildowicz, A. (2017). Company culture, knowledge sharing and organizational performance. The employee's perspective. *In Proceedings of the 18th European Conference on Knowledge Management, 1*, 524-531.

Kulkarni, U. R., Ravindran, S., & Freeze, R. (2006). A knowledge management success model: Theoretical development and empirical validation. *Management Information Systems, 23*(3), 309-347.

Kumar, S. A. (2019). Knowledge management and new generation of libraries information services: A concepts. *African Journal of Library and Information Science, 5*(4), 1-7.

Lambert, E. G., Hogan, N. L., & Cluse-Tolar, T. (2007). This job is killing me: The impact of job characteristics on correctional staff job stress. *Applied Psychology in Criminal Justice, 3*(2), 117-142.

Lee, H., & Choi, B. (2003). Knowledge management enablers, processes, and organizational performance: An integrative view and empirical examination. *Journal of Management Information Systems, 20*(1), 179–228.

Lesneski, T. (2015). *The library as a center for innovation*. Retrieved from https://www.demcointeriors.com/blog/the-library-as-a-center-for-innovation/.

Liang, C. C. (1999). Critical success factors for reinventing the academic library. *Reference Services Review, 27*(2), 127-133. Retrieved from https://doi.org/10.1108/00907329910275132.

Liebowitz, J., & Paliszkiewicz, J. (2019). The next generation of knowledge management: Implications for LIS educators and professionals. *Online Journal of Applied Knowledge Management, 7*(2).

Lin, P.C., Ho, H. Y., & Lu, M. H. (2014). Effects of knowledge management and corporate culture on organizational innovation climate. *Revista Internacional de Sociología, 72*(2), 43-55.

Liu, S. (2007). *Introduction to knowledge management.* Retrieved from http://web.archive.org/web/20070319233812/http://www.unc.edu/~sunnyliu/inls258/Intro duction_to_Knowledge_Management.html.

Loughridge, B. (1999). Knowledge management, librarians and information managers: Fad or future? *New Library World*, *100*(6), 245–253.

Lu, L., Leung, K., Koch, P., & Tong, K. (2006). Managerial knowledge sharing: The role of individual, interpersonal, and organisational factors. *Management and Organisation Review, 2*(1), 15-41.

MacKinnon, D. P., & Fairchild, A. J. (2009). Current directions in mediation analysis. *Current Directions in Psychological Science, 18*(1), 16–20.

Madan, P., & Khanka, S. (2010). Contribution of knowledge management practices in creating sustainable competitive advantage for business schools in India. *Journal of Information & Knowledge Management, 9*(4), 387–397.

Madge, O-L. (2010). Implementing knowledge management in Romanian academic libraries: Identifying the elements that characterize their organizational culture. *The Journal of Academic Librarianship, 36*(6), 549-552.

Madhoushi, M., & Sadati, A. (2010). Knowledge management, antecedent of organisational innovation and competitiveness. *Proceeding of the 2nd European Conference on Intellectual Capital, ECIC,* Italy, 399-405.

Magnier-Watanabe, R., Benton, C., & Senoo, D. (2011). A study of knowledge management enablers across countries. *Knowledge Management Research & Practice, 9*(1), 17–28.

Mahmood, A., Qureshi, M. A., & Shahbaz, Q. (2011). An examination of the quality of tacit knowledge sharing through the theory of reasoned action. *Journal of Quality and Technology Management, 7*(1), 39–55.

Mahmood, K. (2016). Do people overestimate their information literacy skills? A systematic review of empirical evidence on the Dunning-Kruger Effect. *Communications in Information Literacy, 10*(2), 199-213. Retrieved from https://doi.org/10.15760/comminfolit.2016. 10.2.24.

Mahmood, Z., Iftikhar, W., Vistro, D. M. & Tariq, H. I. (2020). An examination of the use of knowledge management/ knowledge management systems in achieving and sustaining competitive advantage in higher education institutes: A case study of Asia Pacific University, Malaysia. *International Journal of Scientific & Technology Research, 9(4).*

Malhotra, N. (1999). *Marketing research: An applied orientation*. Upper Saddle River, NJ: Prentice Hall.

Maligat, D. E., Torio, J. O., Bigueras, R. T., Arispe, M. C., & Palaoag, T. D. (2019). Web-based knowledge management system for Camarines Norte State College. *IOP Conference Series: Materials Science and Engineering, 803.* Retrieved from https://iopscience.iop.org/article/10.1088/1757-899X/803/1/012006/meta.

Mandelson, P. (2009). *The future of universities in a knowledge economy*. London: Department for Business Innovation and Skills.

Maponya, P.M. (2004). Knowledge management practices in academic libraries: A case study of the University of Natal, Pietermaritzburg Libraries. *SCECSAL Proceedings*.

Marouf, L. (2017). Are academic libraries ready for knowledge management? *The Electronic Library*, *35*(1), 137-151. Retrieved from https://doi.org/10.1108/EL-01-2016-0008.

Martin, A.J., Nejad, H., Colmar, S., & Liem, G. (2013). Adaptability: How students' responses to uncertainty and novelty predict their academic and non-academic outcomes. *Journal of Educational Psychology*, *105*, 728. Doi: 10.1037/a0032794.

Mathew, V. (2010). Knowledge management in higher education: Implementation agenda in distance learning. 10.1109/ICDLE.2010.5606015.

Mavodza, J., & Ngulube, P. (2012). Knowledge management practices at an institution of higher learning. *SA Journal of Information Management*, *14*(1). Retrieved from https://doi.org/10.4102/sajim.v14i1.496.

Maxwell, J. A. (2016). Expanding the history and range of mixed methods research. Journal of Mixed Methods Research, *10*(1), 12–27. Retrieved from https://doi.org/10.1177/1558689815571132.

Memon, M.A., Ramayah, T., Cheah, J.H., Ting, H., Chuah, F. & Cham, T.H. (2021). PLS-SEM statistical programs: A review. *Journal of Applied Structural Equation Modeling*, *5*(1), 1-14.

Migdadi, M. (2009). Knowledge management enablers and outcomes in the small-and-medium sized enterprises. *Industrial Management & Data Systems*, *109*(6), 840-858.

Miller, B. (2020). 15 advantages and disadvantages of quantitative research. Retrieved from https://greengarageblog.org/15-advantages-and-disadvantages-of-quantitative-research.

Mitchell, M. L., & Jolley, M. J. (2013). *Research design explained* (8th ed.). CA, USA: Wadsworth Cengage Learning.

Mitchell, M. L., Jolley, J. M., & O'Shea, R. P. (2013). Writing for psychology (4th ed.). Pacific Grove, CA: Wadsworth.

Mohajan, H. K. (2016a). Sharing of tacit knowledge in organizations: A review. *American Journal of Computer Science and Engineering, 3*(2), 6–19.

Mohajan, H. K. (2016b). Knowledge is an essential element at present world. *International Journal of Publication and Social Studies, 1*(1), 31-53. Retrieved from https://mpra.ub.uni-muenchen.de/83041/.

Mohajan, H. K. (2017a). The impact of knowledge management models for the development of organizations. *Journal of Environmental Treatment Techniques, 5*(1), 12-33.

Mohajan, H. K. (2017b). The roles of knowledge management for the development of organizations. *Journal of Scientific Achievements, 2*(2), 1-27.

Mostofa, S. M., & Islam, M. (2015). Challenges and opportunities of knowledge management in university library: A case study of Dhaka university library in Bangladesh. *Journal of Information Science Theory and Practice, 3*(4), 49-61.

Mostofa, S. M., & Sultana, N. (2019). Present scenario of knowledge management effectuation in the national library of Bangladesh: A study. *Journal of Multidisciplinary Science, 1*(2),1-8.

Muchaonyerwa, N. (2015). *Knowledge sharing strategies in university libraries in KwaZulu Natal Province of South Africa* (Doctoral dissertation, University of KwaZulu-Natal). Retrieved from https://ukzn-dspace.ukzn.ac.za/handle/10413/13085.

Murumba, J.W., Kwanya, T., Maina, J.C., & Wangamati, A.S. (2020). Tacit knowledge management at universities in Kenya. *Online Journal of Applied Knowledge Management, 8*(1).

Musangi, P. S., Odero, D., & Kwanya, T. (2019). Critical success factors in library reengineering: A case of academic libraries in Kenya. *Global Knowledge, Memory and Communication, 68*(6/7), 534-549. Retrieved from https://doi.org/10.1108/GKMC-12-2018-0099.

Muttaqi, F. (2020). Build and design knowledge management system for sharing material teacher. *Journal of Physics: Conference Series.* Retrieved from https://iopscience.iop.org/article/10.1088/1742-6596/1511/1/012016.

Mvungi, M., & Jay, I. (2009). Knowledge management model for information technology support service. *Electronic Journal of Knowledge Management, 7*(3), 353–366.

Nadiri, I. (1970). International studies of factor inputs and total factor productivity: A brief survey. *Review of Income and Wealth, 18,* 129-148. Retrieved from http://dx.doi.org/10.1111/j.1475-4991.1972.tb00855.x.

Nair, B., & Munusami, C. (2020). Knowledge management practices: An exploratory study at the Malaysian higher education institutions. *Journal of Research in Innovative Teaching & Learning, 13*(2),174-190. Retrieved from https://doi.org/10.1108/JRIT-01-2019-0008.

Nayak, M.S.D.P., & Narayan, K.A. (2019). Strengths and weaknesses of online surveys. *IOSR Journal of Humanities and Social Sciences, 24*(5).

Nazim, M., & Mukherjee, B. (2011). Implementing knowledge management in Indian academic libraries. *Journal of Knowledge Management Practice, 12*(3).

Nazim, M., & Mukherjee, B. (2013). Librarians' perceptions of knowledge management in developing countries: A case with Indian academic libraries. *International Information & Library Review, 45*(1), 63-76.

Ngulube, P. (2003). *Preservation and access to public records and archives in South Africa* (Doctoral dissertation, University of Natal). Retrieved from https://www.academia.edu/47534973/Preservation_and_access_to_public_records_and_archives_in_South_Africa.

Nonaka, I., & Konno, N. (1998). The concept of 'Ba': Building a foundation for knowledge creation. *California Management Review, 40*(3), 40-55.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation.* USA: Oxford University Press.

Nonaka, I., & Teece, D.J. (2001). *Managing industrial knowledge: Creation, transfer and utilization.* London: Sage.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science, 5*(1), 14–37.

Nonaka, I. (1998). *The knowledge-creating company.* Boston: Harvard Business School Publishing.

Nooshinfard, F., & L. Nemati-Anaraki. (2014). Success factors of inter-organizational knowledge sharing: A proposed framework. *The Electronic Library, 32*(2), 239-261.

Norland-Tilburg, E. V. (1990). Controlling error in evaluation instruments. *Journal of Extension, 28*(2), 23-41.

Nowrin, S., & Mostofa, S.M. (2015). Expected web-based library services from faculty of business studies students: A study of Dhaka University Library. *Kelpro Bulletin, 19*(1), 1-20.

Obinyan, O. O., & Akande, E. O. (2019). Assessment of nursing students' level of satisfaction with library services in selected universities in Edo State. *Library Philosophy and Practice (e-journal).* 2896. Retrieved from https://digitalcommons.unl.edu/libphilprac/2896.

Odor, H. (2018). Knowledge management. *Journal of Business and Financial Affairs, 7*(2). Retrieved from http://dx.doi.org/10.4172/2167-0234.1000335.

Ogola, S. (2012). *Knowledge management practices in university libraries in Kenya* (Doctoral thesis, University of Kenya). Retrieved from http://erepo.usiu.ac.ke/handle/ 11732/2982; jsessionid=8920AA15C45F464DB4C673669FDC618A.

Okunoye, A. (2004). Context-aware framework of knowledge management. *Cultural and Infrastructural Considerations.*

Ologbo, A. C., & Nor, K. M. (2015). The 7-Circle model: A practical and coherent KM model for managing organizational knowledge. *Mediterranean Journal of Social Sciences, 6*(4), 120–128.

Omotayo, F.O. (2015). Knowledge management as an important tool in organizational management: A review of literature. *Library Philosophy and Practice*, 1-23.

Onwurah, C. U., & Chiaha, G. T. U. (2008). *Knowledge management administration in universities in Nigeria*. Nigeria: University Press LTD.

Onyancha, O. B., & Ocholla, D. N. (2009). Conceptualising 'knowledge management' in the context of library and information science using the core/periphery model. *South African Journal of Information Management, 11*(4).

Othman, R., & Skaik, H. (2014). Determinants of academics' knowledge sharing behavior in United Arab Emirates universities. *Journal of Education and Vocational Research, 5*(1), 1-12.

Oufkir, L., & Kassou, I. (2019). Performance measurement for knowledge management project: Model development and empirical validation. *Journal of Knowledge Management, 23*(7), 1403-1428.

Oyedokun, T. T., Laaro, M. D., Oyewumi, F. A., & Akanbi, M. L. (2018). Assessment of knowledge management competencies of library and information science professionals in Nigeria. *Library Philosophy and Practice*. Retrieved from http://digitalcommons.unl.edu/libphilprac/1919.

Oyemomi, O., Neaga, L., & Alkhuraiji, A. (2016). How knowledge sharing and business process contribute to organizational performance: Using the fs QCA approach. *Journal of Business Research, 69*(11), 5222–5227.

Panni, M.F., & Hoque, N. (2017). Customer knowledge management (CKM) practices in the telecommunication industry in Bangladesh. *International Journal of Information Systems in the Service Sector, 9*(2).

Pathak, R. K. (2014). Knowledge management in academic library: A need based approach. *IOSR Journal of Humanities and Social Science, 19*(1), 17-23.

Paudel, K. P. (2019). Expectations and realities of knowledge management: Experiences from higher education in developing countries. *Education and Development, 29*, 89-102.

Paulin, D., & Suneson, K. (2012). Knowledge transfer, knowledge sharing and knowledge barriers–three blurry terms in KM. *Electronic Journal of Knowledge Management, 10*(1), 81-91.

Pimentel, J.L. (2010). A note on the usage of Likert scaling for research data analysis. *USM R & D, 18*(2), 109–112.

Ponto, J. (2015). Understanding and evaluating survey research. *Journal of the Advanced Practitioner in Oncology, 6*(2), 168-171.

Poonkothai, R. (2016). Knowledge management as an important tool in library management. *International Journal of Information Technology and Library Science, 5*(1), 9-14.

Preacher, K. J., & Hayes, A. F. (2008). Contemporary approaches to assessing mediation in communication research. In A. F. Hayes, M. D. Slater, & L. B. Snyder (Eds.), *The Sage sourcebook of advanced data analysis methods for communication research* (pp. 13–54). Sage Publications, Inc. Retrieved from https://doi.org/10.4135/9781452272054.n2.

Prentice, D. (2018). *10 trends to watch in knowledge management*. Arrow Solutions Group. Retrieved form https://www.arrowsolutionsgroup.com/search?q=knowledge%20management&f_collectionId=5f4ac70f511e4f509f8104c4.

Prusak, L. (1998). *Knowledge in Organizations*. Butterworth-Heinemann: Newton.

Qwaider, W. Q. (2011a). Integrated of knowledge management and e-learning system. *International Journal of Hybrid Information Technology, 4*(4), 59-70.

Qwaider, W. Q. (2011b). Integrated of blended learning system (BLs) and knowledge management system. *International Journal for e-Learning Security, 1*(2), 80-95.

Qwaider, W. Q. (2014). Integrated e-learning 2.0 for knowledge management system in organization. *International Journal for e-Learning Security, 4*(1), 350-353.

Radhakrishna, R. B. (2007). Tips for developing and testing questionnaires/instruments. *Journal of Extension*, *45*(1).

Rafi, M., JianMing, Z. & Ahmad, K. (2019). Technology integration for students' information and digital literacy education in academic libraries. *Information Discovery and Delivery, 47* (4), 203-217. Doi: 10.1108/IDD-07-2019-0049.

Rafi, M., Jianming, Z., & Ahmad, K. (2020a). Estimation of the knowledge management model for performance measurement in university libraries. *Library Hi Tech*. ahead-of-print. Doi:10.1108/LHT-11-2019-0225.

Rafi, M., Jianming, Z., & Ahmad, K. (2020b). Digital resources integration under the knowledge management model: An analysis based on the structural equation model. *Information Discovery and Delivery*. Doi: 10.1108/IDD-12-2019-0087.

Rahim, R. E. A. (2006). *A study of knowledge management and knowledge management system in selected Malaysian Institutes of Higher Learning* (Master's thesis, Kulliyyah of Information and Communication Technology, International Islamic University Malaysia, Gombak, Selangor). Retrievedfromhttp://studentrepo.iium.edu.my/bitstream/123456789/5425/1/t000001059331rabiaheladwiahabdulrahimhd30.2r116s2006_sec_24.pdf.

Rahman, A., & Hasan, N. (2017). Modeling effects of KM and HRM processes to the organizational performance and employee's job satisfaction. *International Journal of Business and Management*, *12*(7), 35-45.

Rahman, M. H., & Islam, M. S. (2020). Building a model for digital content management in agricultural university libraries in Bangladesh. *Knowledge Management & E-Learning, 12*(3), 359–379. Retrieved from https://doi.org/10.34105/j.kmel.2020.12.019.

Ramohlale, M. P. (2014). *Knowledge management practices at the department of Defence in South Africa* (Doctoral dissertation, University of South Africa). Retrieved from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.890.2207&rep=rep1&type=pdf.

Rehman, S. U., Mohamed, R., & Ayoup, H. (2019). The mediating role of organizational capabilities between organizational performance and its determinants. *Journal of Global Entrepreneurship Research, 9*(30).

Reid, M. C., Bennett, D. A., Chen, W. G., Eldadah, B. A., Farrar, J. T., Ferrell, B., Gallagher, R. M., Hanlon, J. T., Herr, K., & Horn, S. D. (2011). Improving the pharmacologic management of pain in older adults: Identifying the research gaps and methods to address them. *Pain medicine, 12*(9), 1336-1357.

Rietveld, T., & Van Hout, R. (1993). *Statistical techniques for the study of language and language behaviour*. Berlin: Mouton de Gruyter.

Rijlaarsdam, R. (2007). The interaction effect of source and motives on fairness perceptions in the context of revenue management in the airline industry (Master thesis, Universiteit Maastricht).

Ringle, C. M., Wende, S., & Becker, J.-M. (2015). *SmartPLS 3. Boenningstedt: SmartPLS GmbH.* Retrieved from http://www.smartpls.com.

Roknuzzaman, M., Kanai, H., & Umemoto, K. (2009). Integration of knowledge management process into digital library system. *Library Review, 58*(5), 372–386.

Roknuzzaman, Md., & Umemoto, K. (2009). How library practitioners view knowledge management in libraries: A qualitative study. *Library Management, 30*(8/9), 643-656.

Rouse, M. (2016). Hard factors–managementmania.com. Retrieved from https://managementmania.com/en/hard-factors.

RU (2021). University of Rajshahi. Retrieved from http://www.ru.ac.bd/.

Rubin, H., & Rubin, I. (2005). *Qualitative interviewing: The art of hearing data* (2nd ed.). Thousand Oaks: Sage.

Sallam, A. T., Eid, A. F., Elfaramawy, A. F., & Khodier, L. M. (2018). Applications of knowledge management in construction: A literature review. *The Academic Research Community publication, 2*(3), 11-18. Retrieved from https://dx.doi.org/10.21625/ archive.v2i3.342.

Salunke S., Weerawardena J., & McColl-Kennedy, J. R. (2011). Towards a model of dynamic capabilities in innovation-based competitive strategy: Insights from project-oriented service firms. *Industrial Marketing Management, 40*(8), 1251–1263.

Sarawanawong, J., Tuamsuk, K., Vongprasert, C., & Khiewyoo, J. (2009). Development of a strategic knowledge management model for Thai Universities. *Asia-Pacific Conference on Library and Information Education & Practice, 2009, at University of Tsukuba, Japan,288-297.* Retrieved from https://www.researchgate.net/publication/50887996.

Sarrafzadeh, M. (2008). *The implications of knowledge management for the library and information professions* (Ph.D. Thesis, RMIT University). Retrieved from http:// researchbank.rmit.edu.au/view/rmit:13384.

Sarrafzadeh, M., Martin, B., & Hazeri, A. (2006). LIS professionals and knowledge management: Some recent perspectives. *Library Management, 27*, 621-635. Doi:10.1108/01435120610715527.

SAU (2021). Sylhet Agricultural University. Retrieved from http://www.sau.ac.bd/.

Saunders, M., & Thornhill, A. (2009). *Research Methods for Business Students* (4th ed.). Harlow, England: Pearson Education Limited.

Saunders, M., Lewis, L. & Thornhil, P. (2016). *Research methods for business students* (9th ed.). New York: Pearson.

Saunders, M., Lewis, P., & Thornhill, A. (2007). *Research Methods for Business students* (4th ed.). Prentice Hall, Edinburgh Gate, Harlow: Financial Times.

Schniederjans, D.G., Curado, C., & Khalajhedayati, M. (2019). Supply chain digitisation trends: An integration of knowledge management. *International Journal of Production Economics, 220*. Doi: 10.1016/j.ijpe.2019.07.012.

Seethanaik, D. (2014). Knowledge management 'new dimensions of knowledge management.' *International Journal in Management and Social Science, 2*(4), 37-43.

Semradova, I., & Hubackova, S. (2014). Responsibilities and competences of a university teacher. *Procedia–Social and Behavioral Sciences, 159*, 437–441. http://dx.doi.org/10.1016/j.sbspro.2014.12.403.

Sh Al-Qdah, M., & Salim, J. (2013). A conceptual framework for managing tacit knowledge through ICT perspective. *Procedia Technology, 11*, 1188-1194.

Shahrani, I. (2018). *Knowledge sharing intention at the workplace: A case study in a selected bank in Malaysia* (Doctoral dissertation, International Islamic University, Malaysia). Retrieved from http://studentrepo.iium.edu.my/handle/123456789/3291.

Shamseer, L., Moher, D., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., & Stewart, L. A. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: Elaboration and explanation. *BMJ, 349*, 1-25. Retrieved from https://doi.org/10.1136/bmj.g7647.

Shanhong, T. (2000). Knowledge management in libraries in the 21st century. *Proceedings of 66th IFLA Council and General Conference.* Retrieved from https://archive.ifla.org/IV/ifla66/pape rs/057-110e.htm.

Shathi, S. J. (2019). Knowledge management practices in university libraries of Bangladesh. *NU Journal of Humanities, Social Sciences & Business Studies, 5/6*(2/1).

Shropshire, S., Semenza, J. L., & Koury, R. (2020). Knowledge management in practice in academic libraries. *IFLA Journal*, *46*(1), 25-33.

Siddike, M. A. K., & Islam, M. S. (2011). Exploring the competencies of information professionals for knowledge management in the information institutions of Bangladesh, *The International Information & Library Review, 43*(3), 130-136.

Siddike, M. A. K., & Munshi, M. N. (2012). Perceptions of information professionals about knowledge management in the information institutions of Bangladesh: An exploratory study. *Library Philosophy and Practice (e-journal)*, 783. Retrieved from http://digitalcommons.unl.edu/libphilprac/783/.

Simonis J. (2010). A guide to question types: An art and a science. Retrieved from http://survey.cvent.com/blog/tips-for-collecting-feedback/a-guide-to-question-types.

Sinclair, N. (2006). *Stealth knowledge management: winning knowledge management strategies for the public sector*. Amsterdam: Butterworth-Heinemann.

Singh, M. D., Shankar, R., Narain, R., & Kumar, A. (2006). Survey of knowledge management practices in Indian manufacturing industries. *Journal of Knowledge Management, 10*(6), 110-118.

Singh, R. (2012). Knowledge management practices in academic libraries**.** *National Conference Proceeding of Knowledge Organization in Academic Libraries (KOAL 2012).* New Delhi, 252-261. Retrieved from https://www.researchgate.net/publication/327743762.

Singleton, R. A., & Straits, B. C. (2009). *Approaches to social research* (5th ed.). New York: Oxford University Press.

Sirorei, E. C., & Fombad, M. C. (2019). Knowledge management processes at St Paul's university library in Kenya. *South African Journal of Information Management, 21*(1). Retrieved from https://doi. org/10.4102/sajim.v21i1.946.

Skaik, H. (2014). *Factors influencing acacdemics'knowledge-sharing behaviour in the United Arab Emirates public universities* (Doctoral dissertation, International Islamic University, Malaysia). Retrieved from http://studentrepo.iium.edu.my/jspui/handle/12 3456789/5393.

Skaik, H.A., & Othman, R. (2015). Investigating academics' knowledge sharing behaviour in United Arab Emirates. *Journal of Business and Economics, 6,* 161-178. 10.15341/jbe (2155-7950)/01.06.2015/016.

Skinner, R., Nelson, R.R. Chin, W.W., & Land, L. (2015). The delphi method research strategy in studies of information systems. *Communications of the Associations for Information Systems, 20.* Retrieved from https://www.researchgate.net/publication/282741929_The_Delphi_Method_Research_Strategy_in_Studies_of_Information_Systems.

Skyrme, D. (2001). *Capitalizing on knowledge: From e-business to k-business*. Oxford: Butterworth Heinemann.

Skyrme, D. (2011). *Critical success factor*. Retrieved from https://www.skyrme.com/kmroadmap/csfs.htm.

Snyder, C. A., & Wilson, L. T. (2002). Implementing knowledge management: Issues for managers. *Knowledge Mapping and Management*, 154-165. Retrieved from https://www.igi-global.com/gateway/chapter/25389.

Sofiyabadi, J., Valmohammadi, C., & Sabet ghadam, A. (2020). Impact of knowledge management practices on innovation performance. *IEEE Transactions on Engineering Management*. Retrieved from https://www.researchgate.net/publication/346951783.

Sommer, R., & Sommer, B. (2002). *A practical guide to behavioral research: Tools and techniques* (5th ed.). New York: Oxford University Press.

Sosik, J. J., Kahai, S. S., & Piovoso, M. J. (2009). Silver bullet or voodoo statistics? A primer for using the partial least squares data analytic technique in group and organization research. *Group & Organization Management, 34*(1), 5-36.

Sultana, N., & Mostofa, S. M. (2018). Knowledge management initiative: A case study of the national library of Bangladesh. *Journal of Information Science Theory and Practice, 6*(1), 6-17.

Sunassee N. N., & Sewry, D. A. (2002). A theoretical framework for knowledge management implementation. *Proceedings of SAICSIT 2002*, 235-245. Retrieved from http://idisk.free.fr/.iFolder/.NET/.MI7.ORG.UK/PDF/Paper-Knowledge-Theory.pdf .

Suni, M. B. (2016). *Knowledge management practices in academic library: A case study of Dar Al-Hikmah library (IIUM)* (Doctoral dissertation, International Islamic University Malaysia). Retrieved from http://studentrepo.iium.edu.my/jspui/handle/ 123456789/5450.

Supermane, S. (2019). Transformational leadership and innovation in teaching and learning activities: The mediation effect of knowledge management. *Information Discovery and Delivery, 47*(4), 242–250.

Suppiah, V.N., & Sandhu, M. S. (2011). Organisational culture's influence on tacit knowledge sharing behaviour. *Journal of Knowledge Management, 15*. 462-477. Doi: 10.1108/13673271111137439.

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics*. New York: Pearson Education, Inc.

Tan, C. N. L. (2016). Enhancing knowledge sharing and research collaboration among academics: The role of knowledge management. *Higher Education, 71*, 525-556.

Tasmin, R., Che Rusuli, M.S., Takala, J., & Norazlin, H. (2012). Relationship between knowledge management practices and library users' satisfaction at Malaysian university libraries: A preliminary finding. *Australian Journal of Basic and Applied Sciences, 6*(12), 30-40.

Thanuskodi, S. (2010). Knowledge management in academic libraries: An overview. *In: 6th International Conference on Webometrics, Informetrics and Scientometrics & Eleventh COLLNET Meeting, October 19 – 22, 2010, University of Mysore*.

Tiwana, A. (2000). *The knowledge management toolkit: Practical techniques for building a knowledge management system*. New Jersey: Prentice Hall.

Tiwari, K. (2013). An increasing influence of knowledge management for library and information science (LIS) professionals. *International Journal of Information Library and Society, 2*(2), 38–45.

Tong, J., & Shaikh, S. A. (2010). ICT driven knowledge management in developing countries a case study in a Chinese organisation. In A. Pont, G. Pujolle, & S. V. Raghavan (Eds.), *Communications: Wireless in Developing Countries and Networks of the Future*, 2010,60-71. Springer. https://doi.org/10.1007/978-3-642-15476-8_7.

Toszewska-Czerniej, W. (2015). Knowledge management model. *Polish Journal of Management Studies, 12*(2).

UGC (2019). *46th Annual Report 2019*. Retrieved from http://ugc.portal.gov.bd/sites/default/files/files/ugc.portal.gov.bd/annual_reports/0b944cc5_aa77_44b7_b1db_cc1a20e0eb37/2021-09-08-06-49 e0bf991565e624555d9915 b54 629624d.pdf.

UGC (2020). *University Grants Commission of Bangladesh, Dhaka.* Retrieved from http:// www.ugc.gov.bd.

Ugwu, C.I., & Ekere, J.N. (2018). The role of knowledge management in providing innovative services in university libraries in Nigeria: A structural equation modeling approach. *Global Knowledge, Memory and Communication.* Doi: 10.1108/GKMC-10-2017-0086.

Ujan, I. A., Orakzai, A. H., & Shah, A. (2021). Health information systems at hospitals at Peshawar & Abbottabad, Pakistan. *International Conference on Statistical Sciences, 35,* 137-143.

Valamis Group (2020). *Knowledge Management*. Retrieved from https://www.valamis.com/hub/knowledge-management#knowledge_management-framework.

Vangala, R. N. K., Hiremath, B. N., & Banerjee, A. (2014). A theoretical framework for knowledge management in Indian agricultural organizations. *ICTCS '14: Proceedings of the 2014 International Conference on Information and Communication Technology for Competitive Strategies*. Retrieved from https://doi.org/10.1145/2677855.2677861.

Verma, R., & Jayasimha, K.R. (2014). Service delivery innovation architecture: An empirical study of antecedents and outcomes. *IIMB Management Review, 26,* 105-121.

Vogt, W.P. (2007). Quantitative research methods for professionals in education and other fields. Illinois State University: Pearson.

Wanchaem, S., Wanitwattanakosol, J., & Harncharnchai, A. (2019). Designing a knowledge management framework based on ISO 39001: 2012 guidance. *Proceedings of the 16th International Conference on Intellectual Capital, Knowledge Management & Organisational Learning ICICKM*. Macquarie University Sydney, Australia, 2019.

Wang, S., Noe, R. A., & Wang, Z.-M. (2014). Motivating knowledge sharing in knowledge management systems: A qualified experiment. *Journal of Management*, *40*, 978-1009.

Weinstein, A. T., & McFarlane, D. A. (2017). How libraries can enhance customer service by implementing a customer value mindset. *International Journal of Nonprofit and Voluntary Sector Marketing*, *22*(1), e1571.

WENR (2019). *Education in Bangladesh*. Retrieved from https://wenr.wes.org/2019/08/education-in-Bangladesh.

Wetzels, M., Odekerken-Schröder, G., & Van Oppen, C. (2009). Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration. *MIS Quarterly*, 177-195.

Wiig, K. M. (1997). Knowledge management: An introduction and perspective. *The Journal of Knowledge Management*, *1*(1), 6-14.

Wiig, K.M. (1993). *Knowledge management foundations*. Arlington, TX, USA: Schema Press.

Wong, K., & Aspinwall, E. (2005). An empirical study of the important factors for knowledge-management adoption in the SME sector. *Journal of Knowledge Management*, *9*, 64-82. 10.1108/13673270510602773.

Yin, R. K. (2014). *Case study research. Design and methods* (5th ed.). Los Angeles: Sage.

Young, R. (2008). *Knowledge associates international KM definition*. Retrieved from http://www.knowledge-management-online.com/knowledge-associates-international-km-definition.html.

Zack, M. H. (1999). Managing codified knowledge. *Sloan Management Review, 40*(4), 45-59.

Zargar, E., & Rezaee, M. (2013). The study of knowledge management effect on performance rate of employees. *Journal of Natural and Social Science, 2*(3).

Zhang, X., & Jiang, J. Y. (2015). With whom shall I share my knowledge? A recipient perspective of knowledge sharing. *Journal of Knowledge Management, 19*(2), 277-295.

Zhou, L., Han, Y., & Li, P. (2018). Home away from home: Extending library services for international students in China's universities. *Journal of Academic Librarianship*. Doi: 10.1016/j.acalib.2017.12.002.

Zimmer, J., & Madeja, M. (2019). Operational knowledge management in a manufacturing enterprise in the High-Tech sector: Case study. *Journal of Organizational Knowledge Management.* Retrieved from https://ibimapublishing.com/articles/JOKM/2019/458202/.

APPENDIX I

APPENDIX A: SURVEY QUESTIONNAIRE WITH COVER LETTER

"A KNOWLEDGE MANAGEMENT (KM) MODEL FOR CREATING SERVICED-BASED VALUE FOR PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH"

Dear Participants

I am conducting a survey as part of my Ph.D. research at the International Islamic University Malaysia (IIUM). My Ph.D. research investigates the aspects of library service and facilities that you may have used during your visit to the library. This research also examines your awareness of Knowledge Management (KM) and its implementation in the library. The findings from this survey will be reported in my Ph.D. thesis at IIUM. Thank you very much for taking part in the survey.

Consent for Survey Response

It will take about 10-15 minutes to complete this survey. The survey does not gather any information that identifies you directly, and your answers will remain exclusively anonymous. Please do not hesitate to contact me at mostofa@du.ac.bd or 01710225762 if you have any questions or concerns.

Researcher

Sk Mamun Mostofa

International Islamic University, Malaysia

Mobile no: 01710225762

Email: mostofa@du.ac.bd

Supervisor

Professor, Dr. Roslina Othman

International Islamic University, Malaysia

Email: profroslina@gmail.com

OBJECTIVES OF THIS RESEARCH

This research aims to design a knowledge management (KM) model for creating service-based value for public university libraries in Bangladesh. The more specific objectives are to:

a. Explore the existing models of KM implemented by the university libraries.
b. Examine current formal KM practices in public university libraries in Bangladesh.
c. Examine the critical success factors for the implementation at public university libraries in Bangladesh.
d. Identify the challenges related to KM practices at the public university libraries in Bangladesh.

Notes: The questions do not have a 'right' or 'wrong' answer. Please answer truthfully based on your personal knowledge or experience. Please attempt to answer every question even if you do not believe it to be relevant, as they have been asked with specific research objectives and questions in mind.

DEFINITION OF KEY TERMS

Knowledge: In this research, the term knowledge (Explicit and Tacit) is social acts and understanding or forms of information that can be communicated, transferred, or shared (Bolisani & Bratianu, 2018).

Explicit Knowledge: Explicit knowledge comes in the form of paperwork and documents, project reports, contracts, diagrams, product specifications, minutes of a meeting, a chain of e-mail correspondence, and program manuals and is simpler to document (Fernandez & Sabherwal, 2004; Sh. Al-Qdah & Salim, 2013).

Tacit Knowledge: Tacit knowledge is intuitive and hard to contact and learn contextual, intangible information. Tacit knowledge is individual knowledge and is tough to formalize, techniques, obligations, ideals, and feelings and also associates to the knowledge that exists in the brains of separate persons and is not controlled and shared through understanding (Magnier-Watanabe et al., 2011).

Knowledge Sharing (KS): KS is the process of conveying and disseminating knowledge or information to groups or units within an organization or between individuals (Oyemomi et al., 2016; Paulin & Suneson, 2012).

Knowledge Management (KM): KM plays a vital role in the organization's success through its capacity to support the acquisition, storage, transformation, and knowledge dissemination (Alshehri & Cumming, 2020).

KM practices: In this research KM practices refers to the process of KM that involves a variety of practices that organizations use to define, develop, codify, pass or exchange, store and retrieve, and apply or use re-use and responsiveness to the new knowledge (Mavodza & Ngulube, 2012).

Service-based Value: It means that the library meets the requirements and demands of the users and provides some unexpected services and performance for their planned services at the same time (Jerome et al., 2017).

Questionnaire for the Active Library Users

SECTION A: GENERAL INFORMATION OF THE RESPONDENTS

1. Name: ……
2. Gender: □ Male □ Female
3. a. Name of your University:

   b. Name of your Department:

4. Current study level:

   □ Undergraduate (□ 1st-year □ 2nd-year □ 3rd-year □ 4th- year)

   □ Masters

   Others (please specify) ……

5. Age:
6. Email/ phone no **(**If I need any assistance for further clarifications**):** ----------

SECTION B: GENERAL QUESTIONS ON LIBRARY USE AND SERVICE

7. Why do you visit the library?

   □ Reading books □ Searching periodicals □ Using IT facilities □ Research purpose

   □ Recreation

   Others, please specify…….

8. How frequently do you visit your library?

   □ Everyday □ Twice a week □ Every week

   Others, please specify…….

9. How many years have you been using the library?
   □ 1-5 Years □ 6 - 10 Years □ 11 - 15 Years
   Others, please specify…….

10. Have you used the web-based services of the library? (*If no, please skip ques. no. 11*- 12)

    □ Yes □ No

11. Which web-based library services do you use most? [Tick one?]

    □ Web OPAC

    □ Bulletin Board Services

    □ Ask- a- Librarian Services

    □ Digital Reference Services

    □ Online Document Delivery

    □ Interlibrary Loan Services

    □ Online full-text databases

    □ Reference databases

    Others, please specify……

12. How often do you use the above web-based services?

    □ Never □ Rarely □ Sometime □ Usually □ Always

SECTION C: USERS PERCEPTIONS OF LIBRARY SERVICES AND KNOWLEDGE

13. How would you rate the quality of the following services rendered by the library? Kindly tick (√) to indicate your level of agreement/disagreement where 1= Strongly disagree, 2=Disagree, 3= Neither agree nor disagree, 4=Agree, and 5=Strongly agree.

Statements	1	2	3	4	5
The membership process to this library is easy.					
The service of the library is very good.					
Staff is actively involved in the better service of the library.					

14. As a user, what is your perception about the facility and performance of the library?

Statements	1	2	3	4	5
There is a long waiting time in front of the reference desk.					
The operating times of the library are convenient to the users.					
The staff knows about the latest technological developments.					
Some of the staff lacks experience.					
Staffs are polite to users.					
Library staff encourages users to effectively use library websites for research purposes.					

15. Do you know what explicit knowledge is?

□ Yes □ No

16. Do you know what tacit knowledge is?

□ Yes □ No

17. How does your library disseminate the captured knowledge to the user?

□ Through publication □ Newsletter □ Traditional library system

□ By publishing on the website

18. Do you think the use of knowledge would bring great benefits to the library?

□Yes □ No

19. Do you share knowledge with your friend or classmates?

□Yes □ No □ Sometimes

If yes, then how do you share?

□ Conversation □ Meetings □ Chat □ Wikis □ Storytelling

Others, please specify…….

SECTION D: QUESTIONS ON KNOWLEDGE MANAGEMENT (KM)

20. How much are you familiar with KM and its relationship with others? (Kindly tick (√) to indicate very high to very low)

Statements	Very Low	Low	Neither high nor Low	High	Very high
Your familiarity with KM					
Relationship between KM familiarity issue and service value					
Relationship between KM familiarity issue and critical success factors					
Library conscious of critical success factors that will influence the implementation of KM					

21. How did you become familiar with KM ideas? (Kindly tick (√) to indicate your level of agreement/disagreement. Where 1= Strongly disagree, 2=Disagree, 3= Neither agree nor disagree, 4=Agree and 5=Strongly agree)

Statements	1	2	3	4	5
Educational programs by different institutions (seminars, conferences, training, etc.)					
Expert bodies' activities					
Independent study, via academic/ research literature					
Courses provided by my own department					

Other (Please specify) …….……

22. What is your perception of KM's relevance to librarianship?

Statements	1	2	3	4	5
KM is a new perception for the LIS field.					
It is an alternate name for information management.					

KM is a modern librarianship discipline.					
It is a contradictory idea dissimilar from librarianship					
KM is a management craze that gains attention for a short span of time.					
It is an allied field of study which tends to extend the librarianship scope.					

23. Do you think KM can meet the requirements of a library in order to achieve its goals?

□ Yes □ No □ Not sure

24. How can KM meet the requirements of a library in order to achieve its goals?

□ Creating new knowledge.

□ Accessing and retrieving knowledge from outer sources.

□ Expand the access of knowledge for their users.

□ Representing knowledge in databases, software, and others.

□ Transmitting present knowledge round the libraries.

□ Using reachable knowledge in policymaking.

25. Are you aware of any KM practice in your library?

□Yes □ No □ Not sure

26. Do you find KM as interesting in library practice?

□ Yes □ No

27. What advantages does KM have for library services? (Kindly tick (√) to indicate your level of agreement/disagreement. Where 1= Strongly disagree, 2=Disagree, 3= Neither agree nor disagree, 4=Agree and 5=Strongly Agree (From question no. 27-31)

Statements	1	2	3	4	5
KM practice will add value to the output of the library and the service area.					
The chances of duplication of work can be minimized by KM.					

University libraries can be made more applicable to their affiliated universities by KM.					
KM will help a university library for learning factors for implementing KM with familiarity with KM.					
KM can boost the overall performance and future prospects of the library.					
KM helps to get innovative organization ideas.					

28. What relevance does KM have on library practice?

Statements	1	2	3	4	5
An important ingredient of KM is the expertise of LIS specialists in librarianship.					
Activities in a library's readers' service section, such as distribution of books, reference services, etc., are synonymous with sharing KM awareness.					
KM helps in enhanced productivity or service quality.					

29. How will you rate the potential contribution to the provision of education for KM by the following departments?

Statements	1	2	3	4	5
Department of Information Science and Library Management.					
Department of Organization Strategy and Leadership.					
Department of Computer Science and Engineering.					
Department of Management Information Systems.					

Other departments, please specify……

SECTION E: CRITICAL SUCCESS FACTORS OF KM

30. As an active library user, please mention what are the critical success factors of KM implementation in the library?

Statements	1	2	3	4	5
Leadership.					

Continuous training programs.					
Utilizing technology accurately.					
Organizational ICT structure.					
Organizational culture.					
Knowledge storage and knowledge capturing.					
Respecting users' demand.					
Establishing a solid infrastructure for future development.					

31. As an active library user, please indicate what challenges are faced by the library for implementing KM.

Statements	1	2	3	4	5
Unwillingness to explore the difficulties associated with KM.					
Problems with organizational culture.					
Inadequate support from management.					
Feeling shy about the nature of the employee to share knowledge.					
Don't find KM the process as interesting.					
Improper technology deployment.					
Losing information from employees' resignations and retirement.					
Lack of awareness.					

Others, please specify……

Please add any additional comments if you wish.

……

Thank you for your response and cooperation. Signature:

APPENDIX II

SEMI-STRUCTURED INTERVIEW QUESTIONNAIRE WITH COVER LETTER

"A KNOWLEDGE MANAGEMENT (KM) MODEL FOR CREATING SERVICED-BASED VALUE FOR PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH"

Dear Sir/Madam,

I am conducting a survey as part of my Ph.D. research at the International Islamic University Malaysia (IIUM), Malaysia. My Ph.D. research investigates many aspects of library service and facilities provided by your library. This research also discovers your opinion about Knowledge Management (KM) and its implementation in your library. The research will be submitted as my Ph.D. thesis at IIUM. Thank you for your consent to complete the following semi-structured interview questions.

Consent for Survey Response

It will take about 35-40 minutes to complete this survey. The semi-structured interview questionnaire does not gather any information that identifies you directly, and your answers will always remain exclusively anonymous. Please do not hesitate to contact me at mostofa@du.ac.bd or 01710225762 if you have any questions or comments.

Researcher	Supervisor
Sk. Mamun Mostofa	Professor, Dr. Roslina Othman
IIUM, Malaysia	IIUM, Malaysia
Mobile no: 01710225762	Email: profroslina@gmail.com
Email: mostofa@du.ac.bd	

OBJECTIVES OF THIS RESEARCH

This research aims to design a knowledge management (KM) model for creating service-based value for public university libraries in Bangladesh. The more specific objectives are to:

a. Explore the existing models of KM implemented by the university libraries.

b. Examine current formal KM practices at public university libraries in Bangladesh.

c. Examine the critical success factors for the KM implementation at public university libraries in Bangladesh.

d. Identify the challenges related to KM practices at the public university libraries in Bangladesh.

Notes: Dear Sir/Madam, please attempt to answer every question even if you do not believe it to be relevant, as they have been asked with specific research objectives and questions in mind.

Interview Schedule for the Librarian/Deputy Librarian/Assistant Librarian of the Library

SECTION A: DEMOGRAPHIC INFORMATION OF THE INTERVIEWEE

a. Name:
b. Age:
c. Gender:
d. Years of service in the present position:
e. Total service experience:
f. Highest academic level achieved:

SECTION B: GENERAL INFORMATION ABOUT YOUR INSTITUTION

g. Name of the library:
h. Year of the establishment of the library:
i. Address of the library:
j. Name of the parent organization:
k. The total number of library employees (including admin staff):
l. The total number of active library users in the library:
m. In the last two years, have there been any changes in the staff numbers in your library?

n. Would you please state the reasons for the changing of the staff?

o. Would you please indicate the operation of your library?

□ Manual □ Automated □ Partial automated

p. Would you please specify the internet facilities are available for staff to look for any records in the library?

□ Yes □ No

q. Would you please mention that your university library is fully Wi-Fi networked?

□ Yes □ No □ Partial

SECTION C: OVERALL KNOWLEDGE MANAGEMENT (KM) ISSUES AND STATUS (Please add additional paper if required))

1. Would you please specify your understanding of Knowledge Management (KM)?

2. Does your university have a separate KM Department/Discipline?

□ Yes □ No

3. In your opinion, is there a need to have a separate KM Department/discipline in your university?

□ Yes □ No

If not, why should there not be a separate KM Department/discipline?

4. Would you please mention whether your library is practicing KM?

□ Yes □ No

If yes, how does your library practice KM? If not, would you please specify why you do not practice KM in your library?

5. Do you plan to implement KM at your library in the near future?

□ Yes □ No

If yes, how would you plan to implement it?

6. Please mention how KM can play a role in achieving the best output of your library?

7. Please specify do you have a different section/division that deals with KM in the library?

□ Yes □ No

8. If yes, what is the total number of human resources assigned to KM in your library? If not, please ignore

9. Do you have any budget allocated for KM initiatives at the library?

□ Yes □ No

SECTION D: QUESTIONS ON INFORMATION, KNOWLEDGE AND KNOWLEDGE SHARING (KS) (Please add additional paper if required)

10. Would you please indicate how knowledge is handled in the library/section in day-to-day duties?

11. Does the employees have the liberty to visit and access information to the different sections of the library?

12. Would you please mention how is the information retrieved when needed in the library?

13. Please specify what type of knowledge you gather most?

14. Please mention what are the apparatuses your library uses to gather explicit knowledge.

15. Please state how you record tacit knowledge?

16. Please mention which knowledge is most difficult to preserve?

17. Has knowledge sharing (KS) provided any benefits for library users and solved a problem?

18. How can teamwork and information sharing be improved among professionals?

SECTION E: KM POLICY AND IMPLEMENTATION IN THE LIBRARY (Please add additional paper if required)

19. How is KM applied to university libraries?

20. If you want to implement KM in your organization, what will be your strategy?

21. Is there a written KM policy in your organization?

□ Yes □ No

If yes, please mention, what is your opinion about the current policies and procedures of KM in your library? If not, please mention the reason behind it.

22. Please mention which is the potential area of KM applications in university libraries.

SECTION F: KM ADOPTION IN THE LIBRARY (Please add additional paper if required)

23. Is your library ready to adopt appropriate KM practices to enhance library performance?

24. Would you please mention that discussions/meetings are conducted around new concepts and ideas in your library?

25. Do you think that ICT should be the starting point for a KM plan?

26. Do you consider that in order to achieve KM strategy success, organizations should invest heavily in ICT?

27. Would you please state whether the present ICT infrastructures are adequate to provide web-based KM library services?

SECTION G: LIBRARY CUSTOMER SERVICE / USER CARE (Please add additional paper if required)

28. Is your library always continuously looking for new methods to satisfy the needs of its users?
29. Is your library often fast to come up with new ideas/services for users of the library?

30. Does your library assess the satisfaction of users/readers?

□ Yes □ No

If yes, how is it done? If not, why not? Please explain.

31. Do you have an outstanding method of service delivery (i.e., automatic circulation, interlibrary borrowing, reference online, etc.)?

32. Do you think that your present manpower is adequate for providing KM services in your library?

33. Do you think that KM practices in the library *(Knowledge Acquisition, Sharing,* Utilization and Dissemination) help to improve library performance?

34. In your opinion, should a library spend on KM initiatives? Please explain in brief.

SECTION H: CRITICAL SUCCESS FACTORS AND CHALLENGES OF KM (Please add additional paper if required)

35. What are the critical success factors for implementing KM?

36. What cultural challenges exist for KM in your library?

37. What are the major challenges for implementing KM in your library?

Please add any additional comments if you wish.

Thank you very much for giving your valuable time, efforts and co-operation.

Signature:

APPENDIX III

RECOMMENDATION LETTER FROM SUPERVISOR FOR CONDUCTING SURVEY

الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
Garden of Knowledge and Virtue

Premier Digital Tech University ™

KULLIYYAH OF INFORMATION AND COMMUNICATION TECHNOLOGY

Date: 2nd August 2021

The Librarian
University of Dhaka
Dhaka-1000, Bangladesh

Dear Sir/Madam,

PERMISSION TO CONDUCT AN INTERVIEW
MR. SK MAMUN MOSTOFA - G1925415

Hope this letter reach you in the best of health.

Kindly be informed that Mr. SK Mamun Mostofa is a PhD of Library and Information Science (PLIB) student at the Department of Library and Information Science, International Islamic University Malaysia (IIUM).

He is currently conducting a survey for his thesis, titled A Knowledge Management (KM) model for creating service-based value for public university libraries in Bangladesh.

This research explores the Knowledge Management System frameworks, critical success factors, challenges, and service-based values. Based on the above-mentioned purpose, we would like to seek permission to collect data and information from your well-esteemed Library. Your responses are kept as anonymous.

For further information, kindly contact the Department or the Supervisor (Prof. Dr. Roslina Othman) at this telephone number: 03-6196-5671 or via email: roslina@iium.edu.my. The student can be contacted via email: sk_mostofa@yahoo.com.

We look forward to having positive response from you. Thank you for your kind cooperation.

Yours sincerely,

Roslina Othman

PROF DR. ROSLINA OTHMAN
Professor cum Supervisor
Department of Library and Information Science
International Islamic University Malaysia

Garden of Knowledge and Virtue

Office Address: Kulliyyah of Information and Communication Technology, International Islamic University Malaysia, Jalan Gombak Selangor
Mailing Address: Kulliyyah of Information and Communication Technology, P.O.Box 10, 50728, Kuala Lumpur, Malaysia.
Tel: +603 6196 5601 **Fax:** +603 6196 5179 **Email:** ask_kict@kict.iium.edu.my **Website:** http://www.iium.edu.my/kict

الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
Garden of Knowledge and Virtue

Premier Digital Tech University™

KULLIYYAH OF INFORMATION AND COMMUNICATION TECHNOLOGY

Date: 2nd August 2021

The Library Administrator
Central Library, University of Rajshahi,
Rajshahi-6205, Bangladesh

Dear Sir/Madam,

PERMISSION TO CONDUCT AN INTERVIEW
MR. SK MAMUN MOSTOFA - G1925415

Hope this letter reach you in the best of health.

Kindly be informed that Mr. SK Mamun Mostofa is a PhD of Library and Information Science (PLIB) student at the Department of Library and Information Science, International Islamic University Malaysia (IIUM).

He is currently conducting a survey for his thesis, titled A Knowledge Management (KM) model for creating service-based value for public university libraries in Bangladesh.

This research explores the Knowledge Management System frameworks, critical success factors, challenges, and service-based values. Based on the above-mentioned purpose, we would like to seek permission to collect data and information from your well-esteemed Library. Your responses are kept as anonymous.

For further information, kindly contact the Department or the Supervisor (Prof. Dr. Roslina Othman) at this telephone number: 03-6196-5671 or via email: roslina@iium.edu.my. The student can be contacted via email: sk_mostofa@yahoo.com.

We look forward to having positive response from you. Thank you for your kind cooperation.

Yours sincerely,

Roslina Othman

PROF DR. ROSLINA OTHMAN
Professor cum Supervisor
Department of Library and Information Science
International Islamic University Malaysia

Office Address: Kulliyyah of Information and Communication Technology, International Islamic University Malaysia, Jalan Gombak Selangor
Mailing Address: Kulliyyah of Information and Communication Technology, P.O.Box 10, 50728, Kuala Lumpur, Malaysia.
Tel: +603 6196 5601 **Fax:** +603 6196 5179 **Email:** ask_kict@kict.iium.edu.my **Website:** http://www.iium.edu.my/kict

الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
Garden of Knowledge and Virtue

Premier Digital Tech University™

KULLIYYAH OF INFORMATION AND COMMUNICATION TECHNOLOGY

Date: 2nd August 2021

The University Librarian
Bangladesh University of Engineering and Technology
Dhaka, Bangladesh.

Dear Sir/Madam,

PERMISSION TO CONDUCT AN INTERVIEW
MR. SK MAMUN MOSTOFA - G1925415

Hope this letter reach you in the best of health.

Kindly be informed that Mr. SK Mamun Mostofa is a PhD of Library and Information Science (PLIB) student at the Department of Library and Information Science, International Islamic University Malaysia (IIUM).

He is currently conducting a survey for his thesis, titled A Knowledge Management (KM) Model for creating service-based value for public university libraries in Bangladesh.

This research explores the Knowledge Management System frameworks, critical success factors, challenges, and service-based values. Based on the above-mentioned purpose, we would like to seek permission to collect data and information from your well-esteemed Library. Your responses are kept as anonymous.

For further information, kindly contact the Department or the Supervisor (Prof. Dr. Roslina Othman) at this telephone number: 03-6196-5671 or via email: roslina@iium.edu.my. The student can be contacted via email: sk_mostofa@yahoo.com.

We look forward to having positive response from you. Thank you for your kind cooperation.

Yours sincerely,

Roslina Othman

PROF DR. ROSLINA OTHMAN
Professor cum Supervisor
Department of Library and Information Science
International Islamic University Malaysia

Office Address: Kulliyyah of Information and Communication Technology, International Islamic University Malaysia, Jalan Gombak Selangor
Mailing Address: Kulliyyah of Information and Communication Technology, P.O.Box 10, 50728, Kuala Lumpur, Malaysia.
Tel: +603 6196 5601 **Fax:** +603 6196 5179 **Email:** ask_kict@kict.iium.edu.my **Website:** http://www.iium.edu.my/kict

الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
Garden of Knowledge and Virtue

Premier Digital Tech University™

KULLIYYAH OF INFORMATION AND COMMUNICATION TECHNOLOGY

Date: 2nd August 2021

The Librarian
Jashore University of Science and Technology
Jashore Sadar, 7408, Bangladesh

Dear Sir/Madam,

PERMISSION TO CONDUCT AN INTERVIEW
MR. SK MAMUN MOSTOFA - G1925415

Hope this letter reach you in the best of health.

Kindly be informed that Mr. SK Mamun Mostofa is a PhD of Library and Information Science (PLIB) student at the Department of Library and Information Science, International Islamic University Malaysia (IIUM).

He is currently conducting a survey for his thesis, titled A knowledge Management (KM) Model for creating service-based value for public university libraries in Bangladesh.

This research explores the Knowledge Management System frameworks, critical success factors, challenges, and service-based values. Based on the above-mentioned purpose, we would like to seek permission to collect data and information from your well-esteemed Library. Your responses are kept as anonymous.

For further information, kindly contact the Department or the Supervisor (Prof. Dr. Roslina Othman) at this telephone number: 03-6196-5671 or via email: roslina@iium.edu.my. The student can be contacted via email: sk_mostofa@yahoo.com.

We look forward to having positive response from you. Thank you for your kind cooperation.

Yours sincerely,

Roslina Othman

PROF DR. ROSLINA OTHMAN
Professor cum Supervisor
Department of Library and Information Science
International Islamic University Malaysia

Office Address: Kulliyyah of Information and Communication Technology, International Islamic University Malaysia, Jalan Gombak Selangor
Mailing Address: Kulliyyah of Information and Communication Technology, P.O.Box 10, 50728, Kuala Lumpur, Malaysia.
Tel: +603 6196 5601 **Fax:** +603 6196 5179 **Email:** ask_kict@kict.iium.edu.my **Website:** http://www.iium.edu.my/kict

الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
Garden of Knowledge and Virtue

Premier Digital Tech University™

KULLIYYAH OF INFORMATION AND COMMUNICATION TECHNOLOGY

Date: 2nd August 2021

The Registrar
Sylhet Agricultural University
Alurtol Road, Sylhet, Bangladesh

Dear Sir/Madam,

PERMISSION TO CONDUCT AN INTERVIEW
MR. SK MAMUN MOSTOFA - G1925415

Hope this letter reach you in the best of health.

Kindly be informed that Mr. SK Mamun Mostofa is a PhD of Library and Information Science (PLIB) student at the Department of Library and Information Science, International Islamic University Malaysia (IIUM).

He is currently conducting a survey for his thesis, titled A Knowledge management (KM) model for creating service-based value for public university libraries in Bangladesh.

This research explores the Knowledge Management System frameworks, critical success factors, challenges, and service-based values. Based on the above-mentioned purpose, we would like to seek permission to collect data and information from your well-esteemed Library. Your responses are kept as anonymous.

For further information, kindly contact the Department or the Supervisor (Prof. Dr. Roslina Othman) at this telephone number: 03-6196-5671 or via email: roslina@iium.edu.my. The student can be contacted via email: sk_mostofa@yahoo.com.

We look forward to having positive response from you. Thank you for your kind cooperation.

Yours sincerely,

Roslina Othman

PROF DR. ROSLINA OTHMAN
Professor cum Supervisor
Department of Library and Information Science
International Islamic University Malaysia

Garden of Knowledge and Virtue

Office Address: Kulliyyah of Information and Communication Technology, International Islamic University Malaysia, Jalan Gombak Selangor
Mailing Address: Kulliyyah of Information and Communication Technology, P.O.Box 10, 50728, Kuala Lumpur, Malaysia.
Tel: +603 6196 5601 **Fax:** +603 6196 5179 **Email:** ask_kict@kict.iium.edu.my **Website:** http://www.iium.edu.my/kict

APPENDIX IV

APPLICATION TO THE UNIVERSITIES FOR CONDUCTING SURVEYS AND APPROVALS

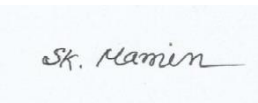
18/08/2021
To the Librarian
University of Dhaka
Subject: Permission to Conduct a Research Study at the University of Dhaka.

Dear Sir,

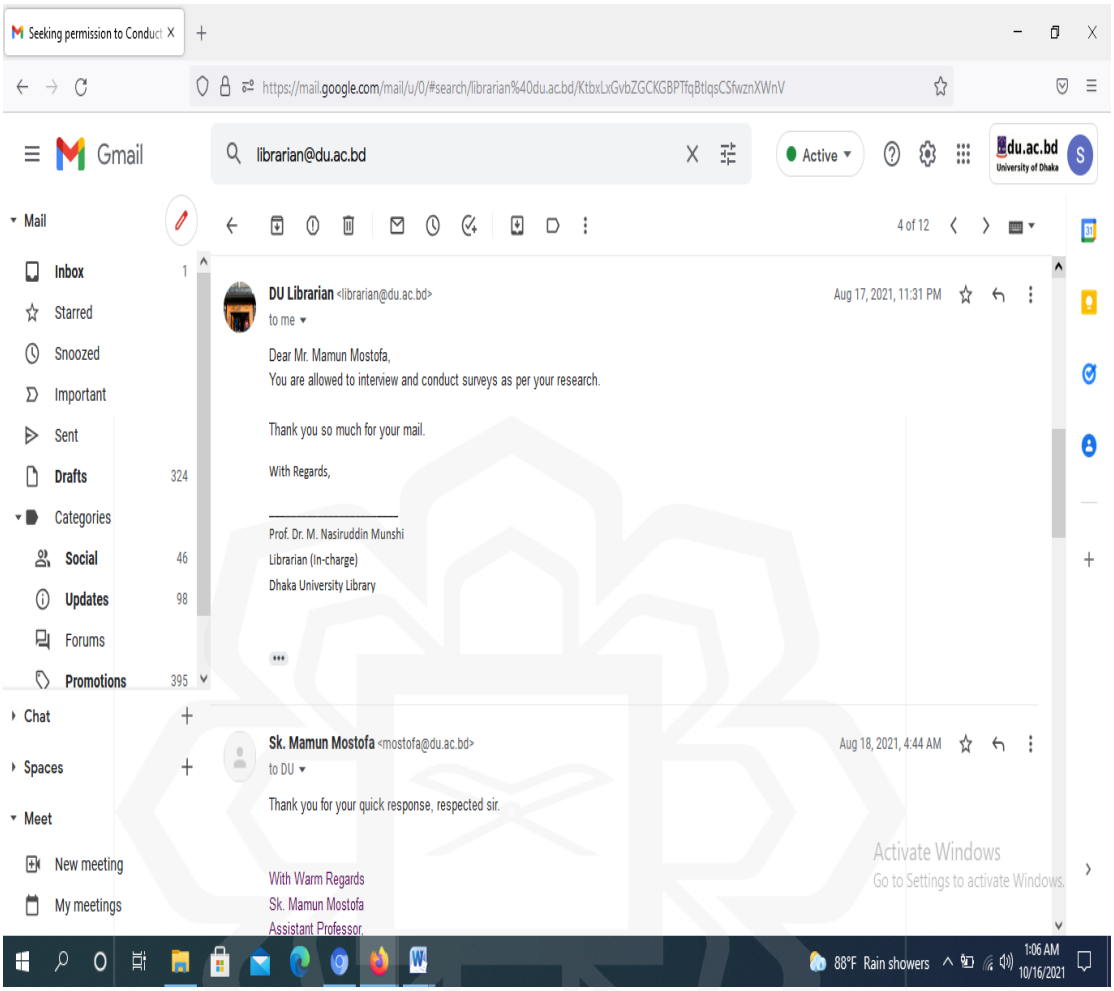
This letter serves to inform you that I am Sk Mamun Mostofa, Ph.D. Scholar of International Islamic University Malaysia (IIUM), Malaysia and Assistant Prof. of Department of Information Science and Library Management University of Dhaka Bangladesh. I would like to conduct research entitled "A KNOWLEDGE MANAGEMENT (KM) MODEL FOR CREATING SERVICE-BASED VALUE FOR PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH." This is the part of my fulfillment towards the award of my Ph.D. in Library and Information Science, under the keen supervision of Prof. Dr. Roslina Othman, former Head, Department of Library and Information Science, International Islamic University Malaysia (IIUM), Gombak Kuala Lumpur, Malaysia. In this regard, I need to take an interview (based on a semi-structured interview questionnaire) of the Librarian/representative of the library of your university library, and I would also collect data from active users of the library (based on survey questionnaires) of various Departments/Disciplines. The information which would be collected for this research would be used only for academic purposes. The respondent's confidentiality and secrecy would be strictly maintained through the research procedure.

I, therefore, pray and hope that you would be kind enough to permit me to data collections from the said person above at your university library.

Sincerely Yours



Sk Mamun Mostofa
Ph.D. Scholar of IIUM, Malaysia
And
Assistant Professor, Department of Information Science and
Library Management University of Dhaka, Bangladesh,
Email: mostofa@du.ac.bd Cell: 01710225762

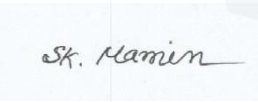

Seeking permission to Conduct
https://mail.google.com/mail/u/0/#search/librarian%40du.ac.bd/KtbxLxGvbZGCKGBPTfqBtlqsCSfwznXWnV
Gmail
librarian@du.ac.bd
Active
du.ac.bd
University of Dhaka
Mail
Inbox 1
Starred
Snoozed
Important
Sent
Drafts 324
Categories
Social 46
Updates 98
Forums
Promotions 395
Chat
Spaces
Meet
New meeting
My meetings
4 of 12
DU Librarian <librarian@du.ac.bd>
to me
Aug 17, 2021, 11:31 PM
Dear Mr. Mamun Mostofa,
You are allowed to interview and conduct surveys as per your research.
Thank you so much for your mail.
With Regards,
Prof. Dr. M. Nasiruddin Munshi
Librarian (In-charge)
Dhaka University Library
Sk. Mamun Mostofa <mostofa@du.ac.bd>
to DU
Aug 18, 2021, 4:44 AM
Thank you for your quick response, respected sir.
With Warm Regards
Sk. Mamun Mostofa
Assistant Professor
Activate Windows
Go to Settings to activate Windows.
88°F Rain showers
1:06 AM
10/16/2021

18/08/2021
To the Library Administrator
Central Library, University of Rajshahi
Subject: Permission to Conduct Research Study at the University of Rajshahi.

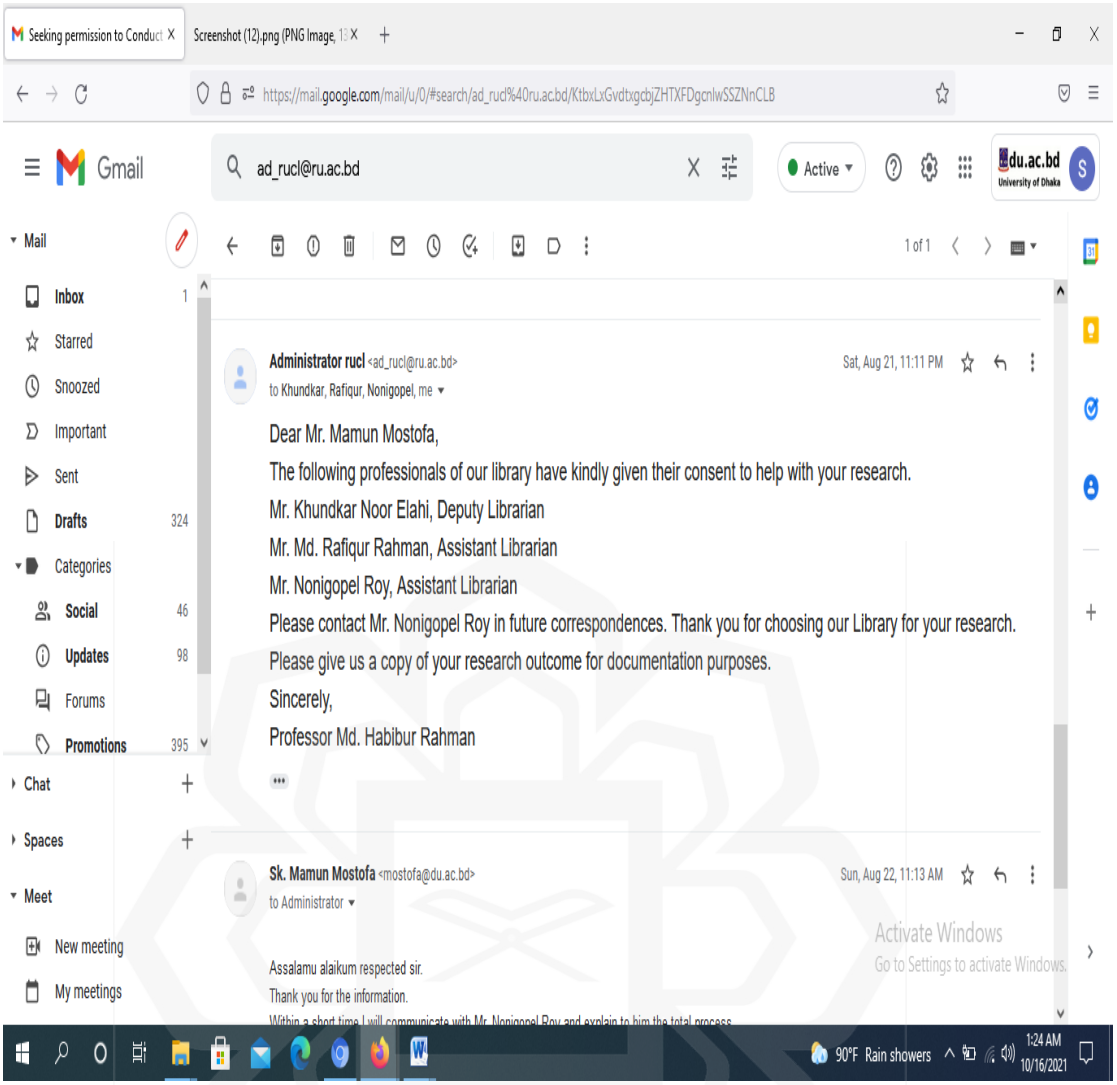
Dear Sir,
This letter serves to inform you that I am Sk Mamun Mostofa, Ph.D. Scholar of International Islamic University Malaysia (IIUM), Malaysia and Assistant Prof. of Department of Information Science and the Library Management University of Dhaka Bangladesh. I would like to conduct research entitled "A KNOWLEDGE MANAGEMENT (KM) MODEL FOR CREATING SERVICE-BASED VALUE FOR PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH." This is the part of my fulfilment towards the award of my Ph.D. in Library and Information Science, under the keen supervision of Prof. Dr. Roslina Othman, former Head, Department of Library and Information Science, International Islamic University Malaysia (IIUM), Gombak Kuala Lumpur, Malaysia. In this regard, I need to take an interview (based on a semi-structured interview questionnaire) with the Librarian/representative of your university library. I would also collect data from active library users (based on survey questionnaires) of various Departments/Disciplines. The information which would be collected for this research would be used only for academic purposes. The respondent's confidentiality and secrecy would be strictly maintained through the research procedure.

I, therefore, pray and hope that you would be kind enough to permit me to data collections from the said person above at your university library.

Sincerely Yours



Sk Mamun Mostofa
Ph.D. Scholar of IIUM, Malaysia
And
Assistant Professor, Department of Information Science and
Library Management University of Dhaka, Bangladesh,
Email: mostofa@du.ac.bd Cell: 01710225762

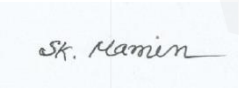

Seeking permission to Conduct
Screenshot (12).png (PNG Image, 1
https://mail.google.com/mail/u/0/#search/ad_rucl%40ru.ac.bd/KtbxLxGvdtxgcbjZHTXFDgcnlwSSZNnCLB
Gmail
ad_rucl@ru.ac.bd
Active
du.ac.bd
University of Dhaka
Mail
Inbox 1
Starred
Snoozed
Important
Sent
Drafts 324
Categories
Social 46
Updates 98
Forums
Promotions 395
Chat
Spaces
Meet
New meeting
My meetings
1 of 1
Administrator rucl <ad_rucl@ru.ac.bd>
to Khundkar, Rafiqur, Nonigopel, me
Sat, Aug 21, 11:11 PM
Dear Mr. Mamun Mostofa,
The following professionals of our library have kindly given their consent to help with your research.
Mr. Khundkar Noor Elahi, Deputy Librarian
Mr. Md. Rafiqur Rahman, Assistant Librarian
Mr. Nonigopel Roy, Assistant Librarian
Please contact Mr. Nonigopel Roy in future correspondences. Thank you for choosing our Library for your research.
Please give us a copy of your research outcome for documentation purposes.
Sincerely,
Professor Md. Habibur Rahman
Sk. Mamun Mostofa <mostofa@du.ac.bd>
to Administrator
Sun, Aug 22, 11:13 AM
Assalamu alaikum respected sir.
Thank you for the information.
Activate Windows
Go to Settings to activate Windows.
90°F Rain showers
1:24 AM
10/16/2021

17/08/2021
To the Librarian
Jashore University of Science and Technology
Subject: Permission to conduct a research study at Jashore University of Science and Technology.

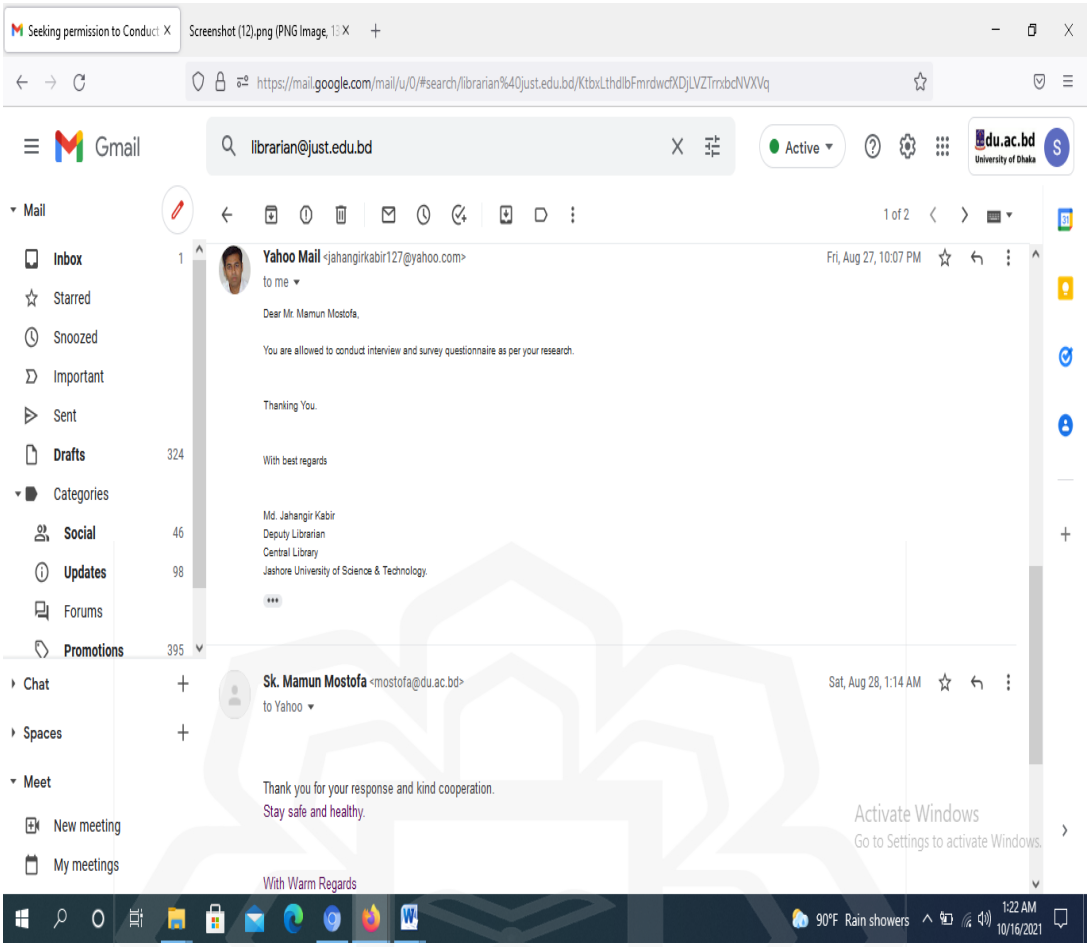
Dear Sir,
This letter serves to inform you that I am Sk Mamun Mostofa, Ph.D. Scholar of International Islamic University Malaysia (IIUM), Malaysia and Assistant Prof. of Department of Information Science and Library Management University of Dhaka Bangladesh. I would like to conduct research entitled "A KNOWLEDGE MANAGEMENT (KM) MODEL FOR CREATING SERVICE-BASED VALUE FOR PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH." This is the part of my fulfilment towards the award of my Ph.D. in Library and Information Science, under the keen supervision of Prof. Dr. Roslina Othman, former Head, Department of Library and Information Science, International Islamic University Malaysia (IIUM), Gombak Kuala Lumpur, Malaysia. In this regard, I need to take an interview (based on a semi-structured interview questionnaire) of the librarian of your university library, and I would also collect data from active users of the library (based on survey questionnaires) of various Departments/Disciplines. The information which would be collected for this research would be used only for academic purposes. The respondent's confidentiality and secrecy would be strictly maintained through the research procedure.

I, therefore, pray and hope that you would be kind enough to permit me to data collections from the said person above at your university library.

Sincerely Yours



Sk Mamun Mostofa
Ph.D. Scholar of IIUM, Malaysia
And
Assistant Professor, Department of Information Science and
Library Management University of Dhaka, Bangladesh,
Email: mostofa@du.ac.bd Cell: 01710225

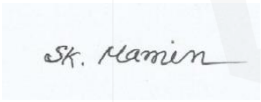

Seeking permission to Conduct
Screenshot (12).png (PNG Image,
https://mail.google.com/mail/u/0/#search/librarian%40just.edu.bd/KtbxLthdlbFmrdwcfXDjLVZTrrxbcNVXVq
Gmail
librarian@just.edu.bd
Active
du.ac.bd
University of Dhaka
Mail
Inbox 1
Starred
Snoozed
Important
Sent
Drafts 324
Categories
Social 46
Updates 98
Forums
Promotions 395
Chat
Spaces
Meet
New meeting
My meetings
1 of 2
Yahoo Mail <jahangirkabir127@yahoo.com>
Fri, Aug 27, 10:07 PM
to me
Dear Mr. Mamun Mostofa,
You are allowed to conduct interview and survey questionnaire as per your research.
Thanking You.
With best regards
Md. Jahangir Kabir
Deputy Librarian
Central Library
Jashore University of Science & Technology.
Sk. Mamun Mostofa <mostofa@du.ac.bd>
Sat, Aug 28, 1:14 AM
to Yahoo
Thank you for your response and kind cooperation.
Stay safe and healthy.
With Warm Regards
Activate Windows
Go to Settings to activate Windows.
90°F Rain showers
1:22 AM
10/16/2021

17/08/2021
To the Chief Librarian
Sylhet Agricultural University
Subject: Permission to Conduct a Research Study at Sylhet Agricultural University.

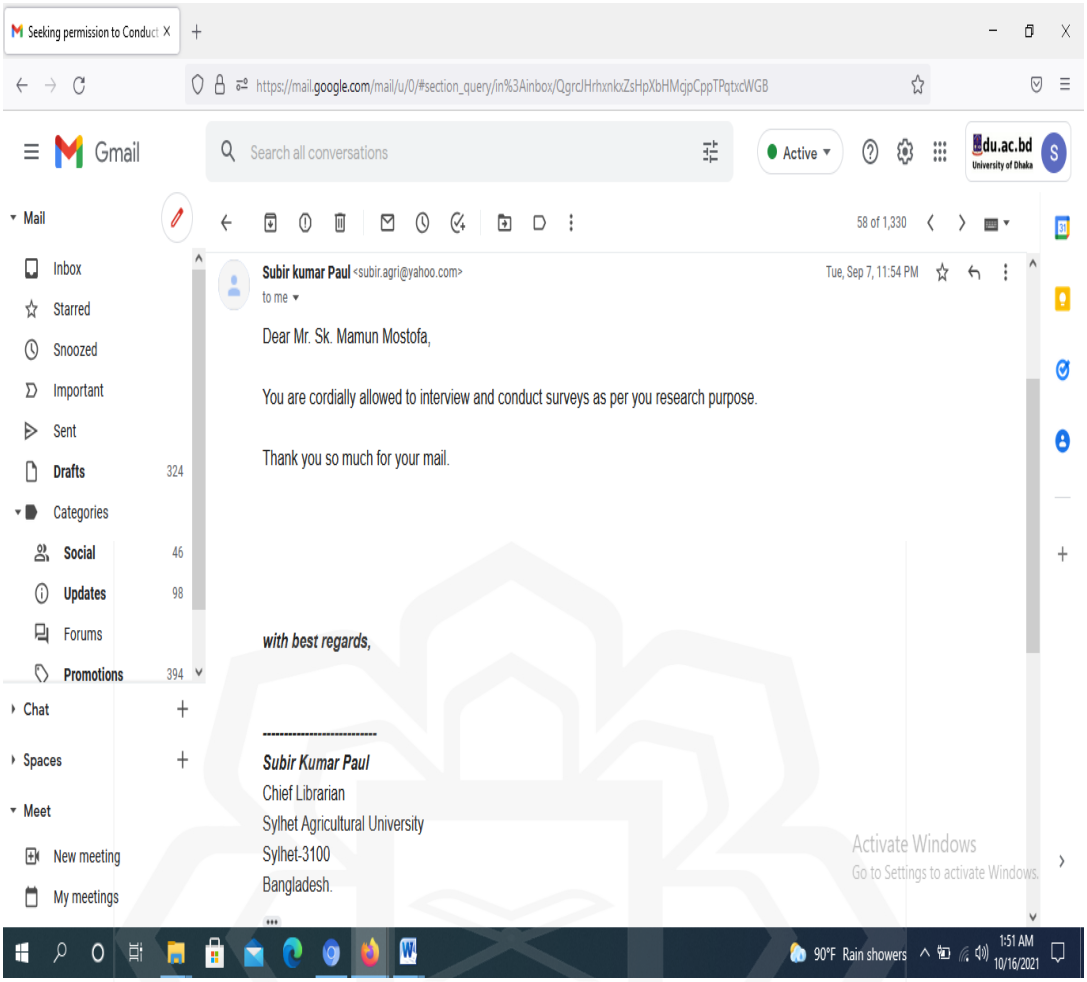
Dear Sir,
This letter serves to inform you that I am Sk Mamun Mostofa, Ph.D. Scholar of International Islamic University Malaysia (IIUM), Malaysia and Assistant Prof. of Department of Information Science and Library Management University of Dhaka Bangladesh. I would like to conduct research entitled "A KNOWLEDGE MANAGEMENT (KM) MODEL FOR CREATING SERVICE-BASED VALUE FOR PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH." This is the part of my fulfilment towards the award of my Ph.D. in Library and Information Science, under the keen supervision of Prof. Dr. Roslina Othman, former Head, Department of Library and Information Science, International Islamic University Malaysia (IIUM), Gombak Kuala Lumpur, Malaysia. In this regard, I need to take an interview (based on a semi-structured interview questionnaire) of the Librarian of your University library. I would also collect data from active users of the library (based on survey questionnaires) of various Departments/Disciplines. The information which would be collected for this research would be used only for academic purposes. The respondent's confidentiality and secrecy would be strictly maintained through the research procedure.

I, therefore, pray and hope that you would be kind enough to permit me to data collections from the said person above at your university library.

Sincerely Yours



Sk Mamun Mostofa
Ph.D. Scholar of IIUM, Malaysia
And
Assistant Professor, Department of Information Science and
Library Management University of Dhaka, Bangladesh,
Email: mostofa@du.ac.bd or Cell: 01710225762


Seeking permission to Conduct
https://mail.google.com/mail/u/0/#section_query/in%3Ainbox/QgrcJHrhxnkxZsHpXbHMcjpCppTPqtxcWGB
Gmail
Search all conversations
Active
du.ac.bd
University of Dhaka
Mail
58 of 1,330
Inbox
Starred
Snoozed
Important
Sent
Drafts 324
Categories
Social 46
Updates 98
Forums
Promotions 394
Chat
Spaces
Meet
New meeting
My meetings
Subir kumar Paul <subir.agri@yahoo.com>
to me
Tue, Sep 7, 11:54 PM
Dear Mr. Sk. Mamun Mostofa,
You are cordially allowed to interview and conduct surveys as per you research purpose.
Thank you so much for your mail.
with best regards,
Subir Kumar Paul
Chief Librarian
Sylhet Agricultural University
Sylhet-3100
Bangladesh.
Activate Windows
Go to Settings to activate Windows.
90°F Rain showers
1:51 AM
10/16/2021

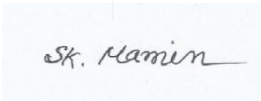
28/08/2021

To the Deputy Librarian
Bangladesh University of Engineering and Technology
Subject: Permission to Conduct a Research Study at Bangladesh University of Engineering and Technology.

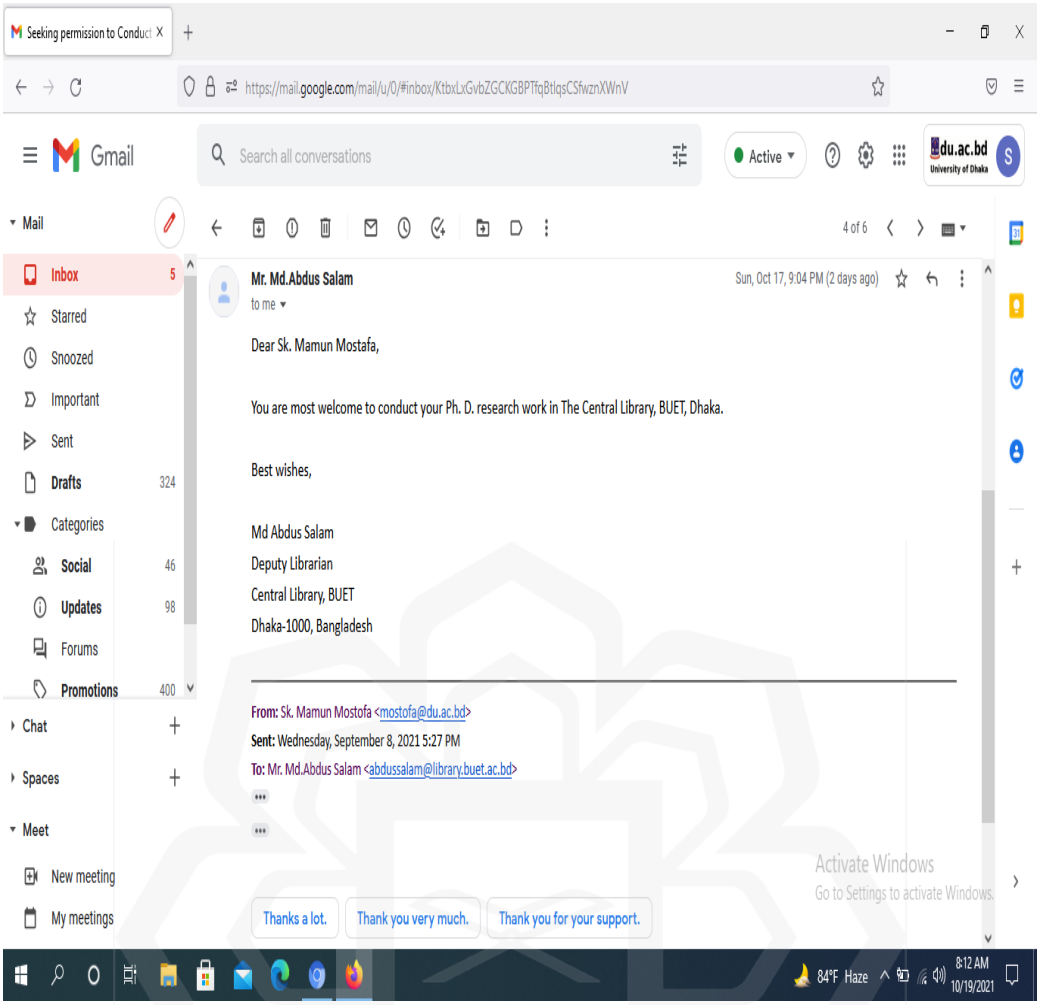
Dear Sir,
This letter serves to inform you that I am Sk Mamun Mostofa, Ph.D. Scholar of International Islamic University Malaysia (IIUM), Malaysia and Assistant Prof. of Department of Information Science and Library Management University of Dhaka Bangladesh. I would like to conduct research entitled "A KNOWLEDGE MANAGEMENT (KM) MODEL FOR CREATING SERVICE-BASED VALUE FOR PUBLIC UNIVERSITY LIBRARIES IN BANGLADESH." This is the part of my fulfilment towards the award of my Ph.D. in Library and Information Science, under the keen supervision of Prof. Dr. Roslina Othman, former Head, Department of Library and Information Science, International Islamic University Malaysia (IIUM), Gombak Kuala Lumpur, Malaysia. In this regard, I need to take an interview (based on a semi-structured interview questionnaire) with the representative of your University Library. I would also collect data from active users of the library (based on survey questionnaires) of various Departments/Disciplines. The information which would be collected for this research would be used only for academic purposes. The respondent's confidentiality and secrecy would be strictly maintained all throughout the research procedure.

I, therefore, pray and hope that you would be kind enough to permit me to data collections from the said person above at your university library.

Sincerely Yours



Sk Mamun Mostofa
Ph.D. Scholar of IIUM, Malaysia
And
Assistant Professor, Department of Information Science and
Library Management University of Dhaka, Bangladesh,
Email: mostofa@du.ac.bd Cell: 01710225762


Seeking permission to Conduct
https://mail.google.com/mail/u/0/#inbox/KtbxLxGvbZGCKGBPTfqBtlqsCSfwznXWnV
Gmail
Search all conversations
Active
du.ac.bd
University of Dhaka
Mail
Inbox 5
Starred
Snoozed
Important
Sent
Drafts 324
Categories
Social 46
Updates 98
Forums
Promotions 400
Chat
Spaces
Meet
New meeting
My meetings
4 of 6
Mr. Md.Abdus Salam
to me
Sun, Oct 17, 9:04 PM (2 days ago)
Dear Sk. Mamun Mostafa,
You are most welcome to conduct your Ph. D. research work in The Central Library, BUET, Dhaka.
Best wishes,
Md Abdus Salam
Deputy Librarian
Central Library, BUET
Dhaka-1000, Bangladesh
From: Sk. Mamun Mostofa <mostofa@du.ac.bd>
Sent: Wednesday, September 8, 2021 5:27 PM
To: Mr. Md.Abdus Salam <abdussalam@library.buet.ac.bd>
Thanks a lot.
Thank you very much.
Thank you for your support.
Activate Windows
Go to Settings to activate Windows.
84°F Haze
8:12 AM
10/19/2021