

**IMPACT OF KNOWLEDGE AND LEADERSHIP QUALITY ON
USER SATISFACTION: INVESTIGATING THE SITUATION OF
SELECTED ACADEMIC LIBRARIES OF BANGLADESH**



**A Thesis Submitted to the Department of Information Science and
Library Management, University of Dhaka for Partial Fulfillment of
the Requirements for the Degree of Doctor of Philosophy**

**By
Md. Monirul Islam
PhD Researcher
Registration No: 101
Session: 2020-2021**

**Under the Supervision of
Dr. M. Nasiruddin Munshi
Professor
Department of Information Science and Library Management
Faculty of Arts
University of Dhaka, Dhaka-1000, Bangladesh**

March 2025

**Impact of Knowledge and Leadership Quality on
User Satisfaction: Investigating the Situation of
Selected Academic Libraries of Bangladesh**

DEDICATION

Dedicated to My Parents

Md. Hasan Ali

and

Ayesha Begum

ACKNOWLEDGEMENTS

I am deeply thankful to the Almighty Allah, the originator of the universe, for granting me the opportunity and stamina to complete this research work on time. I also wish to express my sincere gratitude to Dr. M. Nasiruddin Munshi, Professor of the Department of Information Science and Library Management at the University of Dhaka, for his invaluable supervision in shaping this work. His constant inspiration and insightful guidance allowed me to thoroughly explore the research problem, and for this, I am profoundly grateful to him.

I would like to extend my heartfelt gratitude to the esteemed faculty members Dr. Md. Roknuzzaman, Dr. S. M. Zabed Ahmed, Dr. Md. Saiful Alam, Dr. Salma Chowdhury, Dr. Muhammad Mezbah-ul-Islam, Dr. Kazi Mostak Gausul Hoq, Dr. Md. Shiful Islam, Dr. Muhammad Jaber Hossain, Dr. Md. Anwarul Islam, Professor in the Department of Information Science and Library Management (ISLM), Rowshon Akter, Mohammad Sharif Ul Islam, Shohana Nowrin, Dr. Sk. Mamun Mostofa, Associate Professor in the Department of ISLM, Md. Maidul Islam, Mashiat Tabassum, Assistant Professor of the department, and Susmita Saha, Lecturer in the Department of Information Science and Library Management at the University of Dhaka. Their valuable feedback during the first and second presentations, along with their multiple reviews of the thesis, provided crucial insights that greatly contributed to the shaping of this research.

I would like to express my heartiest gratitude to Brig Gen Md. Nurul Momen, *ndc, psc (Retd.)* former Chief Administrator, Army Medical College Chattogram (AMCC), for giving the institutional permission to conduct the research, Brig Gen Md. Abdul Alim Tarafder, *afwc, psc (Retd)*, Chief Administrator, AMCC for giving the continuous support throughout the research journey. I oblige all faculty members and office staff of Department of Information Science and Library Management, University of Dhaka who have shown me their affection during my research.

I also accord my special thanks to Dr. Md. Anwarul Islam, Librarian, SAU, Md. Habibur Rahman, Librarian, CVASU, Dr. Md. Milan Khan, Librarian, DIU, Dr. M Hossam Haider Chowdhury, Librarian, IUB, Dr. Md. Zahid Hossain Shoeb, Librarian, NSU, Dr. Syed Robiul Bashar, Librarian, USTC, Shah Abdul Kabej, Ex-Deputy

Librarian, BUET, K.M. Hasan Emam, Joint Librarian, ULAB, Mohammad Shakhaought Hossain Bhuiyan, Deputy Librarian, DU, Dil Ruksana Basuina, Deputy Librarian, CU, Md. Kowser Ahmed, Deputy Librarian, SUST, Md. Nasiruzzaman, Deputy Librarian, Md. Amranul Haque, Deputy Librarian, CUET, Nonigopal Roy, Deputy Librarian, RU, Molla Saiful Islam, Deputy Librarian, USTC, Shahajada Masud Aowarul Haque, Sr. Asst. Librarian, BRACU, Mubassir Ahsan, Deputy Director, IUB, Shaharima Parvin, Sr. Assistant Librarian, EWU, Md. Jamal Hossain, Asst. Librarian, CVASU, Mrs. Sufia Begum, Asst. Librarian, BSMMU, Md. Kamrul Islam, Assistant Librarian, EU, Faisal Habib, Sr. Cataloguer, BUP for their kind contribution in data collection.

My special thanks to Dr. Md. Jahangir Alam, Librarian, IIUC for his kind cooperation in data analysis especially in formulating and testing the data and hypotheses. I also accord my special thanks to Dr. Md. Nurul Islam, Sr. Assistant Librarian, IIUC; for reviewing the text and providing valuable suggestions. Special thanks to Mohammad Noman Hossain, Deputy Librarian, Md. Anisur Rahman, Deputy Librarian, Md. Yousuf Anim, Sr Assistant Librarian, DU, for helping to collect data as well as administrative support in the absence of my physical appearance in campus. Special thanks to Mohammad Joynal Abdin, Sr. Lab Instructor, DU for giving me the information about the course in the required time. I am grateful to my colleague at AMCC, who have shown me their affection during the period of my research and helped to collect data and review the text. Acknowledgment also goes to all my friends who inspired and motivated me.

I sincerely appreciate the contributions of the respondents who kindly offered crucial data by completing the questionnaire. Their participation was vital in making this research report a reality. I also extend my thanks to the authors, scholars, and professionals whose insightful research papers, articles, reports, and reference materials greatly enhanced the depth of this thesis. My sincere thanks and appreciation go to my beloved wife, Morium Islam Hashi, and my dear sons, Najmus Sakib, Hasan Tarik, and Sadik Al Mahmud, for their patience and understanding during this journey.

March 2025

Md. Monirul Islam

DECLARATION

I declare that the research titled “*Impact of Knowledge and Leadership Quality on User Satisfaction: Investigating the Situation of Selected Academic Libraries of Bangladesh*” was conducted within the Department of Information Science and Library Management at the University of Dhaka to fulfill the Doctor of Philosophy degree requirements. This thesis is entirely composed of original research findings gathered by me, supplemented by references from published literature. It has not been submitted, either partially or fully, to any other institution for any other degree. I also confirm that this thesis is free from any plagiarized content.



March 2025

Md. Monirul Islam

Registration No: 101

Session: 2020-2021

University of Dhaka (DU)



CERTIFICATE OF THE SUPERVISOR

This is to certify that Mr. Md. Monirul Islam conducted his PhD research under my guidance and supervision, resulting in the thesis titled “Impact of Knowledge and Leadership Quality on User Satisfaction: Investigating the Situation of Selected Academic Libraries of Bangladesh”. To the best of my knowledge, the researcher has appropriately acknowledged all materials and sources used in this work from other researchers. Additionally, this thesis has not been submitted to any other university or institution for any other degree or diploma.

Therefore, I recommend that this thesis be submitted to the Office of the Controller of Examinations at the University of Dhaka as part of the requirements for the degree of Doctor of Philosophy. I also confirm that this thesis contains no plagiarized content.

March 2025

Dr. M. Nasiruddin Munshi

Professor

Department of Information Science and Library Management
Faculty of Arts, University of Dhaka, Dhaka, Bangladesh

ABSTRACT

Abstract

The assessment of knowledge and leadership quality is crucial in ensuring the effectiveness of university library services, as these factors directly influence user satisfaction and the library performance. There are no specific efforts to evaluate how leadership quality and knowledge affect user pleasure. This study examined how library professionals' knowledge and leadership quality influence user satisfaction and identified variations and gaps in leadership quality across user and university categories. A Structural Equation Modeling (SEM) was developed where knowledge competency, technical competency, negotiation skill, visionary, and responsiveness were used as independent variables and user satisfaction as the dependent variable. User and university types computed individual differences in leadership quality and adequacy, superiority, and realistic gaps in leadership quality by ANOVA. Several statistical methods supported sampling adequacy, reliability, validity, and fitness of the SEM model that attained specific objectives and hypotheses. The SEM approach was established as significant and indicated that leadership quality dimensions positively impact user satisfaction. The study found that technical competency (beta coefficient = 0.331, t-value= 2.21 and p-value < 0.027) and responsiveness (beta coefficient = 0.445, t-value = 3.954, p-value = < 0.000) dimensions have significant positive impacts on user satisfaction. ANOVA indicated that the users of private university libraries get significantly qualified leadership performance. The study recommended maintaining technical competency, emphasizing responsiveness approach, improving knowledge competency, increasing negotiation skill, enhancing visionary approach, reducing realistic gap in leadership quality. The authorities would be benefitted from this study in planning and executing library leadership performance to satisfy their users. More studies would be expected to make it a well-accepted model that will prompt further research in academic libraries locally and globally.

Keywords: *Leadership Quality Assessment, Impact of knowledge and leadership Quality, User Satisfaction, Leadership Quality Gap, Individual Difference in Leadership Quality, University Library, Bangladesh.*

TABLE OF CONTENTS

Content	Page No.
Dedication	iii
Acknowledgment	iv
Declaration	vi
Certificate of the Supervisor	vii
Abstract	viii
Table of Contents	ix
List of Tables	xviii
List of Figures	xxii
List of Acronyms and Abbreviations	xxiii
Chapter One: Introduction	1-19
1.1 Prologue	2
1.2 Background of the Study	4
1.3 Problem Statement	4
1.4 Rationale of the Study	5
1.5 Research Objectives	6
1.6 Research Questions	6
1.7 Research Hypothesis	6
1.8 Operational Definition	7
1.8.1 Knowledge and Leadership Quality	7
1.8.2 User Satisfaction	8
1.8.3 Impact	8
1.8.4 Library Leadership Quality Gap	8
1.8.5 Knowledge Competency	9
1.8.6 Technical Competency	9
1.8.7 Negotiation Skill	9
1.8.8 Visionary	10
1.8.9 Responsiveness	10
1.9 Research Methodology	10
1.9.1 Research Instruments	10
1.9.2 Procedure of Data Analysis	10
1.9.3 Population and Sampling	11
1.10 Scope and Limitations of the Study	13
1.11 Importance of the Study	14
1.11.1 Theoretical Significance of the Research	14

1.11.2 Practical Significance of the Research	15
1.12 Reference Style	16
1.12 Organization of the Thesis	17
1.13 Conclusion	19
Chapter Two: Literature Review	20-51
2.1 Introduction	21
2.2 Literature Review	21
2.2.1 Conceptual Definition	21
2.2.1.1 Knowledge Management (KM)	21
2.2.1.2 Knowledge Quality	23
2.2.1.3 Leadership Quality	23
2.2.1.4 Knowledge and Leadership Competencies	24
2.2.1.5 Leadership and Leadership Style	26
2.2.1.6 Library Leadership	29
2.2.2 The Impact of Knowledge and Leadership Quality	32
2.2.3 The Relationship between Knowledge Management and Leadership Quality	34
2.2.4 Knowledge Leadership Quality on User Satisfaction	36
2.2.5 Theoretical Perspectives on Leadership Quality	37
2.2.5.1 Leadership Theories	37
2.2.5.2 Traits and Behavioral Theory	38
2.2.5.3 Situational and Contingency Theory	38
2.2.5.4 Transformation and Transaction Theory	39
2.2.5.5 Laissez Faire Leadership	40
2.2.5.6 Autocratic Leadership	41
2.2.5.7 Instructional Leadership	41
2.2.6 Models and Frameworks for Assessing Leadership Quality and User Satisfaction	42
2.2.6.1 Quality Assessment Tools	42
2.2.6.2 Conceptual Model Development	45
2.2.7 Bibliometric Analysis on Knowledge and Leadership Quality	45
2.3 Research on Knowledge, Leadership and Quality Assessment	48
2.3 Research Gap and Uniqueness of the Study	48
2.4 Summary of Literature Review	50
2.5 Conclusion	51
Chapter Three: Conceptual Framework	52-71
3.1 Introduction	53

3.2 Development of Structural Equation Modeling (SEM)	54
3.2.1 Dimensions	56
3.2.1.1 Knowledge Competency (KC)	56
3.2.1.2 Technical Competency (TC)	57
3.2.1.3 Negotiation Skill (NS)	57
3.2.1.4 Visionary (V)	58
3.2.1.5 Responsiveness (R)	58
3.2.1.6 User Satisfaction	59
3.2.2 Items	59
3.2.3 Rating Formats	60
3.2.3.1 Minimum Leadership Expectation (MLE)	61
3.2.3.2 Desired Leadership Expectation (DLE)	61
3.2.3.3 Real Leadership Expectation (RLE)	61
3.2.3.4 Actual Leadership Performance (ALP)	61
3.2.4 Scales	61
3.3 Impact Evaluation of Library Leadership Quality on Satisfaction by SEM	62
3.4 Library Leadership Quality Evaluation Model	62
3.4.1 Problematic Zone	63
3.4.2 Improvement Zone	63
3.4.3 Maintenance Zone	64
3.4.4 Superiority Zone	64
3.5 Individual Difference in Library Leadership Quality	64
3.5.1 Difference in Library Leadership Quality by User Category	65
3.5.2 Difference in Library Leadership Quality by University Category	65
3.6 Library Leadership Quality Gaps	65
3.6.1 Adequacy Gap	66
3.6.2 Superiority Gap	66
3.6.3 Realistic Gap	66
3.7 Individual Difference in Library Leadership Quality Gaps	67
3.7.1 Individual Difference in Adequacy Gap	67
3.7.1.1 Individual Difference in Adequacy Gap by User Category	67
3.7.1.2 Individual Difference in Adequacy Gap by University Category	68
3.7.2 Individual Difference in Superiority Gap	68
3.7.2.1 Individual Difference in Superiority Gap by User Category	68
3.7.2.2 Individual Difference in Superiority Gap by University	68

Category	
3.7.3 Individual Difference in Realistic Gap	68
3.7.3.1 Individual Difference in Realistic Gap by User Category	68
3.7.3.2 Individual Difference in Realistic Gap by University Category	69
3.8 Conclusion	71
Chapter Four: Research Methodology	72-91
4.1 Introduction	73
4.2 Research Design	73
4.3 Population and Sample	75
4.3.1 Population	76
4.3.2 Sample	76
4.4 Data Collection Tools	77
4.4.1 Questionnaire Set-1	77
4.4.2 Questionnaire Set-2	77
4.5 Data Collection Technique	79
4.5.1 Primary Sources of Data	79
4.5.2 Secondary Sources of Data	80
4.6 Pilot Survey	81
4.7 Statistical Methods	81
4.8 Sampling Adequacy, Descriptive State, Reliability, and Validity	82
4.8.1 Sampling Adequacy	82
4.8.1.1 Kaiser-Meyer-Olkin (KMO) Value	82
4.8.1.2 Bartlett's Test of Sphericity	82
4.8.2 Descriptive State	83
4.8.3 Reliability	83
4.8.3.1 Cronbach's Alpha	84
4.8.3.2 RHO_A Coefficient	84
4.8.3.3 Composite Reliability	84
4.8.4 Validity	85
4.8.4.1 Discriminant Validity (Correlation Matrix)	85
4.8.4.2 Factor Analysis	86
4.8.4.3 Scree Plot	88
4.8.4.4 Regression Analysis : Durbin Watson Statistic	88
4.8.4.5 Commonalities	89
4.8.4.6 Collinearity Statistics	89
4.9 Conclusion	90

Chapter Five: Data Analysis	92-179
5.1 Introduction	93
5.2 Demographic Information of Respondents	94
5.3 Present Status of the Selected University Libraries in Bangladesh	95
5.3.1 Library Staff	96
5.3.2 Library Space, Seating Capacity, and Library Hours	97
5.3.3 Library Automation and Digitization	98
5.3.4 Use of Social Media by University Library	99
5.3.5 Membership with Digital Library Consortia in Bangladesh	100
5.4 Knowledge Competency of Library Professionals	101
5.4.1 Library Staff Having Highest LIS Degrees	101
5.4.2 Library Staff having Highest ICT Degrees	102
5.4.3 Professional Course/Workshop/Training	103
5.5 Engagement with Professional Body	105
5.5.1 Status of Library Staff in Professional Bodies	105
5.5.2 Positional Status of Library Staff in Professional Bodies	106
5.6 Training and Promotional Activities	107
5.6.1 Training Programs for Library Staff Organized by the Library	107
5.6.2 Promotional Activities Organized by the Library	108
5.7 Infrastructural Development	108
5.8 Shelving System	109
5.9 Automation Status	110
5.10 Library Services	111
5.10.1 General Services in the University Libraries	111
5.10.2 Innovative Services in the University Libraries	112
5.11 Facilities in the University Libraries	113
5.11.1 ICT Facilities in the University Libraries	113
5.11.2 Library Resources Selection facility	114
5.12 Library Collections and Access	115
5.12.1 Library Resources	115
5.12.2 Access to Online Journals	115
5.12.3 Access to E-books Database	116
5.12.4 Access to other E-resources Database	117
5.13 Usages of Library and Library Services	118
5.13.1 Frequency of Library Use	118
5.13.2 Frequency of Library Use by User Category	118
5.13.3 Frequency of Library Use by University Category	119
5.14 Analyses of Knowledge and Leadership Quality of the University Library professionals	120
5.14.1 Overall Leadership Quality of the University Library Professionals	121
5.14.2 Dimensional Leadership Quality of the University Library	121

Professionals	
5.14.3 Assessment of Leadership Quality on Each Item	123
5.14.4 Zone of Tolerance in Leadership Quality of Library Professionals	125
5.14.5 Leadership Quality Evaluation Model	126
5.15 User Satisfaction in the University Libraries of Bangladesh	128
5.15.1 User Satisfaction in the University Libraries by User Category	129
5.15.2 Overall User Satisfaction on Leadership Quality by User Category	130
5.15.3 ANOVA of Overall User Satisfaction by User Category	131
5.15.4 ANOVA of Item Wise User Satisfaction by User Category	131
5.15.5 User Satisfaction in the University Libraries by University Category	132
5.15.6 Overall User Satisfaction by University Category	133
5.15.7 Item Wise User Satisfaction by University Category	134
5.15.8 Item Wise User Satisfaction by University Category	136
5.15.9 ANOVA of Overall User Satisfaction by University Category	137
5.15.10 ANOVA of Item Wise User Satisfaction by University Category	138
\ 5.16 Impact of Leadership Quality on User Satisfaction	139
5.16.1 Descriptive Statistics and Correlation Matrix	141
5.16.2 Structural Equation Modeling (SEM)	141
5.16.3 Sampling Adequacy, Reliability, and Validity Testing	142
5.16.4 Average Variance Extracted	142
5.16.5 SEM Hypotheses	143
5.17 Variations in Knowledge and Leadership Quality	145
5.17.1 Minimum, Expected, and Perceived Leadership Quality by User Category	145
5.17.2 Overall Leadership Quality by User Category	147
5.17.3 ANOVA of Overall Leadership Quality by User Category	148
5.17.4 ANOVA of Dimensional Leadership Quality by User Category	149
5.17.5 ANOVA of Each Item in Leadership Quality by User Category	153
5.17.6 Minimum, Expected and Perceived Leadership Quality by University Category	155
5.17.7 Overall Leadership Quality by University Category	156
5.17.8 ANOVA of Overall Leadership Quality by University Category	157
5.17.9 ANOVA of Dimensional Leadership Quality by University Category	159
5.17.10 ANOVA of Each Item in Leadership Quality by University Category	161
5.18 Individual Variations in the Leadership Quality Gaps	163
5.18.1 Adequacy, Superiority, and Realistic Gaps in the Leadership Quality	163
5.18.2 Dimensional Adequacy, Superiority, and Realistic Gaps in Leadership Quality	164
5.18.3 Overall Adequacy, Superiority, and Realistic Gaps in Leadership Quality	164

5.18.4 Adequacy, Superiority, and Realistic Gaps by User Category	166
5.18.4.1 Overall Leadership Quality Gaps by User Category	167
5.18.4.2 ANOVA of Overall Leadership Quality Gaps by User Category	168
5.18.4.3 ANOVA of Dimensional Leadership Quality Gaps by User Category	169
5.18.4.4 ANOVA of Each Item in Leadership Quality Gaps by User Category	170
5.18.5 Adequacy, Superiority, and Realistic Gaps by University Category	172
5.18.5.1 Overall Leadership Quality Gaps among University Categories	173
5.18.5.2 ANOVA of Overall Leadership Quality Gaps among University Categories	174
5.18.5.3 ANOVA of Dimensional Leadership Quality Gaps by University Category	175
5.18.5.4 ANOVA of Each Item in Leadership Quality Gaps by University Category	176
5.19 Conclusion	178
Chapter Six: Discussions	180-227
6.1 Introduction	181
6.2 Sampling Adequacy, Reliability, Validity, and Fitness of SEM	182
6.2.1 Sampling Adequacy	182
6.2.2 Test of Reliability	183
6.2.3 Validity Test	183
6.2.4 Fitness of the Model	185
6.3 The Current State of the Chosen University Libraries in Bangladesh	185
6.3.1 Library Staff and their Knowledge Competency	185
6.3.2 Participation in Professional Training Course and Seminar	187
6.3.3 Engagement with Professional Body	188
6.3.4 Training and Promotional Activities	189
6.3.5 Library Space, Seating Capacity, Library Hours and Library Digitization	189
6.3.6 Use of Social Media and Membership in Library Consortium	190
6.3.7 Infrastructural development and Library Automation	191
6.3.8 Library Services and Facilities	193
6.3.9 Library Collections and Access	194
6.4 Usages of Library and Library Services	195
6.5 Impact of Knowledge and Leadership Quality Dimensions on User Satisfaction	197
6.6 The SEM Model and Justification of Hypotheses	199
6.7 Individual Variance in Library Leadership Expectations	201
6.7.1 Individual Variance in Minimum Leadership Expectations	201
6.7.2 Individual Variance in Desired Leadership Expectations	202
6.7.3 Individual Variance in Real Leadership Expectations	204

6.8 Individual Variance in User Satisfaction	205
6.9 Individual Variance in Library Leadership Quality	206
6.10 Individual Variance in Library Leadership Quality Gaps	207
6.10.1 Individual Variance in Adequacy Gap of Library Leadership Quality	208
6.10.1.1 Adequacy Gap in Leadership Quality by User Category	208
6.10.1.2 Adequacy Gap in Library Leadership Quality by University Category	209
6.10.2 Individual Variance in Superiority Gap of Library Leadership Quality	210
6.10.2.1 Superiority Gap in Library Leadership Quality by User Category	210
6.10.2.2 Superiority Gap in Library Leadership Quality by University Category	211
6.10.2.3 Realistic Gap of Library Leadership Quality	212
6.10.2.3.1 Realistic Gap in Library Leadership Quality by User Category	213
6.10.2.3.2 Realistic Gap in Library Leadership Quality by University Category	214
6.11 Inter-Correlation among Research Gaps, Objectives, Hypotheses, Findings, and Recommendations	216
6.12 Relationship of the Study with Contemporary Issues and SDGs	220
6.12.1 Globalization and Knowledge Management	220
6.12.2 Digital Transformation and Leadership	220
6.12.3 Innovation and Educational Leadership	221
6.12.4 Organizational Resilience and Leadership in Crisis	221
6.12.5 Leadership and Reducing Inequalities	222
6.13 Reasons for Less User Satisfaction	222
6.13.1 Lack of Strategic Vision and Innovation	224
6.13.2 Inadequate Technological Infrastructure	224
6.13.3 Limited Professional Development for Library Staff	224
6.13.4 Bureaucratic Decision-Making Processes	224
6.13.5 Lack of User-Centered Services	224
6.13.6 Ineffective Communication and Feedback Mechanisms	224
6.13.7 Insufficient Collaboration between Academic and Library Leaders	225
6.13.8 Understaffing and Resource Limitations	225
6.13.9 Limited Access to Global Knowledge Networks	225
6.13.10 Resistance to Change and Organizational Inertia	225

6.14 Implication of the Result of the Study	226
6.15 Conclusion	227
Chapter Seven: Major Findings and Recommendations	228-246
7.1 Introduction	229
7.2 Key Findings	230
7.2.1 Present Status of the Selected University Libraries in Bangladesh	230
7.2.2 Knowledge Competency of Library Professionals	231
7.2.3 Engagement with Professional Bodies	232
7.2.4 Promotional Activities	233
7.2.5 Infrastructural Development and Library Automation	234
7.2.6 Library Services	234
7.2.7 Facilities in the University Libraries	235
7.2.8 Library Collections and Access	235
7.2.9 Usage of Library and Library Services	236
7.2.10 Knowledge and Leadership Quality of Library Professionals	236
7.2.11 Leadership Quality Evaluation Model	237
7.2.12 User Satisfaction in the University Libraries of Bangladesh	237
7.2.13 Impact of Knowledge and Leadership Quality	238
7.2.14 Library Leadership Quality Gaps	239
7.3 Recommendations	240
7.3.1 Enhance Leadership Development Programs	240
7.3.2 Focus on User-Centered Services	240
7.3.3 Improve Technical and Knowledge Competency	241
7.3.4 Address Gaps in Leadership Performance	241
7.3.5 Strengthen Communication and Responsiveness	242
7.3.6 Regular Evaluation of Leadership and Service Quality	242
7.3.7 Collaboration with Other Institutions	242
7.3.8 Resource Accessibility Improvements	242
7.3.9 Recommendations for Different Categories of Universities	243
7.3.9.1 Public Universities	243
7.3.9.1 Private Universities	243
7.3.9.1 Specialized Universities	243
7.4 Future Study	244
7.5 Conclusion	245
References	247-265
Appendix	266-278
Appendix A: Questionnaire Set-1	267
Appendix B: Questionnaire Set-2	275

LIST OF TABLES

SN	Content	Page No.
1.	Table 1.1: Research Site of the Study	12
2.	Table 3.2: Conceptual Framework of Library Leadership Quality Evaluation Model	62
3.	Table 4.1: Selected 20 Universities of the Study	75
4.	Table 4.2: Sampling of the Study	80
5.	Table 4.3: Sampling Adequacy Statistics	83
6.	Table 4.4: Descriptive Statistics of the Model	83
7.	Table 4.5: Reliability Statistics	84
8.	Table 4.6: Discriminant Validity (Correlation Matrix)	85
9.	Table 4.7: Factor Analysis	87
10.	Table 4.8: Durbin Watson Statistic	89
11.	Table 4.9: Communalities and Collinearity Statistics	90
12.	Table 5.1: Demographic Information of Respondents	94
13.	Table 5.2: Library Staff of the Selected University Libraries	96
14.	Table 5.3: Library Space, Seating Capacity, and Opening Hours	97
15.	Table 5.4: Library Automation and Digitization	98
16.	Table 5.5: Use of Social Media by University Libraries in Bangladesh	100
17.	Table 5.6: Membership with Digital Library Consortiums in Bangladesh	101
18.	Table 5.7: Number of Library Staff having Highest LIS Degrees	102
19.	Table 5.8: Library Staff having Highest ICT Degrees	103
20.	Table 5.9: Engagement with Professional Courses	104
21.	Table 5.10: Participations in Seminar and Conference Program by Library Staff	105
22.	Table 5.11: Status of Library Staff Engaged in Professional Body	106
23.	Table 5.12: Positional Status of Library Staff in Professional Body	107
24.	Table 5.13: Training Programs for Library Staff Organized by the Library	107
25.	Table 5.14: Promotional Activities Organized by the Library	108
26.	Table 5.15: Infrastructural Development Ensured by the Library	109
27.	Table 5.16: the Shelving System of the Selected Library	109
28.	Table 5.17: The Automation Status of the Selected Library	110
29.	Table 5.18: the Automation Software Used by the Selected Library	110
30.	Table 5.19: the Digital Library Software Used by the Selected Library	111
31.	Table 5.20: Library Automation and Digitization Work	111
32.	Table 5.21: General Services in the University Libraries	112
33.	Table 5.22: Innovative Services in the University Libraries	113
34.	Table 5.23: ICT Facilities in the University Libraries	113

SN	Content	Page No.
35.	Table 5.24: Library Resources Selection Facility	114
36.	Table 5.25: Status of Library Resources	115
37.	Table 5.26: Access to Online Journals	116
38.	Table 5.27: Status of Access to E-books	117
39.	Table 5.28: Access to other E-resources	117
40.	Table 5.29: Frequency of Library Use	118
41.	Table 5.30: Frequency of Library Use by User Category	119
42.	Table 5.31: Frequency of Library Use by University Category	120
43.	Table 5.32: Overall Leadership Quality in the University Libraries	121
44.	Table 5.33: Dimensional Leadership Quality of the University Library Professionals	123
45.	Table 5.34: Leadership Quality of Each Item in the University Libraries	124
46.	Table 5.35: Zone of Tolerance in Leadership Quality in the University Libraries	125
47.	Table 5.36: Leadership Quality Evaluation Model	127
48.	Table 5.37: User Satisfaction on Leadership Quality of the University Library Professionals	128
49.	Table 5.38: User Satisfaction on the Leadership Quality by User Category	129
50.	Table 5.39: Overall User Satisfaction in the University Libraries by User Category	130
51.	Table 5.40: ANOVA of Overall User Satisfaction by User Category	131
52.	Table 5.41: ANOVA of Item Wise User Satisfaction by User Category	132
53.	Table 5.42: User Satisfaction in the University Libraries by University Category	133
54.	Table 5.43: Overall User Satisfaction by University Category	134
55.	Table 5.44: Item Wise User Satisfaction by University Category	134
56.	Table 5.45: Item Wise User Satisfaction by User Category	136
57.	Table 5.46: ANOVA of Overall User Satisfaction by University Category	138
58.	Table 5.47: ANOVA of Item Wise User Satisfaction by University Category	138
59.	Table 5.48: Means, Standard Deviations, and Pearson Correlation	140
60.	Table 5.49: Model Summary of Impact of Leadership Quality on User Satisfaction	141

SN	Content	Page No.
61.	Table 5.50: Construct Reliability and Validity	142
62.	Table 5.51: SEM Hypotheses	144
63.	Table 5.52: Minimum, Expected, and Perceived Leadership by User Category	146
64.	Table 5.53: Overall Leadership Quality Expectation by User Category	147
65.	Table 5.54: ANOVA of Overall Leadership Quality Expectation by User Category	148
66.	Table 5.55: Descriptive Analysis of Dimensional Leadership Quality Expectation by User Category	150
67.	Table 5.56: ANOVA of Dimensional Leadership Quality Expectation by User Category	152
68.	Table 5.57: ANOVA of Each Item in Leadership Quality by User Category	154
69.	Table 5.58: Minimum, Expected, and Perceived Leadership Quality by University Category	155
70.	Table 5.59: Overall Leadership Quality by University Category	157
71.	Table 5.60: ANOVA of Overall Leadership Quality by University Category	158
72.	Table 5.61: ANOVA of Dimensional Leadership Quality by University Category	160
73.	Table 5.62: ANOVA of Each Item in Leadership Quality by University Category	162
74.	Table 5.63: Adequacy, Superiority, and Realistic Gaps in Leadership Quality	164
75.	Table 5.64: Dimensional Adequacy, Superiority, and Realistic Gaps	165
76.	Table 5.65: Overall Adequacy, Superiority, and Realistic Gaps	166
77.	Table 5.66: Adequacy, Superiority, and Realistic Gaps by User Category	167
78.	Table 5.67: Overall Leadership Quality Gaps by User Category	168
79.	Table 5.68: ANOVA of Overall Leadership Quality Gaps by User Category	168
80.	Table 5.69: ANOVA of Dimensional Leadership Quality Gaps by User Category	169
81.	Table 5.70: ANOVA of Each Item in Leadership Quality Gaps by User Category	171
82.	Table 5.71: Adequacy, Superiority, and Realistic Gaps by University Category	172
83.	Table 5.72: Overall Leadership Quality Gaps among University Categories	174
84.	Table 5.73: ANOVA of Overall Leadership Quality Gaps by University Category	174

SN	Content	Page No.
85.	Table 5.74: ANOVA of Dimensional Leadership Quality Gaps by University Category	175
86.	Table 5.75: ANOVA of Each Item in Leadership Quality Gaps by University Category	177
87.	Table 6.1: Hypotheses at a Glance	215
88.	Table 6.2: Inter-correlation among Research Gaps, Objectives, Hypotheses, Findings	217

LIST OF FIGURES

SL.	Content	Page No.
1.	Figure 1.1: Schematic Structure of the Dissertation	17
2.	Figure 2.1: Most Relevant Journal Sources in Knowledge Leadership	46
3.	Figure 2.2: Most relevant journal sources in knowledge leadership	46
4.	Figure 2.3: the Most Used Keywords	47
5.	Figure 2.4: Co-occurrence Networking between Library and Leadership	47
6.	Figure 3.1: Conceptual Framework of the Study	56
7.	Figure 3.2: Conceptual Framework of Library Leadership Quality Gaps	66
8.	Figure 3.4: Quality Gap, Zone of Tolerance, and Satisfaction Assessment Frameworks	70
9.	Figure 4.1: Scree Plot in the Factor Analysis	88
10.	Figure 5.1: P-value flowchart of the Structural Equation Modeling	144
11.	Figure 5.2: β -value Flowchart of the Structural Equation Modeling	145

LIST OF ACRONYMS AND ABBREVIATIONS

Abbreviation	Expansion
AG	Adequacy Gap
ALA	American Library Association
ALP	Actual Leadership Performance
ANOVA	Analysis of Variance
ASIALA	The Asian Library Association
ASIS&T	The Association for Information Science and Technology
AZ	Action Zone
AUW	Asian University for Women
AVE	Average Variance Extracted
BALID	Bangladesh Association of Librarians, Information Scientists & Documentalists
BdREN	Bangladesh Research and Education Network
BIC	Bayesian Information Criterion
BSMMU	Bangabandhu Sheikh Mujib Medical University
BRACU	BRAC University
BLA	British Library Association
BUET	Bangladesh University of Engineering and Technology
BUP	Bangladesh University of Professionals
SEM	Structural Equation Modeling
CFA	Confirmatory Factor Analysis
CIU	Chittagong Independent University
COVID-19	Coronavirus Disease 2019
CR	Composite Reliability
CU	University of Chittagong
CUET	Chittagong University of Engineering and Technology
CVASU	Chittagong Veterinary and Animal Sciences University
DIR	Digital Institutional Repository
DIU	Daffodil International University
DLE	Desired Leadership Expectation
DU	University of Dhaka
DUL	Dhaka University Library
EU	Eastern University
EWU	East West University
EZ	Evaluation Zone
GFI	Goodness of Fit Index
ICT	Information and Communications Technology
IFLA	International Federation of Library Associations and Institutions
IIUC	International Islamic University Chittagong
ILS	Integrated Library System
IR	Institutional Repository
IoT	Internet of Things

Abbreviation	Expansion
IUB	Independent University Bangladesh
KC	Knowledge Competency
KM	Knowledge Management
KL	Knowledge Leadership
KLQ	Knowledge and Leadership Quality
KMO	Kaiser-Meyer-Olkin
KOL	Knowledge-oriented Leadership
LAB	Library Association of Bangladesh
LEADQUAL	Leadership Quality
LibQUAL	Library Quality
LiCoB	Library Consortium of Bangladesh
LIS	Library and Information Science
MEDLAB	Medical Library Association of Bangladesh
MLE	Minimum Leadership Expectation
NS	Negotiation Skill
NSU	North South University
OPAC	Online Public Access Catalog
OpenDOAR	Directory of Open Access Repositories
ROAR	Registry of Open Access Repositories
PCA	Principal Component Analysis
PLS	Partial Least Squares
PLS-SEM	Partial Least Squares Structural Equation Modeling
RG	Realistic Gap
RFID	Radio Frequency Identification
RLE	Real Leadership Expectation
RU	University of Rajshahi
RQ	Research Question
SAU	Sher-e-Bangla Agricultural University
SERVQUAL	Service Quality
SLA	Special Library Association
SLiMS	Sanyan Library Management Software
SZ	Study Zone
SD	Standard Deviation
SDG	Sustainable Development Goals
SG	Superiority Gap
SPSS	Statistical Package for Social Sciences
SRMR	Standardized Root Mean Square Residual
SU	Southeast University
SUST	Shahjalal University of Science and Technology
TC	Technical Competency
TQM	Total Quality Management
UDL	UGC Digital Library

Abbreviation	Expansion
UGC	University Grants Commission
ULAB	University of Liberal Arts Bangladesh
USTC	University of Science and Technology Chittagong
URL	Uniform Resource Locator
USA	United States of America
VIF	Variance Inflation Factor

CHAPTER ONE

CHAPTER ONE

Introduction

1.1 Prologue

Leadership plays a key role in the sustainable development and integrated implementation of library administration and practices (Seidel et al., 2019). A knowledge leader is a leading person, who undertakes the responsibility of taking the value obtained through knowledge, which is the most important asset of organizations, to the highest level. A knowledge leader is a person, who pioneers and leads in the knowledge management initiative of an organization (Bozdoğan, 2013; Selen, 2009). Knowledge leadership is defined as a process whereby an individual supports other group members in the learning process needed to attain group or organizational goals (Viitala, 2004). Donate & Sánchez de Pablo (2015) examined the role of the specific type of organizational leadership- knowledge-oriented leadership – in Knowledge Management (KM) initiatives that seek to achieve innovation. Results showed that although KM practices themselves are important for innovation purposes, the existence of this kind of leadership encourages the development and use of KM exploration and exploitation practices. Organizational leadership is an essential condition for the development and encouragement of KM practices for innovation purposes in technology-intensive firms.

Knowledge Leadership (KL) and Knowledge Management (KM) are well-established topics in both the educational and commercial sectors. KM ethics improve the effectiveness of administrative procedures, guarantee the quality of services, and find alternative goods and solutions for the users. Knowledge management quality has become one of the most popular topics of management literature in recent years (Farkas, 2003). Management of knowledge is nothing but budgeting learning at an organizational level which could be used by an organization and its members of self-renewal. In other words, for knowledge creation and management to take place, organizational learning has to come first (Singh, 2008).

Leaders are naturally curious, always want to know more, learn something new every day. Leadership draws on knowledge, reading, interacting, being interested in everything concerning the environment. Leaders are not enclosed in themselves, but speak with

Chapter One: Introduction

others, read constantly, manage information and investigate the real fact. They make every possible effort to improve their expertise and keep abreast of the latest developments in their profession.

This study was intended to assess the factors associated with the knowledge and leadership quality of Library and Information Science (LIS) professionals in academic libraries in Bangladesh. A theoretical background and research questions under study follow this preliminary segment. Next, the segment presents the problem statement, rationale of the study, operational definition, literature review, methodology, data analysis, and final results of the statistical analysis. Lastly, the attempt closes the study with a discussion of the research outcomes and the prime conclusion of the study. The author hopes that the outcomes of the study will be of noteworthy value in filling the gaps that exist in the LIS professionals of Bangladesh.

The study aims to measure the knowledge and leadership quality and its impacts on user satisfaction in academic libraries using a modified LEADQUAL instrument which will give a glimpse of knowledge quality along with the leadership quality of library administrators in Bangladesh. The study will help LIS professionals to revise their knowledge competency, technical competency, negotiation skill, visionary circumstance, and responsiveness behavior in academic libraries of Bangladesh. Leadership quality is defined for this study as the librarianship performance of LIS professionals to meet the demands of user expectations and their perceptions of the leadership experience. User satisfaction is specified here as the perceptions of the library users toward the library administrator or librarian that contribute to his/her satisfaction with librarians' leadership quality. The impact is also defined for this study as the significant effect or influence of leadership quality on user satisfaction in the libraries of higher educational institutions.

Academic libraries serve as vital hubs for supporting the educational and research endeavors of college and universities. In Bangladesh, where academic excellence is a cornerstone of national development, the role of academic libraries in facilitating knowledge dissemination and research endeavors is particularly significant. This chapter introduces the research topic, which focuses on the interplay between knowledge management, leadership quality, and user satisfaction in academic libraries within the Bangladeshi context.

1.2 Background of the Study

The effectiveness of academic libraries depends not only on the quality and accessibility of their resources but also on the leadership performance provided by library professionals. Library personnel's leadership qualities like knowledge competency, technical skills, negotiation abilities, visionary outlook, and responsiveness play fundamental and essential roles in shaping the user experience within academic libraries. However, there is a gap in understanding how these leadership qualities impact user satisfaction in the specific context of Bangladesh's academic libraries.

1.3 Problem Statement

The academic library plays a vigorous role in meeting the multi-dimensional academic needs of teachers, students, and researchers. The libraries invest a large amount of money every year for procuring, processing, and storing information resources to provide its users which almost depends on leadership performance. But the leadership performance of the library professionals how much satisfies them to get their expected services in the library? An issue is raised as to whether library users are satisfied or not with knowledge managers and their performance. Many authors have agreed that measuring leadership quality is the most useful and easy to evaluate the success of the information system. Mezbah-Ul-Islam (2003) pointed out the leadership behavior styles and the job satisfaction of library professionals. Though the different leadership styles were induced and tested to relate between leadership behavior style and library effectiveness, no assessment was done to evaluate leadership quality on user satisfaction in public and private university libraries of Bangladesh. Ahmed and Shoeb (2009) pointed out that SERVQUAL, developed by Parasuraman et al. in 1988, has now evolved as an efficient tool to assess service quality in diverse library arrangements, including academic, special, and public libraries around the world. There was no library personnel performance measurement tool in the study.

Based on the available literature, it is found that some studies have been conducted on measuring the service quality of university libraries worldwide using SERVQUAL for example (Hery Wihardika Griadhi, 2018; Afridi et al., 2016; Malik & Malik, 2015; Silva et al., 2017; Suresh & Mohan, 2015; Quyet et al., 2015; Bahrainizadeh, 2013; Haneefa et al., 2014; Arshad & Ameen, 2010) and so forth. A number of researches have been conducted to measure the library service quality using SERVQUAL in individual

university libraries of Bangladesh (Alam, 2017; Shoeb, 2011; Shoeb & Ahmed, 2009; Hossain & Islam, 2012; Ahmed & Shoeb, 2009), developing a service performance assessment system for academic libraries (Hossain & Ahmed, 2013), and key dimensions for evaluating service quality and satisfaction in academic libraries (Hossain, 2016). However, not much initiative has been made to assess the impact of leadership quality in the academic libraries of Bangladesh. Besides, no study has been conducted to measure the library leadership quality using LEADQUAL in Bangladesh including public, private and international universities. Thus, it can be concluded that an effort has been proposed for the first time to evaluate leadership quality and its impact on user satisfaction using LEADQUAL in academic libraries in Bangladesh.

1.4 Rationale of the Study

Based on the research gaps, conceptual framework, raised questions, and social impacts, the study has proposed mainly to assess the knowledge and leadership quality of library professionals and evaluate the impacts of leadership quality on user satisfaction in academic libraries of Bangladesh. The findings will have several significant implications for both practice and future research on library leadership quality. It is hoped that the study will provide a clear picture of the existing quality of the academic library professionals of Bangladesh and build awareness among library professionals and users regarding their leadership quality and quality of library amenities. The study will also measure the gaps between perceived and expected leadership quality in academic libraries of Bangladesh that will help the library professionals in designing appropriate strategic plans for improving the quality of their librarianship and library services based on their users' expectations. The findings of the study would be helpful for the authority of academic libraries and UGC in planning and arranging training, workshops, and seminars for library professionals regarding quality leadership and library facilities.

An attempt has been taken for the first time to evaluate the impact of knowledge and leadership quality on user satisfaction in academic libraries of Bangladesh that will prompt future study on the evaluation of effectiveness of the existing librarianship and services provided by them. Based on the findings, the study recommends some remedies that will enhance the quality of the librarianship and library facilities as well as implement required innovative quality services. Moreover, the study will contribute to filling the research gaps regarding knowledge leadership quality.

1.5 Research Objectives

The study has made a general objective and four specific objectives based on the raised question, research gaps, conceptual framework, and social impact. The general objective of this study is to assess the leadership quality and its impact on user satisfaction in the libraries of higher educational institutions in Bangladesh. The specific objectives of the study are as follows:

1. To identify the knowledge & leadership performance of library administrators, infrastructural development, library services and facilities in university libraries of Bangladesh.
2. To measure the impact of leadership quality dimensions on user satisfaction in academic libraries of Bangladesh.
3. To evaluate the individual variance in knowledge and leadership quality by the user and institution categories.
4. To find out the gaps in library leadership quality among users and university categories.
5. To develop a leadership quality measuring tool using LEADQUAL for evaluating the impact of leadership quality on user satisfaction in academic libraries.

1.6 Research Questions (RQ)

Based on the research gaps, the following research questions were raised in the study. The research questions guiding this study are:

RQ1: *Are there any significant impacts of leadership quality dimensions on user satisfaction in the university libraries of Bangladesh?*

RQ2: *Are there any significant differences in library leadership quality by the user and university categories?*

RQ3: *Are there any significant differences in the adequacy gap, superiority gap and realistic gap in librarians' leadership quality by the user and university categories?*

1.7 Research Hypotheses

A query is raised here that is there any significant impact of five dimensions of LEADQUAL on user satisfaction as well as any significant difference in perceived

leadership quality by academic library category, and user category. Another issue is raised here, that is, whether there is any significant gap between the expected and desired leadership quality by academic library category, and user category. Based on the research gaps, raised questions, and specific objectives, the study has formulated the following six hypotheses:

- H1: The higher the perceived *Knowledge Competency* of librarians of Bangladesh, the higher the level of user satisfaction.
- H2: The greater the perceived *Technical Competency* of the library professionals, the greater the level of user satisfaction.
- H3: The greater the *Negotiation Skills* of the library professionals, the greater the level of user satisfaction.
- H4: The more *Visionary* the library staff is, the more satisfied the patrons are.
- H5: The better the perceived *Responsiveness* from library staff, the greater the level of user satisfaction.
- H6: The *library leadership quality* among users and university categories differs significantly
- H7: The *gaps in library leadership quality* among users and university categories differ significantly

1.8 Operational Definitions

For this study, the following operational definitions have been followed:

1.8.1 Knowledge and Leadership Quality

Knowledge and leadership quality is defined for this study as the librarianship of LIS professionals to meet the demand of user expectations; and their perceptions of the leadership experience. Separately, the knowledge quality is determined by fulfilling the expectations of the community and its social context (Chiu et al., 2006). In general, knowledge quality comprises the following elements: information accuracy, completeness, timeliness, and relevance (Nelson et al., 2005). Leadership quality is defined as the quality performance between user expectations of leadership quality and their perceptions towards the library leader. Leadership Quality refers to the effectiveness of library professionals in guiding and managing academic libraries,

encompassing dimensions such as knowledge competency, technical skills, negotiation abilities, visionary outlook, and responsiveness. Additionally, leadership quality is defined as the librarianship performance of LIS professionals to meet the demands of user expectations and their perceptions of the leadership experience.

1.8.2 User Satisfaction

User satisfaction is specified here as the perception of the library users that contributes to his/her satisfaction on knowledge and leadership performance of library administrator and library personnel.

1.8.3 Impact

The impact is defined for this study as the significant effect or influence of library professionals' knowledge and leadership quality on user satisfaction in academic libraries.

1.8.4 Library Leadership Quality Gap

A gap refers to the disparity between two entities, perspectives, or circumstances, specifically characterized as an unfulfilled or unsatisfied commercial need. In this study, the researcher proposed a leadership quality model that encompasses five gaps. The initial four gaps represent the fundamental approach to address perceived disparities in leadership quality. The fifth conceptual gap arises from a user-centric interpretation of leadership quality, which refers to the disparity between user expectations and their perceptions of the actual leadership performance. In this paradigm, a negative discrepancy indicates that leadership performance did not meet expectations, while a positive discrepancy indicates that leadership performance exceeded expectations.

This study involved the creation of a three-segment rating system to assess leadership quality. The segments included minimum leadership expectation, desired leadership expectation, and actual leadership performance. The purpose was to identify two types of quality gaps: adequacy gap and superiority gap. The term "adequacy gap" refers to a gap that is considered acceptable, while a "superiority gap" refers to a difference that indicates dominance and should be reduced.

The researcher created a system for evaluating leadership performance using the LEADQUAL tool. In this system, a conceptual framework was implemented that includes three leadership quality gaps: the realistic gap, adequacy gap, and superiority gap. Merely establishing minimum and preferred leadership expectations alone is insufficient for accurately assessing the gap in leadership quality.

The study determined the actual leadership expectation by employing a formula that involves adding the minimum leadership expectation score to the desired leadership expectation score, and then dividing the sum by 2 $[(MLE+DLE)/2]$. The researcher defined an adequacy gap as the "discrepancy between the actual performance of leadership and the minimum expectation for leadership". The superiority gap refers to the difference between the actual performance of a leader and the expectations for leadership. The realistic gap refers to the disparity between the actual performance of a leader and the genuine expectations of leadership. This study identified three distinct gaps in leadership qualities: the adequacy gap, the superiority gap, and the realistic gap. In the context of this study, the adequacy gap refers to the disparity between the actual level of leadership performance and the minimal level of leadership expectation. The superiority gap refers to the difference between the actual performance of a leader and the expectations for leadership performance. The realistic gap refers to the disparity between the actual performance of a leader and the genuine expectations of leadership.

1.8.5 Knowledge Competency

The proficiency of library professionals in managing and disseminating knowledge resources within academic libraries.

1.8.6 Technical Competency

The expertise of library professionals in utilizing technology and information systems to support library operations and services.

1.8.7 Negotiation Skill

The capacity of library professionals to engage in effective communication and collaboration with stakeholders to achieve mutually beneficial outcomes.

1.8.8 Visionary

The ability of library professionals to anticipate and adapt to emerging trends and challenges in the field of library science.

1.8.9 Responsiveness

The promptness and effectiveness of library professionals in addressing user inquiries, requests, and feedback within academic libraries.

1.9 Research Methodology

1.9.1 Research Instruments

Two questionnaire sets were utilized to collect both quantitative and qualitative data from two distinct groups: librarians/heads or senior library professionals of libraries and library users.

- **Questionnaire Set-1:** This set is designed to gather quantitative data from Librarians/Heads or representative personnel of Libraries of selected university libraries. It includes sections covering general information about the university and library, academic qualifications, knowledge and leadership quality/performance/activities, professional development initiatives, infrastructural developments, library services/facilities, and library collections/access.
- **Questionnaire Set-2:** This set is intended to collect qualitative and quantitative data from library users of the selected university libraries. It assessed the leadership quality based on five variables: knowledge competency, technical competency, negotiation skill, visionary outlook, and responsiveness. The questionnaire contains twenty-five items, and the satisfaction level towards leadership quality was also evaluated. The purpose of the study was clearly stated, and respondent confidentiality was ensured.

1.9.2 Procedure of Data Analysis

The 23rd version of SPSS, Smart PLS, VOSviewer, and Biblioshiny (R-studio) were utilized to conduct the study. The researcher applied the following analysis techniques and test for conducting various aspect of the study smoothly:

- **Descriptive Analysis:** Descriptive statistics, such as mean and standard deviation, is used to analyze the overall leadership quality and user satisfaction (Objective 1).
- **Multiple Regression:** This method is utilized to assess the significant impact of LEADQUAL dimensions on user satisfaction and to test hypotheses 1, 2, 3, 4, and 5 (Objective 2).
- **ANOVA (Analysis of Variance):** ANOVA is conducted to determine the variance in perceived leadership quality by user category and university category, addressing objective 3 and measuring hypotheses 6.
- **Mann-Whitney U Test and Kruskal-Wallis H Test:** These tests are used to calculate gap scores between users' expected and perceived qualities by user category and university category, responding to objective 4 and assessing hypotheses 5 and 6.
- **Reliability and Validity Testing:** Reliability of the data is assessed using Bartlett's test and Cronbach's Alpha, while validity is evaluated through factor analysis with varimax rotation, item loading, commonalities, discriminate validity, normal probability plot, histogram, KMO, multicollinearity, and VIF values.

1.9.3 Population and Sampling

In Bangladesh, there are 55 public, 114 private, and 3 international universities (UGC, 2024). Among them, ten public, nine private, and one international university are selected for the study. These universities are purposively selected based on their current implementation of library automation, organization of professional courses/workshops/trainings, provision of general library services, richness of library collections, and subscription to e-databases/resources. The selection of university libraries for this study was based on the following criteria:

1. **Diversity in Institutional Type:** Libraries from public, private, and specialized universities (agricultural, engineering, medical, etc.) were included to ensure a comprehensive analysis across different academic environments.

2. **Accreditation and Recognition:** Only universities recognized by the University Grants Commission (UGC) of Bangladesh were considered to maintain academic credibility.
3. **Library Service Scope:** Universities with well-established library facilities, including digital and physical resources, were selected to assess the impact of knowledge and leadership quality on user satisfaction.
4. **User Base:** Libraries with a large and active user population, including students, faculty, and researchers, were prioritized to ensure meaningful data collection.
5. **Geographical Representation:** Institutions from different regions of Bangladesh were chosen to capture variations in library services and leadership quality.

These criteria ensured a balanced and representative selection of libraries for the study. Table 1 provides an overview of the selected universities for the research study, including their names, establishment years, types of Integrated Library Systems (ILS) used, and the nature of their institutions.

Table 1.1 Research Site of the Study

SL	Name of university	Est.	ILS	IR	Type
1.	Asian University for Women (AUW)	2000	ILS	DIR	Int.
2.	Bangabandhu Sheikh Mujib Medical University (BSMMU)	1965	ILS	DIR	Public
3.	Bangladesh University of Engineering & Technology (BUET)	1962	ILS	DIR	Public
4.	Bangladesh University of Professionals (BUP)	2009	ILS	DIR	Public
5.	BRAC University (BRACU)	2001	ILS	DIR	Private
6.	Chittagong University of Engineering & Technology (CUET)	1968	ILS	DIR	Public
7.	Chittagong Veterinary and Animal Sciences University (CVASU)	2006	ILS	DIR	Public
8.	Daffodil International University (DIU)	2002	ILS	DIR	Private
9.	Eastern University (EU)	2003	ILS	DIR	Private
10.	East West University (EWU)	1996	ILS	DIR	Private
11.	Independent University Bangladesh (IUB)	1993	ILS	DIR	Private
12.	International Islamic University Chittagong (IIUC)	1995	ILS	DIR	Private
13.	University of Science and Technology	2003	ILS	DIR	Public

	Chittagong (USTC)				
14.	North South University (NSU)	1992	ILS	DIR	Private
15.	Shahjalal University of Science & Technology (SUST)	1986	ILS	DIR	Public
16.	Sher-e-Bangla Agricultural University (SAU)	2001	ILS	DIR	Public
17.	University of Chittagong (CU)	1966	ILS	Plann ing	Public
18.	University of Dhaka (DU)	1921	ILS	DIR	Public
19.	University of Rajshahi (RU)	1953	ILS	DIR	Public
20.	University of Liberal Arts Bangladesh (ULAB)	2004	ILS	DIR	Private

This table serves as a reference point for understanding the diversity of universities included in the research study, encompassing various types of institutions and their respective library systems. The population for the study consists of librarians, teachers, students, and researchers of the selected academic libraries. The purposive sampling method is considered for this study due to the huge population size of the selected universities, to collect data from the current users of the selected libraries, and to make this study more convenient. The questionnaire booklet-1 is distributed among the Librarian, deputy librarians, assistant librarians, or senior library professionals of the selected libraries. Besides, the researcher visited the selected academic libraries and distributed a sufficient number of the questionnaire set-2 at each university among the users such as teachers, students, and researchers inside the library. After verifying the returning responses, only completely filled-up survey questionnaires are considered for analysis.

1.10 Scope and Limitations of the Study

The scope of this study is limited to academic libraries especially university libraries in Bangladesh, focusing on the leadership quality of library professionals and its impact on user satisfaction. The study employs the LEADQUAL instrument for assessing leadership quality, thereby providing a comprehensive analysis of various leadership dimensions. However, the study may be limited by factors such as sample size, respondent bias, and external factors influencing user satisfaction beyond leadership quality.

Staff members and part-time faculty members are not included in the study as they comprise a small proportion of the library users. The study considered the non-probability sampling technique like purposive sampling for conducting the survey:

- Being the large population size of the 20 universities;
- To collect data from library users; *and*
- To make this study more convenient.

1.11 Importance of the Study

This study holds significant implications for both academic library professionals and stakeholders in Bangladesh's education sector. By understanding the relationship between leadership quality and user satisfaction, library administrators can implement targeted strategies to enhance their leadership performance to provide quality services, ultimately improving the overall user experience. Additionally, the findings of this study may inform policy decisions aimed at optimizing resource allocation and professional development initiatives within academic libraries.

Specifically, the findings of the study will

- Contribute to filling the research gaps regarding library professionals' leadership quality;
- Help to design strategic plans for improving leadership quality based on users' expectation;
- Help in planning and arranging training, workshop and seminar;
- Enhance the quality of the library professionals;
- Implement required leadership quality;
- Build awareness among library professionals and users; *and*
- Finally, it will prompt farther study on leadership quality of LIS professionals.

1.11.1 Theoretical Significance of the Research

- a. **Advancement of Library Science Theory:** This research contributes to the advancement of library science theory by exploring the relationship between knowledge management, leadership quality, and user satisfaction in academic libraries. By examining these interrelated constructs, the study provides theoretical insights into how leadership practices impact user experiences within library settings.

- b. **Validation of Leadership Models:** The study validates existing leadership models, such as the LEADQUAL instrument, in the context of academic libraries in Bangladesh. By applying these theoretical frameworks to real-world scenarios, the research enhances our understanding of leadership effectiveness and its implications for user satisfaction.
- c. **Identification of Leadership Dimensions:** Through factor analysis and hypothesis testing, the research identifies specific dimensions of leadership quality, such as knowledge competency, technical skills, negotiation abilities, visionary outlook, and responsiveness. These findings contribute to the theoretical understanding of leadership constructs within the context of academic libraries.
- d. **Theoretical Framework for Assessing User Satisfaction:** By examining the impact of leadership quality on user satisfaction, the study develops a theoretical framework for assessing user satisfaction within academic library environments. This framework can serve as a basis for future research in library science and related fields.

1.11.2 Practical Significance of the Research

- a. **Enhanced Library Management Practices:** The findings of this research provide practical insights for library administrators and professionals in improving their leadership practices. By identifying areas of strength and areas for improvement, library managers can implement targeted strategies to enhance leadership quality and ultimately improve user satisfaction.
- b. **Optimized Resource Allocation:** Understanding the factors that contribute to user satisfaction allows library administrators to optimize resource allocation. By investing in areas that directly impact user experiences, such as staff training and infrastructure development, libraries can maximize the value of their resources and better serve their patrons.
- c. **Professional Development Initiatives:** The research highlights the importance of professional development initiatives for library professionals, such as training programs and workshops. By investing in the continuous learning and development of library staff, institutions can ensure that their personnel possess the necessary knowledge and skills to meet the evolving needs of library users.

- d. **Informed Decision-Making for Policy Development:** The insights gained from this research can inform policy development at the institutional and national levels. By understanding the factors that influence user satisfaction, policymakers can develop policies and guidelines that support effective leadership practices and enhance the overall quality of academic library services.
- e. **Improved User Experience and Satisfaction:** Ultimately, the practical significance of this research lies in its potential to improve the overall user experience and satisfaction within academic libraries. By addressing the factors that contribute to user satisfaction, libraries can create environments that are conducive to learning, research, and scholarly inquiry, ultimately fulfilling their mission to serve the academic community.

1.12 Reference Style

The American Psychological Association (APA) 7th edition has been adopted in the citation pattern and in bibliographical references. The following are a few examples:

Abshirow Mohamed, H., Datche, E., & Kisingu, T. (2018). Effect of Leadership Styles on Employee Performance in the Somali National Civil Service Commission. *International Journal of Novel Research in Humanity and Social Sciences*, 5(3), 56–69. www.noveltyjournals.com

Bahrainizadeh, M. (2013). Identification of Service Quality Dimensions and Measuring Service Quality of University Library from Users' Point of View in Persian Gulf University. *Advances in Environmental Biology*, 7(8), 1654–1662.

Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Linda C. Wang. (2024). Reporting Reliability, Convergent and Discriminant Validity with Structural Equation Modeling: A review and best-practice recommendation. *Asia Pacific Journal of Management*, 41, 745–783.

Dharejo, S., Hussain, N., Farooq, S. M., Kalwar, M. S., & Mallah, W. R. (2021). Examining the Effect of Authoritative and Laissez-Faire Leadership on Employee Involvement and Performance. *International Journal Advanced Research in*

1.13 Organization of the Thesis

This thesis is organized into seven chapters, namely the introduction, literature review, conceptual framework, methodology, data analysis, discussions, and suggestions & conclusion. Furthermore, each chapter of the thesis contains an introduction and a conclusion. The dissertation has been structured in a coherent manner, consisting of seven main chapters, which also include an appendix and a bibliography. The research process is schematically illustrated in figure 1.1.

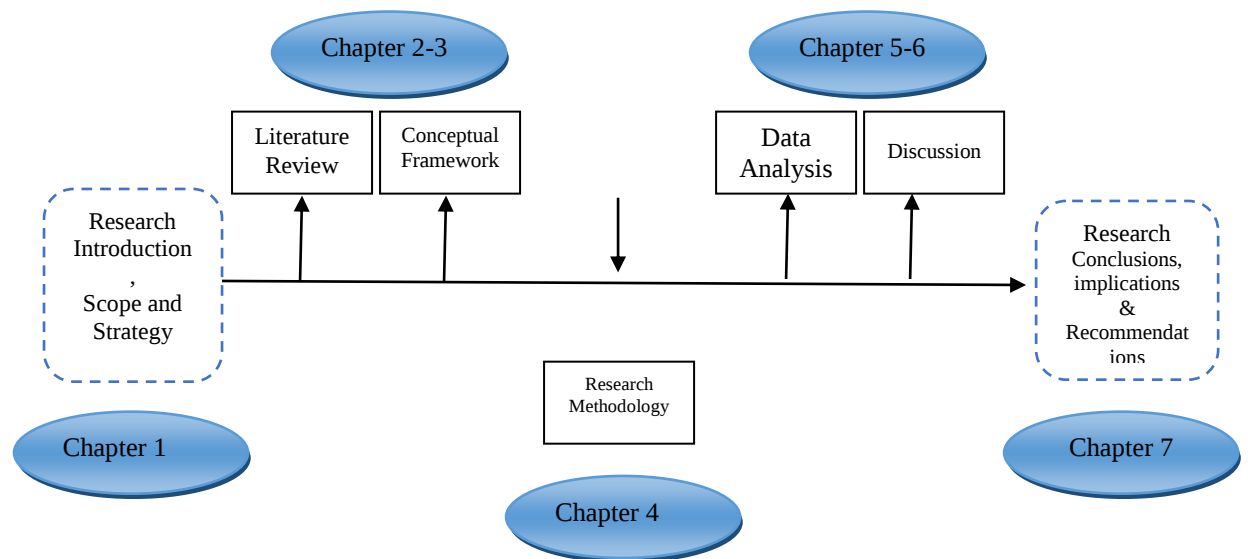


Figure 1.1: Schematic Structure of the Dissertation. Source: Author

Chapter One provided an initial overview of the study, including the background, problem statements, rationale, research objectives, research questions and hypotheses, research methods, data analysis procedures, population and sampling, scopes and limitations, importance, theoretical and practical significance, and operational definitions. The operational definitions encompass knowledge and leadership quality, user happiness, impact, knowledge competency, technical competency, negotiating skill, visionary ability, and responsiveness. Ultimately, the chapter presents a clear depiction of the thesis outline.

Chapter Two presents a comprehensive analysis of the literature that has been previously undertaken in various locations and periods around the world. Specifically,

this includes important ideas like Knowledge Management (KM), knowledge quality, leadership quality, knowledge and leadership competencies, leadership and leadership style, library leadership; the impact of knowledge and leadership quality; the relationship between knowledge management and leadership quality; knowledge leadership quality on user satisfaction; theoretical perspectives on leadership quality that includes leadership theories, traits and behavioral theory, situational and contingency theory, transformation & transaction theory, laissez faire leadership, autocratic leadership, instructional leadership, assessing the quality of library services, measuring differences in individual perceptions of library service quality, evaluating gaps in library service quality, measuring differences in individual perceptions of gaps in library service quality, identifying areas where research is lacking, and concluding with a summary of the literature review. The pertinent themes were knowledge and leadership prowess, user contentment, and the correlation between them. The leadership quality evaluation tools utilized SERVQUAL and LibQUAL, and also provided a comparative analysis of these techniques.

Chapter Three of the study presents a conceptual framework that includes the development of structural equation modeling, the influence of library leadership quality on user satisfaction, assessment zones for leadership quality, variations in leadership quality among librarians, gaps in leadership quality, variations in quality gaps among library professionals, and statistical methods.

Chapter Four provides an overview of the study methodology, including the research design, research site, assessment methods, data collection method, pilot survey, and statistical methodologies. It concludes with a summary of the findings.

Chapter Five examined the demographic data of participants, the current state of university libraries in Bangladesh, the utilization of library resources and services, the quality of services provided by university libraries, user satisfaction with the leadership quality of library professionals, the influence of librarians' leadership quality on user satisfaction, variations in leadership quality among individuals, and differences in leadership quality gaps based on user and university categories.

Chapter Six of the study examined several important aspects including the adequacy of the sampling, reliability, validity, and fitness of SEM. It also assessed the current state of

selected university libraries, the usage of library services, the quality of leadership in these libraries, and user satisfaction. Furthermore, it investigated the impact of knowledge and leadership quality on user satisfaction, as well as individual differences in leadership quality, leadership expectations, and leadership quality gaps. The study also presented hypotheses, explored the inter-correlation among research gaps, objectives, hypotheses, findings, and recommendations. Additionally, it discussed the relationship between the contemporary studies and issues like globalization and KM, Digital Transformation (DT) & Leadership, and Organizational Resilience and leadership in Crisis. The study also identified reasons for lower user satisfaction in public university libraries and discussed the implications of the findings.

Chapter Seven provided a concise summary of the main findings, suggestions, and potential areas for future research. The summary of the main findings encompassed leadership quality, user satisfaction, the influence of knowledge and leadership quality dimensions on user satisfaction, variations in leadership quality among users and universities, and disparities in leadership quality gaps among users and universities. The final chapter encompasses the primary issues, recommendations, and conclusion of the study.

1.13 Conclusion

Knowledge and Leadership quality is well-known and represents a very important field of research. Fulfilling the expectations of the community and its social setting determines the quality of the knowledge. The performance of LIS professionals in meeting user demands and their impressions of the leadership experience is referred to as leadership quality. Both terms have a significant impact on how well the library users' needs are met. From the discussion, it can be concluded that an effort has been made for the first time to assess the knowledge and leadership quality and its impact on user satisfaction in university libraries of Bangladesh using formulated an adapted LEADQUAL instrument, including library professional, teachers, students, and researchers from Public, private and international university libraries. Finally, based on the findings, an attempt will be made to develop a model using LEADQUAL for evaluating the impact of knowledge and leadership quality on user satisfaction in university libraries that will prompt further study.

CHAPTER TWO

CHAPTER TWO

Literature Review

2.1 Introduction

Chapter 2 investigates the exploration of leadership quality and service quality within the context of academic libraries. The chapter reviews the significant body of literature related to knowledge management, leadership quality, and their impact on library services. By examining theoretical frameworks, empirical studies, and conceptual definitions, this chapter aims to provide a comprehensive understanding of how knowledge and leadership competencies contribute to the overall performance and user satisfaction in university libraries. The literature review also includes an analysis of various leadership styles and their implications for library management, as well as a bibliometric analysis to highlight key research trends in this area.

2.2 Literature Review

A number of relevant studies on library leadership quality and service quality have been carried out nationally and internationally. Researcher tried to trace out the literature on different aspects of knowledge and leadership quality like Conceptual Definition, the impact of knowledge and leadership quality, Relationship between Knowledge and leadership quality, Leadership theories and Quality assessment tools etc. Apart from these, a bibliometric analysis is done to examine the bibliometric status of leadership in the field of librarianship visualizing the key publications or scientific productions with the help of VOSviewer and Biblioshiny (R-Studio).

2.2.1 Conceptual Definition

2.2.1.1 Knowledge Management (KM)

Knowledge Management (KM) is the process of creating, storing, sharing, and re-using organizational knowledge to help achieve the organization's goals and objectives (Tasmin et al., 2012). This concept is popularized in the business world in the late 20th century, and emphasizes the importance of continuously renewing strategic knowledge to gain a competitive edge, now widely applied in various organizations (Tandale et al.,

2011). Knowledge management can be defined as an organizational competency that enables individuals, teams, projects, or other communities of interest inside an organization to generate, gather, share, and utilize their aggregate knowledge for better performance. The concept of knowledge management encompasses all of the procedures that are implemented with the aim of finding relevant data and information sources within organizations, turning these sources into knowledge, and then distributing that knowledge to the various areas of the organization where it is required (Lakshman, 2007).

Knowledge Management (KM) is crucial for organizational performance and innovation. Leadership plays a significant role in influencing KM implementation in organizations. Various leadership theories have been proposed, impacting organizational performance differently. Amiri et al. (2020) reviewed the relationship between leadership styles and KM activities for successful implementation. Knowledge management encompasses a range of actions, projects, and approaches that organizations employ to generate, retain, transmit, and utilize knowledge in order to enhance their overall performance (Alavi & Leidner, 2001; Jahmani et al., 2018). KM covers a variety of models, ideas, and systems that contain useful and recurring knowledge, which can be utilized in new KM systems. Assessing the quality of the acquired information, the technical knowledge management system utilized, or the social KM approach employed is challenging and enhancing them is also not straightforward (Rech et al., 2007).

Higher education institutions in developing countries aim for superior innovation performance by emphasizing top management knowledge value, knowledge-oriented culture and knowledge-based rewards. Iqbal (2021) investigated how these knowledge management enablers influence innovation speed and quality, highlighting the mediating role of the knowledge-sharing process. Knowledge management influences organizational performance through the leveraging of knowledge assets and capabilities. Mills & Smith (2011) examined the impact of knowledge management practices on organizational performance using a decomposed view, emphasizing the importance of knowledge creation, knowledge retention, and knowledge sharing.

2.2.1.2 Knowledge Quality

University libraries serve as hubs of knowledge, providing students, faculty, and researchers with access to a vast array of information resources. However, the quality of knowledge available in these libraries can significantly impact the experiences and outcomes of their users (Ogunbodede & Sawyerr-George, 2023). Knowledge has been recognized as a crucial asset that enhances the competitive advantage of a firm. Numerous companies have come to the realization that skillful handling of knowledge is the sole means to exploit their fundamental strengths and attain a competitive edge (Politis, 2001). The quality of knowledge material is contingent upon the capacity to effectively convey the knowledge through suitable presentation styles, such as text, graphics, and video. Additionally, the usefulness of the content to the user is a determining factor (Kulkarni et al., 2006). Knowledge, defined as processes, techniques, or tools, is integral to economic prosperity and technological progress (Bolatan et al., 2022; Landaeta, 2008). Stemberkova et al. (2020) highlighted that effective knowledge management is essential for successful technology transfer, emphasizing the critical role knowledge plays in these processes.

One key aspect of knowledge quality is the currency and relevance of the materials. Libraries must continuously update their collections to ensure that the information they provide is up-to-date and aligned with the evolving needs of their patrons. As the volume of information grows, users can become overwhelmed, making it difficult to locate the exact information they require. Librarians and information professionals play a crucial role in guiding users through this complex landscape, educating them on effective search strategies and helping them distinguish between accurate and inauthentic sources.

In addition to currency, the breadth and depth of a library's collection are also important factors in knowledge quality. Libraries that can provide a diverse range of resources, spanning multiple disciplines and perspectives, can better support the diverse research and learning needs of their users.

2.2.1.3 Leadership Quality

University libraries serve as hubs of knowledge, providing students, faculty, and researchers with access to a vast array of information.

Management and leadership are inextricably related and enhance each other. Any attempt to keep the two apart is likely to create more issues than it fixes. The manager's duties include organizing, coordinating, and planning. It is the role of the leader to uplift and encourage. It takes work to become a good leader. Being a successful leader is possible if he/she has the drive and determination to do so (Sharma & Jain, 2013). Basically, managers focus on known techniques and goals, while leaders inspire others with a vision of the library's mission and effective ways to achieve it (Riggs, 2001).

2.2.1.4 Knowledge and Leadership Competencies

Competencies refer to the skills, expertise, and qualities that people throughout an organization are required to possess in order to make a valuable contribution to the firm's achievements. Effective library directors have specific qualities that are crucial in achieving desired results. Competencies are characteristics like knowledge and skills that individuals demonstrate to achieve goals in organizations, with specific leadership competencies being essential for effective leadership (Jena & Sahoo, 2014). Competencies refer to the amalgamation of knowledge, skills, and abilities that are pertinent to a specific professional role (Osa, 2014). Jordan (2012) identified 19 leadership competencies for library administrators, with customer service and integrity ranked highest. In the academic library sector, Ammons-Stephens et al., (2009) developed the core leadership competency model consisting of 17 competencies grouped under cognitive ability, visionary, interpersonal effectiveness, and managerial effectiveness. Core skills have been utilized by various academic professional organizations to effectively navigate their career paths. Manu et al. (2018) presented a comprehensive outline of the essential abilities for professionals in the field of library and information science. This included a focus on core professional skills and knowledge, such as leadership development, knowledge acquisition, personal attributes, and scholarly communication skills. These competencies were specifically tailored to meet the needs of academic library professionals.

Al Ansari & Al Khadher (2011) identified the essential skills and abilities that library and information professionals must possess in order to effectively fulfill their leadership roles. The researchers compiled a comprehensive list of 42 leadership skills through an exhaustive study of existing literature. The competencies were categorized into six meta-competencies: management effectiveness, cognitive abilities, social skills, motivational

skills, personal qualities, and occupational competencies. Winston & Dunkley (2002) identified the areas of competence for academic librarianship. The authors incorporated the recognition of leadership characteristics such as adaptability, proficient interpersonal communication, and sound decision-making. Additional leadership characteristics are encompassing with the capacity to demonstrate integrity, visionary, vigorous, implement strategy, and inspire others. Hollenbeck et al. (2006) corresponded with each other to discuss their perspectives on the significance of leadership competence models. The authors highlighted the fundamental assumptions of leadership competence models derived from both theoretical frameworks and practical experiences. Visagie et al. (2011) also identify the specific leadership competency types exhibited by managers in businesses and to cultivate a favorable environment for diversity management in order to sustain ongoing success.

Atanda & Udoeduok (2019) examined the proficiencies of librarians and the level of satisfaction among students regarding the information services provided at the University of Uyo Library. Three objectives, three research questions, and three hypotheses were developed for three skills. The study discovered a notable impact of three specific talents, namely the librarians' expertise in information resources, technical abilities, and interpersonal skills, on students' satisfaction. Le (2015) examined the top five issues facing academic library leadership in the digital era, outlining the necessary leadership competencies and strategies for enhancing them. The top five critical leadership qualities for academic libraries were determined by the study to be vision, honesty, managerial abilities, teamwork, and communication skills. The need for mentors, participation in leadership development programmes, gaining real-world leadership experience in libraries, applying for leadership positions, and self-awareness rank as the top five most effective strategies to build these abilities.

Leader effectiveness is defined by the dynamic interactions between leaders and followers, influenced by leader characteristics, follower attributes, and the quality of leader-subordinate relationships. This effectiveness is influenced by key attributes such as emotional stability, interpersonal skills, and cognitive competencies, which are essential for effective executive work (Zaccaro & Klimoski, 2002). Viitala (2004) explored the concept of knowledge leadership and its significance in organizational development and learning. Author bridged the gap between knowledge management and

leadership. The findings suggested that leaders vary in their approaches to knowledge leadership, with implications for organizational learning and development. A study on leadership qualities for academic library professionals highlighted the importance of managerial skills, personal characteristics, and knowledge competency like scholarly communication and financial management (Le, 2015). Aslam (2020) examined the primary difficulties faced by academic libraries in the context of the evolving higher education system, and discussed strategies for library leaders to effectively address these concerns. The author discovered that effective leadership in academic libraries requires inventive talents and competencies, proficient communication abilities, and a transformative mindset to address obstacles and foster a readiness to embrace change.

2.2.1.5 Leadership and Leadership Style

Despite much research throughout the years, there is currently no widely agreed-upon definition of leadership. The number of people who have sought to define leadership is almost equal to the number of definitions that exist. Leadership is one of the social impact mechanisms that have been thoroughly studied. It is a broad process that necessitates authority, accountability, and power delegation. Leaders assist in guiding, directing, and persuading to achieve the own organization's goals and objectives. As a result, leadership styles encompass all facets of conducting business both inside and outside of an organization, managing or resolving problems, assisting and directing employees to complete their jobs, and setting an example for others (Hugar, 2022).

Leadership is a critical component of every organization, as it plays a major role in determining its success or failure. Leadership styles are described as behavioral models that significantly impact organizational performance (Tsigu & Rao, 2015). Organizational researchers have focused on leadership practices and styles for many years. Researchers think that a leader's approach of realizing his potential will have a significant impact on performances (Khuwaja et al., 2020). Leadership is a process where an individual influences a group to achieve common goals, emphasizing effective leadership as the successful application of influence towards goal completion (Fought, 2016a). Sharma, M. K., & Jain, S. (2013) stated that leadership is defined as a process by which a person directs the organization in a way that makes it more cohesive and

coherent and influences others to accomplish an objective. These are achieved by putting leadership qualities to use, including convictions, ethics, values, character, knowledge, and abilities. In order to bring about meaningful change, leadership is the comprehensive sharing of vision, resources, and values. It is the capacity to inspire individuals with a desire to follow direction and to instill in them a sense of confidence and zeal.

A leader is someone who delegated or persuaded others to act in a way that carried out predetermined objectives. Leadership is thus seen as a social influence process in which the leader seeks the voluntary participation of subordinates in an effort to attain organization goals (Faiz Rasool et al., 2015). According to Memon (2014)), leadership is the process by which a person shapes the attitudes, ideas, and actions of others by taking charge of establishing the intuition's direction and enabling others to see the future and figure out how to archive it.

Mostly, leadership is the capacity to persuade others to voluntarily follow one's instructions or respect one's conclusions. According to Sundi (2013), Leadership is the capability to influence and inspire others to collaborate as a team under his direction in order to accomplish a specific goal. The process of persuading followers and leaders to make changes to accomplish organizational goals is called leadership. Armstrong (2004) defined leadership as the capacity to influence people voluntarily to act in a different way in order to complete the work assigned to them with the group's assistance. According to Conger, Jay & Kanungo, Rabindra (1994), leadership is the ability to set direction for a working group of people, win the group's commitment to that direction, and then inspire the group to accomplish the direction's goal. Since there is no one perfect leadership style, leaders who seek out the most effective ones may discover that a combination of styles works best (Darling & Leffel, 2010).

Human history has demonstrated time and again that effective leadership is essential to success. Effective leaders need to be growth-oriented and ready to adjust fast. Strong relationships are established by great leadership, which also enables to adjust quickly the most effective tactics to increase assets and income (Capozzi, 2018). Hassanzadeh Mohassel et al. (2024) investigated how leadership style (specifically transformational and servant) influences audit quality in audit firms. It also examines the mediating role

of knowledge sharing in enhancing the relationship between leadership style and audit quality, highlighting the importance of knowledge sharing in improving audit quality. According to views and research findings of Singh (2008), an organization's sincere desire to transform into a knowledge-creating and knowledge-managing enterprise is heavily dependent on the type of leader it has had and the leadership styles they have employed.

Koohang et al. (2017) carried out research to look at how knowledge management, and organizational performance are affected by leadership. The results showed a strong and positive relationship between organizational performance, knowledge management, and leadership. The results suggested that good leadership facilitates the successful application of knowledge management procedures, and ultimately improves organizational performance. The function of leaders in contemporary organisations has undergone a transformation, and the success of any organisation is contingent upon the leadership styles employed by its leaders. Genuine leaders demonstrate engagement with others by their thoughtfulness and humility, as they actively participate in their actions without seeking personal benefits (Mintzberg, 2010; Saleem, 2015a).

Librarians perceive leadership as an influence-producing process and recognize that informal leaders are not the only ones who may exercise leadership. A more systematic understanding of what makes for effective leadership is lacking. Team and emerging leadership have not received enough attention in the literature; the majority of leadership studies in the area use a headship perspective. In an effort to shed light on additional research that can guide and enhance practices, Wong (2017) highlighted academic librarians' comprehension of leadership and leadership development.

Because of the rapid developments and ongoing changes, libraries require library leaders who can manage and shape changes, bring theories and practices together, be solution-oriented, people-oriented, environment-oriented, well-appointed, successful, and creative (Konya & Gurel, 2014). Sasnett & Ross (2007) presented a model in health information management to assess the effectiveness of leadership style. The model provided a comprehensive framework for understanding how leaders perceive and navigate organizational challenges based on their preferred leadership styles. The results found that program directors commonly reported higher scores in human resource and

structural skills compared to political and symbolic skills. Faiz Rasool et al. (2015a) highlighted the critical role of leadership in the health sector of Pakistan and its impact on organizational effectiveness. Authors discussed the evolution of leadership theories and the importance of leadership styles in influencing employee job satisfaction and performance. The pilot study found that effective leadership styles positively impact employee job satisfaction and performance. Von Krogh et al. (2012) discussed various leadership theories such as style theory, role-modeling, and strategic leadership in the context of knowledge creation. Authors explored how different leadership styles impact knowledge sharing, team efficacy, and organizational effectiveness; and emphasized the need for leadership to bridge the gap between different types of knowledge assets and their impact on knowledge creation. Awan & Mahmood (2010) explored leadership style, organizational culture, and job commitment in university libraries in Pakistan, finding that most professionals perceived an autocratic leadership style and an achievement and bureaucratic culture.

2.2.1.6 Library Leadership

Academic libraries are experiencing significant impacts on leadership roles due to the changing environment of higher education. Aslam (2018) focused on identifying key challenges in libraries, leadership skills, effective leadership traits, and the need for new skills development for library leaders in the evolving academic landscape. Leadership in libraries is often misunderstood due to multiple definitions and styles, making it challenging to grasp the concept (Phillips, 2014). The library's leadership is ultimately responsible for deciding whether and how a philosophy and vision are expressed and carried out. Leadership affects the institutional function, efficacy, and flexibility of libraries (Weiner, 2017).

Leadership is crucial in all circumstances, but it becomes particularly vital during periods of swift and profound transformation (O'Connor, 2014). Libraries require leaders who can adapt to and stay updated with changes and advancements, effectively manage and influence these changes, integrate theories and practices, prioritize solutions, prioritize people and the environment, possess the necessary qualifications, achieve success, and demonstrate creativity. Due to the rapid pace of developments and ongoing changes, it has become increasingly crucial for library managers to enhance their leadership abilities

(Konya & Gurel, 2014). Library leaders at all levels prioritize skills development, but the key challenge for both commercial and public organizations is how to promote leadership development with limited funds. Leadership in academic libraries relies on a set of essential abilities that are crucial for success in this field. Effective leaders are individuals that inspire and incentivize their subordinates to surpass expectations and enhance the morale of employees by providing support to establish elevated standards and principles (Aslam, 2019).

Mullins & Linehan (2006) tried to explore the desired qualities of public library leaders through interviews with 30 senior librarians from Ireland, the UK, and the USA. Findings revealed that while there is no universal behavior for effective leadership, attention to implementing vision and desired goals is prioritized by two-thirds of the interviewees. So, library leaders should develop their teams by coaching, managing budgets, setting goals, and maintaining relationships while also handling changes in information policy and intellectual property rights (Sophia et al., 2013). Phillips (2014) explored the various dimensions of leadership, its importance, and its integration into the Library and Information Science (LIS) curriculum by reviewing of 10 years scholarly research on library leadership. The author identified key qualities essential for effective library leadership, including commitment, communication skills, and empathy.

Fought (2016) emphasized the importance of effective library leadership in academic health sciences libraries to influence staff towards collective goals and library effectiveness. The study found that significance lies in addressing the lack of knowledge regarding electronic information resources among physicians and the contributions of academic libraries to student success and retention. Le (2015) focused on academic library leadership in the digital age in American academic library, identifying the top five challenges, essential leadership skills, and best ways to develop these skills. The survey identified challenges like demonstrating library values, managing fiscal uncertainty, balancing digital and print materials, and emphasizes leadership attributes such as vision, integrity, and collaboration skills. Green (2007) discussed major issues and trends in academic libraries and leadership skills, focusing on collaboration, emerging trends, skills, and qualities for the next generation of leaders. Collaboration is highlighted as crucial for success in academic libraries, with an emphasis on working with the community and developing effective leadership skills and qualities. Ameen (2006)

focused on the challenges faced in preparing Library and LIS professionals for leadership roles in Pakistan. It investigated the lack of leadership qualities among professionals in the field and the impact on the overall development of the library profession in the country. Yang et al. (2016) assessed the impact of an Asian library leadership institute on participants, revealing enhanced leadership skills, knowledge, and career progression. While the study couldn't establish a direct cause-effect link, it provided evidence of positive changes in participants' professional lives, motivating organizers to continue offering the institute in the Asia region.

Wong (2017) examined three prevalent leadership styles in academic libraries: emergent leadership, team leadership, and headship, highlighting the need of comprehending their distinctions. The study revealed that the topics of team and emerging leadership have not received sufficient attention. Most of the existing research on leadership in this field primarily focuses on the concept of headship. It is recommended that leaders working in academic libraries participate in management-related workshops and conferences. This will provide them with additional knowledge on human and resource management within the library, enabling them to demonstrate effective leadership (Akparobore & Omosekejimi, 2020). Feldmann et al. (2013) emphasizes the importance of academic librarians gaining experience and training to be well-prepared for future leadership roles, especially as middle management positions in academic libraries decrease. It also highlights the role of library administration in providing such opportunities for professional growth.

Jange (2012) highlighted the need for LIS professionals to acquire leadership competencies to effectively navigate the evolving landscape of libraries and information services. The author emphasized the role of graduate programs in LIS in preparing students for leadership positions within the profession. He mentioned that leadership development should be integrated into the curriculum of LIS programs to equip students with the necessary skills and knowledge. Author found some challenges faced by LIS professionals in assuming leadership roles and the strategies that can be employed to address these challenges. Finally, he stressed the significance of leadership training for LIS professionals to enhance their capabilities and drive innovation in library and information services.

Leadership is a crucial skill for librarians in managing academic and research libraries effectively for improved productivity, visibility, and functional development. Pasha & Jange (2016) reviewed the existing literature on library leadership and discussed the competencies necessary to become strategic library leaders, drawing from various leadership models proposed by management experts. The study aimed to identify the traits essential for effective leadership among librarians in Dubai, with a focus on fostering a conducive atmosphere within libraries to enhance teamwork and performance. Riggs (2001) discussed the essential qualities and challenges faced by leaders in library and information science professions. He highlighted the importance of courage in leadership roles, emphasizing the need for leaders to make difficult decisions. (DeLong, 2009) discussed the importance of leadership in libraries, especially focusing on new professionals entering the field. It highlights the challenges faced by librarians in leadership roles, such as technological advancements, budget fluctuations, and changing expectations. The study emphasizes the need for developing leadership skills among new library and information science professionals, as identified in a Canadian national survey

2.2.2 The Impact of Knowledge and Leadership Quality

A review of previous research studies offers valuable insights into the factors that contribute to effective leadership practices and organizational success within academic libraries. By analyzing empirical studies, case analyses, and literature reviews, this section identifies key determinants of leadership quality and highlights areas for further investigation. Through a critical lens, this review aims to uncover trends, gaps, and emerging themes in the literature, setting the stage for empirical inquiry. Libraries play a crucial role in meeting the diverse information needs of users, requiring effective leadership. Different leadership styles can impact organizational behavior and goal achievement positively (Segun-Adeniran, 2015).

Effective leadership is crucial at all times, but it becomes much more crucial during periods of sudden and significant transformation (O'Connor, 2014). The impact of the leadership scopes provides more exhaustive directions, than does the previous analysis, about the sorts of leadership that mark an alteration in student outcome (Robinson et al., 2008). The quality of knowledge and its impact is important (Marwick, 2001) in

educational institutions because knowledge is, typically, reused by people who do not authored it and will have a lifetime of several years. Quality aspects for knowledge include usability-related aspects such as readability, understandability or learnability, as well as reliability, efficiency, maintainability, portability as well as impact etc. Rech et al. (2007) presented a knowledge quality model. According to the authors knowledge domain might require a specific quality model emphasizing specific quality aspects including functionality, reliability, usability, efficiency, maintainability and portability. Knowledge-oriented leadership plays a significant role in enhancing the sustainable service quality of higher education institutions. The Mansoor & Hussain (2024) focused on how leaders in such institutions can leverage knowledge-oriented practices to drive continuous quality improvement in their services.

A study conducted by Shamim et al. (2019) explored how knowledge-oriented leadership (KOL) influences KM behavior, as well as the mediating role of employee work attitudes like affective commitment, creative self-efficacy, and work engagement. The result found that Knowledge-oriented leadership (KOL) has a positive influence on knowledge management (KM) behavior among hospitality employees at the individual level. Knowledge is crucial for organizations to excel in the competitive environment, emphasizing the importance of knowledge management. The study conducted by BOZDOĞAN (2013) focused on understanding the perceptions of accounting department managers in Turkey regarding knowledge leadership.

Library leaders face excitement for new possibilities and apprehension about choices, as they strive to manage diverse reactions within themselves and their staff. The article outlines the rationale for focusing on library leadership, core beliefs guiding leadership development, traits to be nurtured in training, and strategies for administrators to foster leadership within their libraries. Library leaders encounter challenges in managing the expectations of diverse customers, balancing between traditional services and digital resources, and coping with staffing issues like recruitment, training, and deployment. In their leadership roles, they need to develop the ability to build relationships and coalitions, support the success of others, and exert influence without explicit power (Schreiber & Shannon, 2001). Konya & Gurel (2014) focused on the leadership qualities and skills required in the library service sector. The author investigated the significance

of leadership in organizational success and the impact of transformational and transactional leadership and found a positive impact of transformational leadership on organizational success. Robinson et al. (2008) examined the impact of different leadership types on students' academic and nonacademic outcomes. A meta-analysis compared the effects of transformational and instructional leadership, showing that instructional leadership had a significantly higher impact on student outcomes. Hirtz et al. (2007) explored the impact of leadership quality within organizations, focusing how leadership behaviors influence quality outcomes. The study found a positive correlation between transformational leadership and quality outcomes in organizations, indicating that this leadership style is associated with higher quality performance.

Mansoor & Hussain (2024) examined the impact of knowledge-oriented leadership on sustainable service quality in higher education institutes. The study explored the mediating roles of organizational innovation and psychological empowerment in this relationship. Knowledge-oriented leadership is identified as a vital factor in promoting knowledge sharing, innovation, and sustainable service quality in organizations. According to Lawrence (2019), university librarians have a democratic and laissez-faire leadership style, which has a significant impact on how committed, devoted, and dedicated the library staff is to their work-related activities in the library. Pasha & Jange (2016) focused on the impact of leadership styles and technology adoption on job satisfaction among librarians in academic libraries. The study explored how different leadership styles influence work environments and employee job satisfaction, emphasizing the role of transformational leadership in stimulating innovation and creativity.

2.2.3 The Relationship between Knowledge Management and Leadership Quality

Effective knowledge management hinges upon strong leadership practices that foster a culture of innovation, collaboration, and continuous learning within academic libraries. This section explores the symbiotic relationship between knowledge management and leadership, examining how leadership dynamics shape knowledge creation, dissemination, and utilization processes. Through theoretical frameworks and empirical evidence, this review elucidates the interconnectedness of these key constructs and their

impact on organizational performance. Arab-Rahmatipour & Mohammad-Alipour (2015) investigated the relationship between knowledge management and transformational leadership style among managers of hospital libraries in Tehran. The result indicated that there is an average relationship and positive and significant correlation between the components of knowledge management and components of transformation leadership style. Donate & Sánchez de (2015) examined the role of a specific type of organizational leadership - knowledge-oriented leadership- in knowledge management (KM) initiatives that seek to achieve innovation. Authors found that the indirect effect of knowledge-oriented leadership on a company's innovations results through knowledge management initiatives. The effect is strong (path coefficient=0.318, $p < 0.001$) and accounts for 44.2% of the explained variance of innovation performance. There is a significant effect between knowledge management processes and sustainable development dimensions, recommending the college to utilize the processes for sustainable development and competitive advantage (Ahmed, 2022).

University libraries play a crucial role in supporting the academic and research activities of a university community. Two key factors that can influence user satisfaction in university libraries are the knowledge and leadership quality of library staff (Rizky et al., 2020). Ensuring user satisfaction is essential for libraries to fulfill their mission effectively. Knowledge leadership is seen as the driving force behind the interplay among the elements of organizational intellectual capital management. Modern management scholars frequently highlight the importance of effectively acquiring, developing, and utilizing knowledge. They argue that obtaining new knowledge relies on transforming organizations and engaging in leadership activities that can adapt to evolving organizational circumstances. Knowledge-based leadership has a direct impact on the capacity to attract knowledge (Sadeghi & Rad, 2018). Supermane (2019) did a study to examine if knowledge management acts as a mediator between transformational leadership and teaching and learning innovation. The findings of this study suggest that knowledge management did not act as a mediator, as the direct impact of transformational leadership on teaching and learning innovation was more significant than the indirect impact through knowledge management.

2.2.4 Knowledge Leadership Quality on User Satisfaction

Assessing the library's effectiveness relies heavily on user happiness. The fundamental idea is that the effectiveness of the library increases in direct proportion to the level of users' satisfaction (Mezbah-Ul-Islam, 2003). Evaluating user satisfaction with university libraries is essential to determine the overall efficiency of the selected university libraries. Academic library leaders should continuously demonstrate the value of their libraries by staying updated on new technologies, understanding user needs through surveys, and adapting to trends to remain relevant (Moropa, 2010).

Different researchers discussed the relationship between knowledge and leadership quality and user satisfaction in diverse contexts. Leadership management positively influences students' satisfaction in universities in Kenya (Kandie et al., 2018). The study's results suggested that better leadership management within universities leads to increased student satisfaction levels, highlighting the crucial role of leadership in shaping students' experiences and perceptions within educational institutions. Famolu & Adelekan (2018) asserted that there is a direct cause-and-effect link between leadership and the performance of organizations. Leaders are not limited to management; they can exist at any level of an organization. In order to get the most out of the organization's resources—including its most valuable and costly ones—they exert influence over others in their immediate vicinity.

It is advisable for university administrators to have a thorough understanding of the significant advantages and drawbacks associated with various leadership styles. This knowledge is crucial because it can influence how organizational politics are seen, which in turn can impact the satisfaction level. They need to take into account the skills and abilities of their employees and actively encourage their subordinates to reach their full potential by exhibiting more transformational leadership qualities. Additionally, they should strive to create a stimulating and less politically charged work atmosphere, which will ultimately result in increased job satisfaction (Saleem, 2015b).

2.2.5 Theoretical Perspectives on Leadership Quality

The study of leadership has become the most popular area of study in organizational behavior worldwide, and several theories have been developed that concentrate on the tactics, characteristics, and situational approach of leadership. Due to the increasing interest in leadership, sociologists and behavioral scientists started examining the factors that predict a leader's behavior as well as the potential outcomes of their actions.

Leadership in library contexts encompasses a diverse array of theoretical perspectives, ranging from traditional models to contemporary theories that reflect the evolving nature of leadership in the digital age. This section critically examines these perspectives, elucidating how they inform leadership practices and behaviors within academic library settings. By synthesizing insights from transformational, transactional, situational, and distributed leadership theories, this review provides a nuanced understanding of the multifaceted nature of leadership in libraries.

2.2.5.1 Leadership Theories

General leadership theories are described by (Seidel et al. 2019) as well as their relevance from the lean viewpoint. They addressed 7 leadership theory as authentic leadership theory, leader-member exchange theory, complexity leadership theory, transformational leadership, distributed leadership, servant leadership and situational leadership. The leadership framework based upon transformation and transactional leadership was adopted by (Chen, 2007). There are 2 leadership approaches and 5 leadership theories like as trait approach, behaviour approach; Fiedler's contingency theory, path-goal theory, leadership substitutes' theory as contingency theories; and charismatic and transformational leadership as new leadership theories. Viitala (2004) examined the elements that comprise knowledge leadership. Finally, he defined "leadership that promotes learning is leadership where the leader, together with his/her subordinates clarifies the direction of development, creates a climate which promotes learning, and supports learning processes at both individual and group level. The leader also inspires his/her subordinates towards continual personal development through his/her own example".

Leadership theories and models are explored to enhance the skills of health professionals in capacity building. Kumar et al. (2014) proposed a simplified model for training health

professionals in leadership skills, emphasizing the trainable nature of leadership and the importance of continuous learning. Fagan (2012) examined current research on effective library leadership as well as leadership theories from mainstream management literature. The author advocated for additional research on the characteristics of effective library directors and deans, citing the necessity to base studies on accepted theories of leadership and employ reliable tools for empirical research.

2.2.5.2 Traits and Behavioral Theory

One of the first theories of leadership developed in the 1940s was the characteristic perspective, which holds that exceptional leaders have unique personality qualities that both set them apart from others and their followers and make them more suitable for leadership. An examination of the literature on leadership conducted by Stogdill in 1948 produced the most extensive list of characteristics. Trait theory was disproved by Stogdill's discovery that leadership contexts differ greatly and put diverse demands on leaders, which gave rise to situational and behavioral approaches.

According to behavioral theories of leadership, a leader's actions set them apart from their followers. It is predicated on the idea that exceptional leaders are created, not born, and it emphasizes the behaviors of leaders rather than their traits or inner moods. This notion holds that people can pick up leadership skills through instruction and observation. Behavior theories look at a leader's task orientation, people orientation, or combination of both. Research carried out in 1945 at Ohio State University and the University of Michigan defined two primary types of leader behavior: production-centered behavior and employee-centered behavior (Hersey et al., 2012).

2.2.5.3 Situational and Contingency Theory

Contingency theory is a style of leadership where the combination of the leader's personal traits and situational factors determines how effective the leadership is. Contingency theories operate under the premise that situational factors pertaining to the environment moderate the relationship between leadership style and organizational outcomes. As a result, leadership style cannot predict outcomes unless the situational variables are known (Thompson & Glasø, 2018).

This leadership method draws from three models: the situational leadership theory of Hersey and Blanchard (1969), the path-goal theory, and the co-worker theory of Fiedler, F. E., & House (1988). With this method and the three models, there isn't a single optimum leadership style for every circumstance. A multitude of factors influence success, such as the leader's favored style, the followers' skills and actions, and situational factors. Three aspects determine control: the degree of task structure, the relationship between the leader and followers, and the leader's authority, position, or power. Effective leadership necessitates adapting one's style of leadership to situational factors.

2.2.5.4 Transformation and Transaction Theory

Since 1990, transformational and transactional leadership have become prominent in leadership studies. Transformational leaders inspire and motivate subordinates, enhancing job satisfaction and organizational outcomes, while transactional leaders focus on a reciprocal exchange, rewarding or punishing based on performance to ensure productivity and loyalty (Saleem, 2015a). Transformational leadership is a leadership style that is frequently explored in LIS education and leadership literature. Libraries have experienced substantial transformations in the last two decades. Transformational leadership can be defined as leaders who serve as agents for their followers (Hicks & Given, 2013; Phillips, 2014). Librarians are exploring organizational learning and new management styles to adapt to rapid changes in their environment. Transformational management styles, which can be learned and implemented by library administrators, are being considered for coping with these changes (Castiglione, 2006).

A substantial amount of study on the theory of transformational and transactional leadership has been produced over the last 25 years. The foundation of transactional theories is a system of incentives and penalties for achieving certain goals, with an emphasis on the role of supervision, organization, and group performance. The nature of the transaction—reward or discipline—is determined by the worker's output. According to Chan (2005), who referenced Longshore & Bass (1987), transactional leaders appeal to their subordinates' self-interests. Through negotiating and exchanging, transactional leaders try to satisfy the demands of their subordinates at the moment. Reaching the agreed upon performance level is the main goal shared by leaders and followers. The relationships that arise between leaders and followers are the main emphasis of

transformational theories. The capacity of a leader to inspire subordinates to put the organization's needs ahead of their own is known as transformational leadership. According to Longshore & Bass (1987), a transformative leader appeals to the moral responsibilities and ideals of their subordinates and draws from strongly held personal principles that are unaccountable. According to Bass, there are four different kinds of transformative leadership behavior: intellectual stimulation, individualized consideration, inspiring motivation, and idealized influence (charisma).

The Transformational Leadership theory outlines the specific behaviors that leaders use to influence their followers. These behaviors include: clearly and persuasively communicating a vision, providing guidance on how to achieve the vision, displaying confidence and optimism, demonstrating trust in followers, and setting a positive example (Seidel et al., 2019; Stone et al., 2004). The goal of transformational leadership is to turn an individual's vision into a shared vision that is carried out by followers. Put differently, a variety of transformational leadership behaviors, such as charisma, idealized influence, inspiring motivation, intellectual stimulation, and individualized concern, can be used to observe the transformational process (Sundi, 2013). Transformational leadership is a key factor in enhancing user satisfaction. Desa & Kassim (2010) explored the interrelation between leadership, total quality management, quality management systems, and users' satisfaction, focusing on improving performance in library services.

2.2.5.5 Laissez Faire Leadership

The situational aspects that affect a leader's capacity to lead include their preferred style. A lot of empirical freedom in leadership is supported by contingency theories of leadership (laissez-faire style) (Dharejo et al., 2021). Several studies have put it to the test and discovered that it provides a legitimate and trustworthy explanation of how good leadership can be attained. It emphasizes how crucial it is to pay attention to the interpersonal dynamics between a leader's approach and the needs of different teams and circumstances. Abshirow Mohamed et al., (2018) claims that under this style of leadership, subordinates are given the greatest amount of independence. They are allowed complete autonomy to choose their own policies, procedures, and means of decision-making.

It is based on the idea that the best leadership styles are those that permit employees to have some degree of autonomy in applying any style of leadership. The purpose of this study is to learn more about the potential relationship between employee performance and laissez-faire. However, a lot has been written about the connection between good management and a positive sense of self. In his study on the relationship between values and organizational leadership, Kerns in 2004 made a strong case for the laissez-faire approach to closing the gap between employers and employees. His main concern was that this approach would foster a supportive atmosphere where both parties, employers and employees, would feel like a family, regardless of their respective roles.

2.2.5.6 Autocratic Leadership

The traditional "do as I say" kind of leader is an autocrat. These leaders are usually inexperienced when it comes to leadership and are thrown into a new role or task that includes managing others. Autocratic leaders keep the power to make decisions for themselves (Hassnain, 2023). They have the power to permanently harm an organization by pressuring their "followers" to implement plans and services in a limited manner that is determined by their definition of success. Apart from coercion, there is no unified vision and minimal incentive. Under autocratic leadership, commitment, creativity, and innovation are usually eliminated (Luqman et al., 2019). According to Michael (2010), the majority of people who obey autocratic dictators are merely biding their time until this leadership style ultimately fails and the leader is overthrown.

2.2.5.7 Instructional Leadership

Research from the late 1970s and early 1980s provides the empirical basis for instructional leadership theory. These investigations concentrated on urban poor schools where students succeeded in spite of major obstacles. Strong instructional leadership was demonstrated by these institutions, which included a peaceful, congenial learning atmosphere, well stated teaching objectives, and high teacher expectations for students. A study conducted by Robinson et al. (2008) explored instructional leadership, which was initially centered around the principal's role in overseeing teaching programs and fostering a positive academic culture. Recent research has shifted towards a more inclusive approach, considering shared instructional leadership among various staff

members. The analysis emphasizes the importance of instructional leadership in educational settings and its impact on student outcomes.

2.2.6 Models and Frameworks for Assessing Leadership Quality and User Satisfaction

Various models and frameworks have been developed to assess leadership quality and user satisfaction in academic libraries, offering valuable tools for research and practice. This section evaluates the strengths, limitations, and applicability of these instruments within the context of Bangladesh's academic library landscape. By critically analyzing the SERVQUAL model, LEADQUAL instrument, and other frameworks, this review aims to inform methodological approaches and enhance our understanding of leadership dynamics and user experiences.

2.2.6.1 Quality Assessment Tool

Quality assessment is the most useful and easy to evaluate the success of library systems and services (Mezbah-Ul-Islam, 2003). University libraries are service oriented organizations which are established for the provision of relevant information resources and quality services to meet the information needs of their users (Alam, 2017). Through the years different research streams have focused on developing tools and techniques for measuring quality (Roy & Bouchard, 1999). In 1985, initiative has been evolved by the authors as an effective instrument to measure library service quality. It has been used in various library settings, including academic, special and public libraries around the world including Bangladesh.

Kolonairi & Fassoulis (2017) aimed to explore how library employees perceive knowledge management, as well as which KM tools and techniques are adopted by academic libraries. The results indicated that although practitioners are aware of knowledge management and appreciative of its benefits not only for library performance but also for LIS professionals' future career options, there is a lack of clarity on fundamental KM issues. Bozdoğan (2013) revealed the perception of accounting department managers towards knowledge leadership from a knowledge management perspective with a survey study in Turkey and to create a scientific basis for subsequent studies to be carried out in the future.

Quality (Parasuraman et al., 1985) initially identified ten dimensions of leadership quality which are “(1) reliability, (2) responsiveness, (3) competence; (4) creditability; (5) access, (6) courtesy, (7) security, (8) communication, (9) understanding the customer, and (10) tangibles”. In a later study, Parasuraman et al. (1988) combined all the components of the ten originally conceptualized dimensions into five dimensions which are “(1) *tangibles* - the appearance of physical facilities, equipment, personnel, and communication materials; (2) *reliability* - the ability to perform the promised service dependably and accurately; (3) *responsiveness* - the willingness to help customers and provide prompt service; (4) *assurance* - the knowledge and courtesy of employees and their ability to inspire trust and confidence; and (5) *empathy* - the provision of caring, individualized attention to customers”.

LEADQUAL generated for this study requires respondents to rate leadership quality in a three-column format, i.e., minimum leadership expectation, desired leadership expectation, and actual leadership performance. The minimum and desired leadership expectations appear at either end, with the area in between known as the zone of tolerance. The zone of tolerance represents the range of leadership performance which users consider satisfactory. A leadership performance “below the tolerance zone could create disappointment, frustration, and dissatisfaction as well as decreased customer loyalty and reliability” (Berry and Parasuraman, 1991). On the other hand, a performance level “above the tolerance zone would pleasantly surprise users and therefore strengthen their loyalty and reliability”. Andaleeb and Simmonds (1998) adequately covers the entire services of academic libraries due to the inclusion of additional “resources” dimension with existing LEADQUAL dimensionalities and merging the former two dimensions “assurance and empathy” into a separate one “demeanor”. So, the modified LEADQUAL dimensions are “competency, responsiveness, manner, and tangibles”. They conducted a multiple regression analysis to assess the impact of leadership dimensions of LEADQUAL on user satisfaction. For the multiple regression analysis, this study considered five dimensions as independent variables and overall user satisfaction as the dependent variable.

Kumar (2012) conducted a study on user satisfaction and leadership quality of the university libraries in Kerala using 17 statements of five dimensions which are “(1)

reliability, (2) assurance, (3) tangibles, (4) empathy, and (5) responsiveness”. Asogwa et al. (2014) conducted a study on use of SERVQUAL in the evaluation of service quality of academic libraries in developing countries using 22 statements of 5 dimensions of SERVQUAL such as “(1) tangibility, (2) reliability, (3) responsiveness, (4) assurance and (5) empathy”. In Bangladesh, Shoeb and Ahmed (2009) conducted a study on individual differences in service quality assessment of IUB Library. They modified LEADQUAL instrument focusing on 30 statements of the following seven dimensions: “(1) assurance; (2) collections and access; (3) empathy; (4) library as place; (5) reliability; (6) responsiveness; and (7) tangibles”. They asked users to evaluate each questionnaire item with three-column format from 1 “lowest” to 7 “highest” corresponding to a 7-point Likert scale. Ahmed and Shoeb (2009) similarly focused on 30 statements of the seven dimensions using a 7-point Likert scale to measure the service quality of DU Library in their earlier study. Shoeb (2011) identified the service superiority, zone of tolerance and underlying dimensions in the IUB Library using SERVQUAL. In order to enhance and sustain library leadership and services, it is crucial to evaluate the leadership quality as well as current services. This includes assessing user happiness, identifying any gaps in leadership and service quality, and determining how users prioritize different dimensions of leadership and service quality in the evolving information landscape. According to numerous academics, evaluating the quality of library leaders and services by considering user feedback is the simplest and most effective method for determining the success of university libraries. This technique helps to minimize the disparity between user expectations and their actual experience (M. J. Alam, 2022; Yu et al., 2008).

Based on the available literature, it can be concluded that the different dimensions, like resourcefulness, competency, responsiveness behavior and tangibles are desirable for conducting service quality or leadership quality assessment of library service and quality. Besides, so many statements of leadership quality are more relevant to assess the leadership quality in higher academic libraries. The statements of Alam (2017) regarding the overall satisfaction of library users are rational. Three-column formats, i.e., desired service expectation, minimum service expectation, and actual service performance are expected for library users to rate the service quality. From the available literature, it is found that all the studies on assessing library service quality used from 1 “lowest” to 7

“highest” corresponding to a 7-point Likert scale. Based on the study three-column formats like minimum leadership expectation, desired leadership expectation and actual leadership expectation are formulated on assessing leadership quality used from 1 lowest to 7 highest corresponding to a 7-point likert scales.

2.2.6.2 Conceptual Model Development

Building on insights gleaned from the literature, this section proposes a conceptual model for understanding the complex relationships between knowledge management, leadership quality, and user satisfaction in academic libraries. By integrating theoretical perspectives, empirical evidence, and practical considerations, this conceptual model offers a roadmap for empirical investigation and lays the foundation for further research in the field.

Through this comprehensive review of the literature, we aim to provide a robust theoretical foundation for our empirical inquiry into the impact of knowledge and leadership quality on user satisfaction in academic libraries of Bangladesh.

2.2.7 Bibliometric Analysis on Knowledge and Leadership Quality

Today's globe is experiencing an expanding problem with leadership. Leadership is essential for managing the library administration, particularly in the field of library and information management. The study considered the whole literature study of leadership and library i.e. documents published during January 1943- July 2021 in Scopus.

The total number of 1990 documents in the field of leadership and library were identified with the help of RStudio (Biblioshiny) and VOSviewer. The study found that the most papers were published during the 2019–2020 academic year, totaling 12625 records (Figure 2.1).

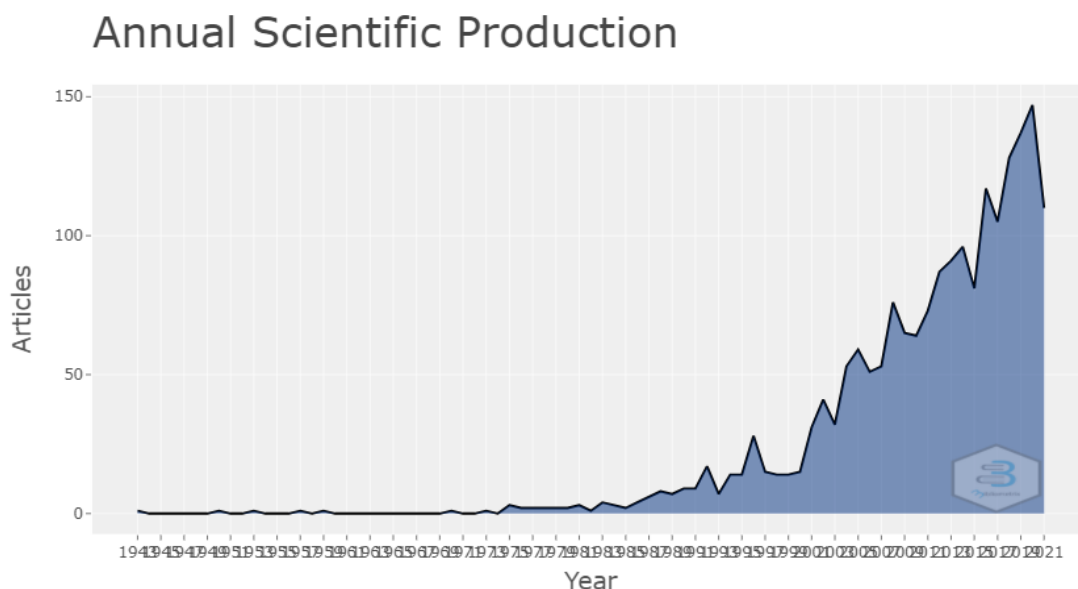


Figure 2.1: Annual scientific production on knowledge and leadership

According to the results of the bibliometric analysis, "Yang, Laurence T." was the most productive author, the United States and China were the world's two most productive nations and the Journal of Library Administration (n=114) was the most prolific journal (Figure 2.2).

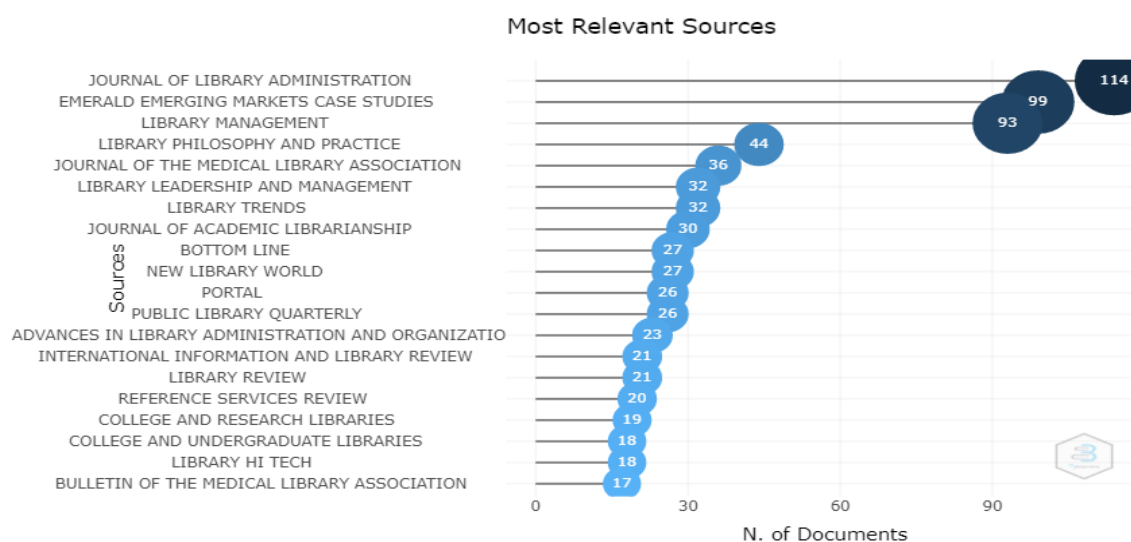


Figure 2.2: Most Relevant Journal Sources in Knowledge Leadership

The study found most cited keywords is leadership (n=612) (Figure 2.3).



Figure 2.3: the Most Used Keywords

The bibliometric analysis of leadership in library research activities is visualized in this study. The analysis reveals a working link between publications, countries, and writers. The visualizations created on the subject provide illuminating details on the status of the scientific literature on leadership in knowledge management as well as current trends, while also highlighting the aptitudes of eager researchers and decision-makers in grasping this study issue (Figure 2.4).

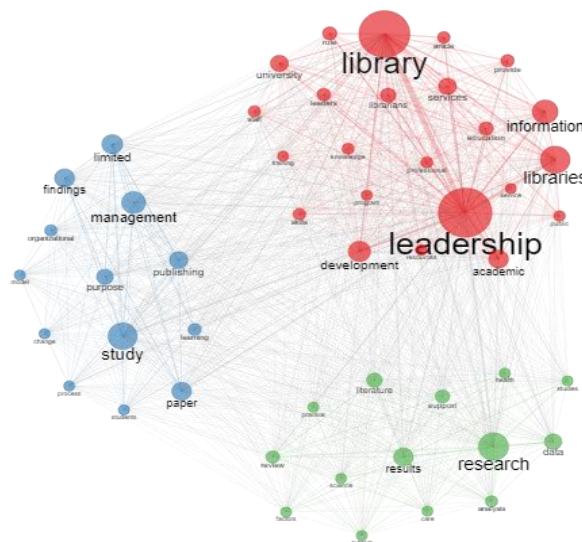


Figure 2.4: Co-occurrence Networking between Library and Leadership

2.3 Research on Knowledge, Leadership and Quality Assessment

Library performance, service quality, and leadership support significantly influence user satisfaction. Arifin et al. (2023) investigated how user satisfaction is affected by leadership support, service quality, and university library performance. In the study, 380 students from nine faculties made up the sample, and SmartPLS is used for data analysis. The study's findings demonstrate that leadership support, service quality, and library performance all have a big impact on patron happiness. Digital library system quality factors, particularly information quality, strongly influence user satisfaction, behavioral intention, and actual use, with satisfaction positively impacting actual use (Alzahrani et al., 2019).

Knowledge Management (KM) Practice and Library Users' Satisfaction are two essential components that contribute significantly to the creation of organizational value. Most businesses concentrate on improving their knowledge processes' capacity to generate new information. Tasmin et al. (2012) conducted an empirical test of the various KM practice and types used in Malaysian university libraries. Findings showed that Knowledge Management Practice (KMP) improved library patron satisfaction. Library resources, staff competence, demeanor approach, and tangible facilities significantly impact user satisfaction in Bangladeshi public university libraries (Alam & Mezbah-Ul-Islam, 2022). Digital library quality and user affinity significantly impact user satisfaction and loyalty in Chinese universities (Xu & Du, 2018). Malakooti et al. (2021) Examined the relationship between patrons' loyalty to academic libraries and their knowledge management skills. The study discovered that patron loyalty to academic libraries is significantly influenced by perceived value, and that patron loyalty is developed in large part by knowledge management capabilities. Tangible facilities, staff responsiveness, and resources significantly influence user satisfaction in Eastern University Library, Bangladesh (Alam, 2020).

2.4 Research Gap and Uniqueness of the Study

Literature review revealed that many studies have been conducted on measuring service quality of academic libraries worldwide using SERVQUAL (For example, Afridi et al., 2016; Asogwa et al., 2014; Bahrainizadeh, 2013; Henry Wihardika Griadhi, 2018; Silva et al., 2017; Suresh & Mohan, 2015). But, a few numbers of studies on leadership quality

have been conducted worldwide. An inadequate number of studies have been conducted in knowledge and leadership quality globally. Much initiative has not been taken to assess the impact of leadership quality on user satisfaction in university libraries of Bangladesh. Besides, an inadequate attempt has been taken to evaluate the significant difference in perceived knowledge and leadership quality by university category including public, private, and international; or user category including teachers, students, and researchers. Moreover, very few efforts have been made to analyze the significant difference in gaps between expected and perceived leadership quality by institution category, and user category.

While prior studies have explored various aspects of library service quality, leadership support, and knowledge management in relation to user satisfaction, gaps remain in understanding the direct impact of library professionals' knowledge and leadership quality on user satisfaction in the context of Bangladeshi university libraries. Arifin et al. (2023) focused on leadership support, service quality, and library performance, while Alzahrani et al. (2019) examined digital library system quality. Tasmin et al. (2012) and Malakooti et al. (2021) investigated knowledge management practices and their role in user satisfaction and loyalty, but did not specifically assess the leadership quality of library professionals. Studies in Bangladesh (Alam & Mezbah-Ul-Islam, 2022; Alam, 2020) mainly addressed resources, staff competence, and tangible facilities without analyzing leadership quality gaps among professionals.

This study fills the gap by directly evaluating how knowledge and leadership quality among library professionals influence user satisfaction and identifying leadership quality variations and gaps across different university categories. By integrating Structural Equation Modeling (SEM) for in-depth analysis, this research provides a novel approach to assessing leadership effectiveness in academic libraries, distinguishing it from previous studies in this domain.

Based on the available literature, five research gaps were found.

Research Gap-1:

- The Impact of leadership quality dimensions on user satisfaction in university libraries of BD
 - Using SEM

Research Gap-2:

- The Significant difference in library leadership quality by
 - User category including teachers, students, and researchers *as well as*
 - University categories including public, private, and international

Research Gap-3:

- The Significant difference in Adequacy gap of library leadership quality by
 - User and University Categories

Research Gap-4:

- The Significant difference in the superiority gap of library leadership quality by
 - User and University Categories

Research Gap-5:

- The Significant difference in the realistic gap of library leadership quality by
 - User and University Categories

2.4 Summary of Literature Review

The literature review begins with a conceptual definition of key terms, including Knowledge Management (KM), knowledge quality, and leadership quality. KM is defined as the process of creating, sharing, and utilizing organizational knowledge to achieve strategic goals, with leadership playing a pivotal role in its implementation. Knowledge quality in university libraries is discussed as a critical factor influencing user satisfaction, emphasizing the need for effective knowledge management practices. Leadership quality is examined through various lenses, including competencies, styles, and theories. The review highlights the importance of leadership in driving organizational success, particularly in academic libraries where effective management and visionary leadership are essential. Different leadership competencies, such as cognitive ability and interpersonal effectiveness, are identified as crucial for library administrators.

The chapter also explores the relationship between knowledge management and leadership quality, revealing a symbiotic relationship where strong leadership fosters a culture of innovation and continuous learning. The impact of knowledge and leadership quality on user satisfaction is also discussed, with studies indicating that effective leadership directly influences positive user experiences in libraries.

Theoretical perspectives on leadership are reviewed, including transformational, transactional, and situational leadership theories, as well as newer approaches like knowledge-oriented leadership. The chapter concludes with an overview of quality assessment tools used to measure service quality in libraries, highlighting instruments like SERVQUAL and LibQUAL.

The literature review revealed that some research had been undertaken on assessing the service quality of academic libraries worldwide using SERVQUAL and other tools. From the available literature, it is understood that globally insufficient research have been conducted applying multiple regression analysis to evaluate the impact of library leadership quality on user satisfaction. Several key quality assessment tools that are widely used to measure service quality in libraries, with a focus on how these tools relate to leadership quality. There is a big gap to develop a quality assessment tool. LEADQUAL may be the solution to gap the lacking. The application of these tools in library settings underscores the importance of leadership quality in shaping service outcomes. Leaders in academic libraries must not only understand the tools available for assessing service quality but also actively engage in the continuous improvement of services based on assessment results. By fostering a culture of quality and accountability, library leaders can ensure that their institutions meet the evolving needs of their users and remain relevant in an increasingly digital and competitive landscape.

2.5 Conclusion

The literature reviewed in this chapter underscores the critical role of leadership in enhancing the quality of leadership performance provided by academic library professionals. Effective knowledge management, coupled with strong leadership, is shown to be instrumental in fostering a culture of innovation, collaboration, and continuous improvement. The review also highlights the importance of aligning leadership styles and competencies with the evolving needs of library users to ensure high levels of user satisfaction. By synthesizing insights from various studies, this chapter lays a solid foundation for understanding the complex interplay between knowledge, leadership, and leadership quality in academic libraries, setting the stage for further empirical investigation.

CHAPTER THREE

CHAPTER THREE

Conceptual Framework

3.1 Introduction

The literature review identified the areas of research that were lacking, which then guided the creation of the problem statement, the establishment of research objectives, and the formulation of hypotheses. This study aims to assess the influence of leadership quality on user satisfaction in the university libraries of Bangladesh through the application of Structural Equation Modeling (SEM). Existing literature has extensively examined the impacts of leadership as well as service quality on customer satisfaction in various service sectors, including hospitals (Jamaluddin & Ruswanti, 2017), restaurants, telecommunication, airlines, railways, insurance, and banking on a global scale. However, there is a lack of sufficient studies that have been conducted to assess the global influence of library leadership quality on user satisfaction. Nevertheless, there is a lack of effort to evaluate the influence of knowledge and leadership competence on user satisfaction in higher educational institutions such as university libraries. Furthermore, there has been no endeavor in Bangladesh to assess the variations in library knowledge and leadership aptitude among different university categories, such as public, private, and foreign, or among different user categories, such as faculty members, students, and researchers. Furthermore, in Bangladesh, there have been some attempts to assess the variations in library leadership quality among different university and user categories, specifically focusing on adequacy, superiority, and realistic gaps.

Evaluating the success of any institution can be most accurately achieved by assessing the quality of its leadership. Throughout time, there have been numerous interpretations and conceptions of knowledge and the quality of leadership, as well as various techniques for evaluating them. Diverse quality evaluation tools, such as SERVQUAL, SERVPERF, HEdPERF, and LibQUAL, are utilized to evaluate different forms of quality in diverse sectors. TQM is employed for this purpose. SERVQUAL and LibQUAL are utilized to assess the quality of library services in Bangladesh. SERVQUAL is the primary and currently the most effective tool for assessing the quality of library services. The LEADQUAL instrument is currently being developed, drawing on the conceptual models of SERVQUAL and LibQUAL.

Chapter Three: Conceptual Framework

There have been 25 additional items included in the assessment of five dimensions of leadership quality.

Structural Equation Modelling (SEM) is a sophisticated analytical methodology that addresses the shortcomings of prior models. It extends regression methods and serves as an effective tool for analyzing the structural relationships between dependent and independent variables. Several studies have utilized the Structural Equation Modelling (SEM) approach to assess the influence of library service quality on user satisfaction in various countries. However, this approach has not yet been employed in any studies investigating library knowledge and leadership quality in Bangladesh. Currently, academics favor using the Structural Equation Modelling (SEM) method to evaluate the influence of library leadership quality on user happiness. This is because SEM combines path analysis, construct reliability, and construct validity into a single analytical process. In addition, ANOVA is suitable for assessing the variations in both individual library leadership quality and the disparities in library leadership quality.

The quality of leadership is strongly correlated with user happiness. To assess the influence of leadership quality on user happiness, a comprehensive model is needed that encompasses a clear definition of quality, its connection to satisfaction, and effective methods for measuring both concepts. Thus, by achieving objective, the study created a conceptual framework using structural equation modelling to assess how the quality aspects of library leadership affect user satisfaction in university libraries in Bangladesh. In addition, the study developed a conceptual framework for evaluating leadership performance. This framework consists of four leadership quality zones: excellent, maintenance, improvement, and problematic. Its purpose is to assess the leadership abilities of library professionals working in the university libraries of Bangladesh. The study created a theoretical framework called the library leadership quality gap model to assess the variation in library leadership quality across different individuals. It also examined the gaps in terms of adequacy, superiority, and realism in the selected academic institutions.

3.2 Development of Structural Equation Modeling (SEM)

The study has formulated a conceptual framework to attain the objectives and test the hypotheses. The statements of the LEADQUAL instrument are modified focusing on the following five dimensions, i.e.,

Chapter Three: Conceptual Framework

(1) **Knowledge Competency**– theoretical and practical understanding of the respective subject;

(2) **Technical Competency** – abilities required to apply techniques in job function;

(3) **Negotiation Skill** – inherent qualities that help professionals and authorities agree to a common logical solution;

(4) **Visionary**- thinking about or planning the future with imagination or wisdom; and;

(5) **Responsiveness** – the quality of reacting quickly and positively;

(6) **User Satisfaction** – justification of the satisfaction level of the users. The modified version of LEADQUAL's three column format, i.e., Minimum leadership expectation - the level of knowledge and leadership quality that the user expect minimally, Desired leadership quality - the level of knowledge and leadership quality that the user hopes highly, and Actual leadership performance - the level of knowledge and leadership quality that the user actually gets from the library administrators has been used to prepare the questionnaire.

The minimum leadership expectation and desired leadership expectation appeared at either end, with the area in between known as the zone of tolerance. The zone of tolerance will represent the range of leadership performance which users consider satisfactory.

The leadership performance below the tolerance zone would create frustration, disappointment, and dissatisfaction as well as decreased users reliability and loyalty. A performance level above the tolerance zone could delight and pleasantly surprise users as well as strengthen their reliability and loyalty.

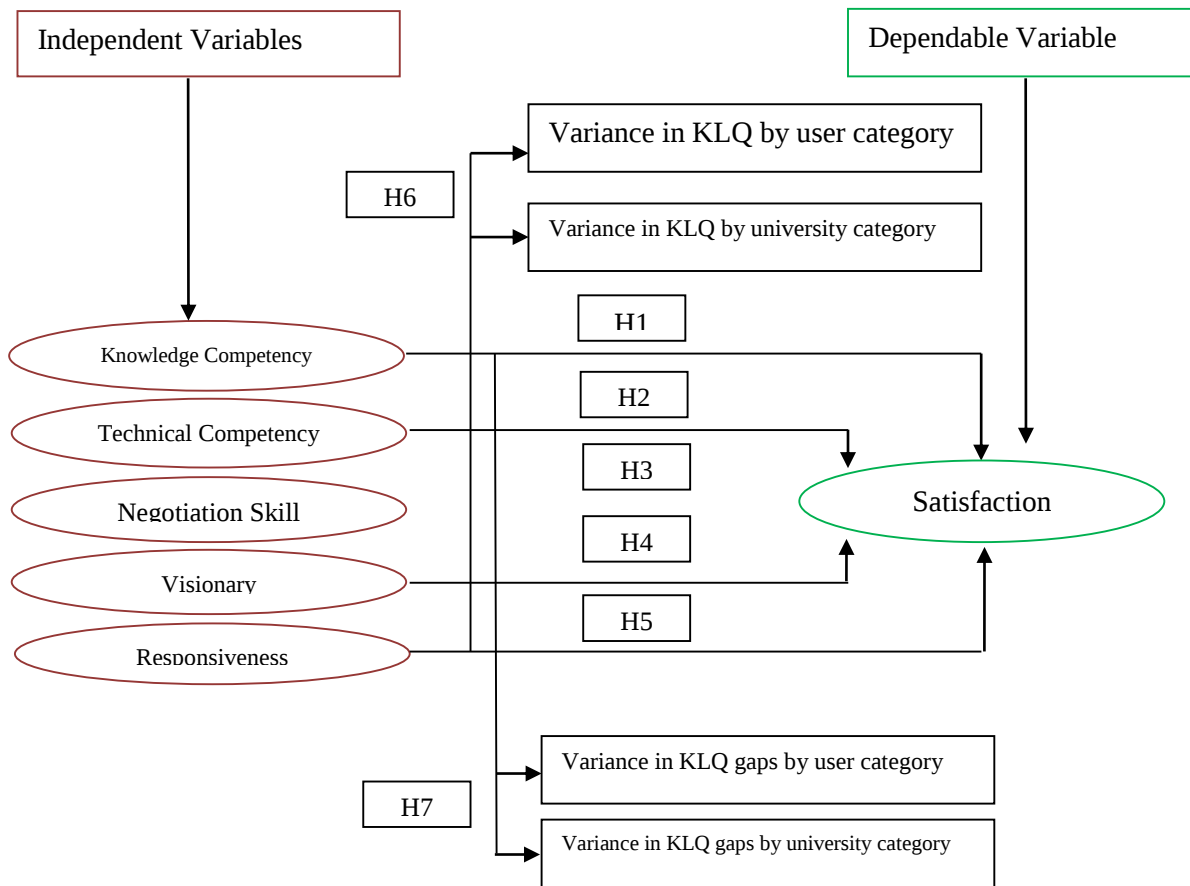


Figure 3.1: Conceptual Framework of the Study

3.2.1 Dimensions

The study comprehensively examined the five crucial leadership attributes of university library employees in Bangladesh as independent variables, consolidating earlier research on leadership skills. In addition, the dimension of user pleasure was also incorporated as the dependent variable. Therefore, a total of six factors, including knowledge competency, technical competency, negotiation skill, visionary, responsiveness, and satisfaction, were utilized for this study.

3.2.1.1 Knowledge Competency (KC)

This aspect pertains to the degree to which library professionals possess and can proficiently employ the requisite knowledge and expertise pertaining to library science and management. It encompasses their comprehension of library resources, information systems, and their capacity to stay current with improvements in the sector. Hence, the presence of library workers with a high level of knowledge competency can positively impact user happiness, which in turn has a major

Chapter Three: Conceptual Framework

influence on user retention. The general perception of knowledge proficiency plays a role in user satisfaction and has an impact on their continued use of the library. The study encompassed five items within the domains of knowledge competency, namely Library workers has extensive knowledge and expertise. They consistently deliver the promised services and priorities information literacy. The library resources are meticulously organized in a standardized fashion, ensuring easy accessibility for individuals with varying levels of knowledge.

3.2.1.2 Technical Competency (TC)

Technical competency refers to the aptitude of library personnel to effectively utilize and oversee library technologies and digital resources. It includes abilities associated with organizing, managing databases, preserving digital content, and utilizing library management systems to improve operational effectiveness.

The technical competency dimension in the study refers to the capacity to efficiently and accurately carry out library tasks that pertain to the users. The study encompassed five elements within the technical competency dimension. These elements include the proficiency of library officers in technical matters, their ability to address technical difficulties, their fast provision of technical help to users, their capability to aid users in resolving technological problems, and their proper management of library automation functions.

3.2.1.3 Negotiation Skill (NS)

Negotiation skill refers to the capacity of library professionals to proficiently engage in discussions and cooperate with diverse stakeholders, such as teachers, students, and external partners. The role encompasses dispute resolution, effective communication, and the capacity to advocate for the requirements and resources of the library.

The responsiveness factor in the study refers to the inclination to engage in negotiations with authorities in order to assist users and offer timely service. The responsiveness dimension encompasses five statements regarding negotiation skills, including the ability of library officials to attain adequate money, assure infrastructural development, guarantee the functionality of library facilities, project confidence, and introduce new items and services punctually.

3.2.1.4 Visionary (V)

The visionary dimension pertains to the ability of library executives to establish a distinct and motivating course for the future of the library. The library and information science sector requires strategic planning, innovation, and the capacity to foresee future trends and obstacles. The visionary factor in the study pertains to the staff's future-oriented perception and their capacity to provide services and give personalized attention to users. The visionary dimension focuses on five key themes including a positive attitude towards library development, the adoption of current technology, handling situations in a compassionate manner, maintaining a strong drive to become a top-ranked university, and embracing a positive mindset for facilitating good change.

3.2.1.5 Responsiveness (R)

Responsiveness refers to the capacity of library personnel to immediately and efficiently address the demands and feedback of library users. The required abilities encompass proficiency in customer service, flexibility, and the ability to promptly offer aid and help to customers. According to Farooq et al. (2018), the responsiveness dimension refers to the extent to which staff members are willing to assist users and offer improved services. Responsiveness refers to the library professionals' ability to promptly and efficiently address student requests, priorities and resolve student complaints, proactively communicate any delays to students, provide prompt and knowledgeable answers to questions, and promptly respond to user inquiries.

The responsiveness component pertains to the institution's preparedness to assist its users in obtaining exceptional, high-quality, and punctual service. This quality signifies that the experts are ready to aid consumers, respond to their inquiries, and notify users when the service is accessible. When a service becomes unsuccessful, it is crucial for the service provider to be able to quickly and competently recover, since this will create highly positive perceptions of the provider. In their study on Chinese business schools, Gao, Y. and Wei (2004) discovered a substantial association between "responsiveness" and user satisfaction. The responsiveness factor in the study signifies the inclination to assist people and deliver timely service. The responsiveness dimension encompasses five statements that pertain to the readiness to assist users, prioritizing the user's interests, providing timely service, ensuring regular updates, and maintaining personnel availability.

3.2.1.6 User Satisfaction

User satisfaction is the dependent variable in this study, reflecting the overall contentment and positive experiences of library users with the library professionals' leadership quality and support provided by them. It measures how well the library professionals meets the expectations and needs of its users in terms of knowledge and leadership quality, resource availability, and staff assistance.

User happiness refers to the conceptualized user experience during a specific service contact. Additionally, some people view customer satisfaction as a cumulative measure based on the overall evaluation of leadership performance. Afthanorhan et al. (2019) provided a definition of library user satisfaction as the extent to which the quality of library service performances meet the expectations of the user. Contented users consistently advocate for the university among their followers, so establishing the university as a recognizable brand. Libraries that continuously meet the needs of their users see higher rates of user retention and increased productivity as a result of enhanced user loyalty (Wicks & Roethlein, 2009). Therefore, it is crucial to ensure user satisfaction, which can be achieved through several methods. The primary users of libraries in higher educational institutions are students, instructors, and researchers. Therefore, the success or failure of these libraries is largely determined by the level of satisfaction among these users.

User satisfaction in this context refers to the perception of teachers, students, and researchers in the chosen libraries, which influences their level of satisfaction with the quality of library leadership. The user satisfaction dimension focuses on ten statements related to knowledge competency, technical competency, negotiation skill, visionary qualities, responsiveness, availability of sufficient resources, library environment, overall library experience, user eagerness for future use, user enthusiasm for sharing services with others, and overall leadership quality.

3.2.2 Items

Among the twenty-five items spread across five leadership quality dimensions, twenty-two were derived from existing SERVQUAL, LibQUAL, and leadership quality literature. These items were then tailored to fit the specific context of university libraries, under the five dimensions: knowledge competency, technical competency,

negotiation skill, visionary outlook, and responsiveness. This adaptation was done in consultation with several LIS researchers, including both academicians and professionals. The knowledge competency dimension comprises five statements that address aspects such as covering the field of study, updating resources, resource accessibility, the richness of the institutional repository, the ease of understanding the OPAC, and access to online resources. The technical competency dimension includes five statements focused on delivering promised services, ensuring minimal service interruptions, creating a relaxed environment for users when interacting with staff, demonstrating professional knowledge, and possessing the skills and abilities needed to guide users effectively. Negotiation skill is reflected in five statements concerning the willingness to assist users, prioritizing user interests, providing prompt service, keeping users informed about progress, and ensuring staff availability. The visionary dimension encompasses six statements, covering areas such as polite behavior, offering individual attention, handling matters considerately, understanding user needs, facilitating easy suggestions or complaints, and being ready to respond to queries. Responsiveness includes five statements related to appropriate space, the internal environment, staff appearance, the use of modern technological tools, the website, opening hours, and automation. Finally, ten items under the satisfaction dimension were drawn from SERVQUAL and LibQUAL literature, focusing on aspects like adequate resources, staff competency, willingness to help users, caring performance, the physical environment, users' eagerness for future use, their enthusiasm to share the services with others, and overall service quality.

3.2.3 Rating Formats

The latest SERVQUAL model by Parasuraman et al. (1994) introduced a three-segment rating system for assessing service quality, which includes minimum expectation, desired expectation, and perceived service quality. This format produces separate ratings for adequate, desired, and actual perceived service using three identical, side-by-side scales. Service quality is quantified by calculating the disparities between perceived and desired expectations (service superiority) and perceived and minimum expectations (service adequacy). Several studies, including Shueb and Ahmed (2021), have applied this model to evaluate service quality in academic libraries. Building on this approach, the current study adopts a similar three-segment rating format in the LEADQUAL instrument to measure leadership quality.

3.2.3.1 Minimum Leadership Expectation

The minimum leadership expectation refers to the lowest level of leadership quality that users are willing to tolerate, even if it falls short of their actual expectations. This study incorporated the concept of minimum leadership expectation in the questionnaire to assess the baseline level of leadership quality that users anticipate from their university library professionals.

3.2.3.2 Desired Leadership Expectation

The desired leadership expectation represents the highest standard of knowledge and leadership quality, combining what users believe "can be" and "should be" offered by library professionals. This study included the desired leadership expectation in the questionnaire to evaluate the level of leadership users ideally expect from their university library professionals.

3.2.3.3 Real Leadership Expectation

Hossain and Ahmed (2014) argued that relying solely on minimum and desired expectations does not provide an accurate measure of the leadership quality gap. To address this, they introduced the concept of a realistic gap alongside the adequacy and superiority gaps to improve existing measurement methods. In this study, the real leadership expectation was calculated by averaging the minimum and desired leadership expectation scores using the formula: $(\text{Minimum Leadership Expectation} + \text{Desired Leadership Expectation})/2$. This represents the average leadership expectation from the users' perspective.

3.2.3.4 Actual Leadership Performance

The actual leadership performance means the actual knowledge and leadership performances provided by the library professionals. This study included the actual leadership performance in the questionnaire to measure the leadership quality of the university library professionals of Bangladesh.

3.2.4 Scales

Parasuraman et al. (1988) utilized a seven-point agreement scale in the SERVQUAL model, ranging from "Strongly Disagree" (1) to "Strongly Agree" (7). While most studies used this seven-point scale to evaluate each SERVQUAL statement, some opted for a five-point scale for assessing librarians' leadership quality. Cronin and Taylor (1992) used a seven-point Likert scale in SERVPERF, while Bae and Cha

(2015) applied a five-point scale in LibQUAL, and other studies varied between five, seven, and ten-point scales. Consequently, this study adopted a seven-point agreement scale from "Strongly Disagree" (1) to "Strongly Agree" (7), along with a satisfaction scale ranging from "Highly Dissatisfied" (1) to "Highly Satisfied" (7), both without verbal labels for intermediate points.

3.3 Impact Evaluation of Leadership Quality on Satisfaction by SEM

This study employs Structural Equation Modeling (SEM) to assess the impact of leadership quality on user satisfaction, following previous applications of SEM in evaluating library service quality (Noudoostbeni et al., 2018). SEM is preferred for its ability to integrate path analysis, factor analysis, and construct reliability into a single method. Path analysis, which models causal relationships between variables, was calculated using SmartPLS software. Based on the analysis, five leadership quality dimensions were treated as independent variables, with user satisfaction as the dependent variable, to evaluate the influence of library leadership on user satisfaction.

3.4 Library Leadership Quality Evaluation Model

The study developed a conceptual framework for evaluating the quality of leadership in university library professionals. This framework includes four zones of leadership quality: problematic, improvement, maintenance, and superiority.

Table 3.2: Conceptual Framework of Library Leadership Quality Evaluation Model

		Evaluation Zone (EZ)					
		Problematic Zone (EZ1) ALP < MLE	Improvement Zone (EZ2) ALP >= MLE ≠ RLE	Maintenance Zone (EZ3) ALP >= RLE ≠ DLE	Superiority Zone (EZ4) ALP >= DLE		
S T U D Y Z O N E (SZ)	Overall	Item no	Item no	Item no	Item no	AZ1	A C T I O N Z O N E (AZ)
	Public	Item no	Item no	Item no	Item no	AZ2	
	Private	Item no	Item no	Item no	Item no	AZ3	
	International	Item no	Item no	Item no	Item no	AZ4	
	Teachers	Item no	Item no	Item no	Item no	AZ5	
	Students	Item no	Item no	Item no	Item no	AZ6	
	Researchers	Item no	Item no	Item no	Item no	AZ7	

Chapter Three: Conceptual Framework

	Prompt action to recover leadership performance (IZ1)	Seeking improvement of leadership performance (IZ2)	Maintain Leadership performance strictly (IZ3)	Sustain Leadership performance as it is (IZ4)	
	Implementation Zone (IZ)				

ALP = Actual Leadership Performance, MLE = Minimum Leadership Expectation, DLE = Desired Leadership Expectation, RLE = Real Leadership Expectation

Parasuraman *et al.* (1994) developed a three zones model in service quality, including the zone of tolerance, adequacy zone, and superiority zone. Parasuraman *et al.* (1994) proposed a concept that the “minimum and desired service expectations appear at either end, with the area in between known as the zone of tolerance”. The zone of tolerance represents the “range of service performance, which customers consider satisfactory”. Berry and Parasuraman (1991) defined the adequacy zone as the service performance below the tolerance zone, which would create dissatisfaction and decrease customer reliability and loyalty. Besides, the superiority zone is defined as the performance level above the tolerance zone, which could pleasantly surprise users and strengthen their reliability and loyalty. Different researchers (Ahmed & Shoeb, 2009; Hossain & Ahmed, 2013, 2014; Hossain & Islam, 2012; Shoeb & Ahmed, 2009) applied the three zones model to measure the service quality in different academic libraries.

The study proposed a leadership performance assessment model to establish the best strategy for evaluating and improving leadership quality in academic libraries. To assess the degree of leadership performance, the researcher introduced a conceptual framework including four leadership quality zones, i.e., excellent zone, maintain zone, improvement zone, and problematic zone. The researcher divided the "zone of tolerance" into the "improvement zone" and "maintain zone" by the real service expectation, which was calculated using the formula of $[(MLE+DLE)/2]$ based on the previous study. Based on the three zones model the study developed a conceptual framework for four zones library leadership quality evaluation model, including problematic zone, improvement zone, maintenance zone, and superiority zone to evaluate the librarians' leadership quality of the university library professionals of Bangladesh.

3.4.1 Problematic Zone

The problematic zone is defined here as the leadership performance below the

tolerance zone that would create dissatisfaction and decrease user reliability and loyalty. The problematic zone represents the actual leadership performance below the minimum leadership expectation ($ALP < MLE$) that indicates the unmet need, which is needed to prompt action to recover the performance of the library leaders.

3.4.2 Improvement Zone

The improvement zone represents the leadership performance is equal or more to the minimum leadership expectation but not equal to the real leadership expectation ($ALP \geq MLE \neq RLE$). It indicates that the minimum need of their users can meet but cannot meet the real leadership expectation, which is needed to improve the leadership performance.

3.4.3 Maintenance Zone

The maintenance zone represents the leadership performance is equal or more to the real leadership expectation but not equal to the desired leadership expectation ($ALP \geq RLE \neq DLE$). It indicates that the real expectation of their users can meet but cannot meet the desired leadership expectation, which is needed to maintain leadership performance (Hossain & Ahmed, 2013).

3.4.4 Superiority Zone

The superiority zone is assigned here as the performance level above the tolerance zone, which could pleasantly surprise users and strengthen their reliability and loyalty (Parasuraman *et al.*, 1994). The superiority zone represents the leadership performance is equal to or more to the desired leadership expectation ($ALP \geq DLE$), which indicates the expectation exceeded that is needed to sustain the leadership performance.

3.5 Individual Difference in Library Leadership Quality

Literature reveals that researchers have measured individual differences in library service quality by factors such as gender, age, user category, and university type across various countries, including Bangladesh (Nawarathne, 2015; Sharma *et al.*, 2010; Shoeb & Ahmed, 2009). For instance, Nawarathne (2015) found no significant differences in daily library use and satisfaction among faculty members in Sri Lanka, though faculty satisfaction was notably lower compared to students. Sharma *et al.* (2010) reported no significant differences in user perceptions between two university libraries in Punjab. In Bangladesh, studies have examined variations in library service

quality between male and female users and among different student groups (Shoeb & Ahmed, 2009), finding significant differences in service quality perceptions among these groups. However, there is a lack of research on individual differences in library leadership quality across different university types and user categories in Bangladesh. Therefore, this study aims to explore these differences by examining library leadership quality among teachers, students, and researchers in public, private, and international universities, addressing objective-2 and testing hypotheses-6 and 7.

3.5.1 Difference in Library Leadership Quality by User Category

University libraries typically serve students, teachers, researchers, staff members, and part-time faculty. For this study, data was gathered exclusively from teachers, students, and researchers at selected universities, excluding staff members and part-time faculty due to their smaller numbers. The study focused on measuring individual differences in library leadership quality among these user categories—teachers, students, and researchers—to evaluate hypothesis-6.

3.5.2 Difference in Library Leadership Quality by University Category

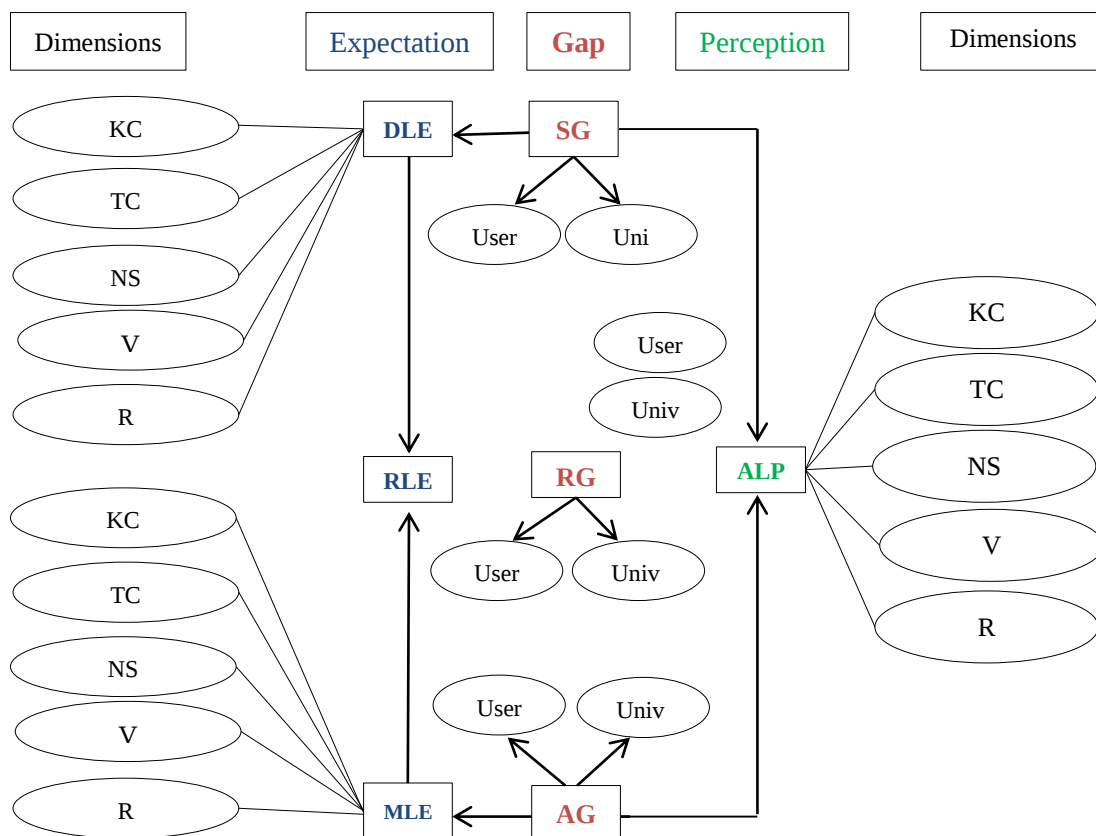
Bangladesh's universities are classified into public, private, and international categories. Public universities are autonomous and government-funded, private universities are financed by non-governmental organizations and managed by boards of trustees, and international universities are governed and funded by foreign agencies (Alam, 2018). For this study, ten public, nine private, and one international university were selected from the 115 private, 56 public, and two international universities (UGC, 2024). The study evaluated individual differences in library leadership quality across these university categories—public, private, and international—to assess hypothesis-7.

3.6 Library Leadership Quality Gaps Model

The study constructed a theoretical framework called the library leadership quality gaps model based on the model proposed by Parasuraman *et al.* (1985) and (Nitecki & Hernon, 2000) in service quality gap model to assess the variations in the sufficiency, excellence, and practical gaps in library leadership quality among different user categories such as teachers, students, and researchers, as well as university categories including public, private, and international. The disparity in leadership performance between the actual and desired expectations (referred to as the superiority gap) was

Chapter Three: Conceptual Framework

computed to see if perceptions surpassed the expectations. The adequacy gap, which measures the difference between actual leadership performance and the minimal leadership expectation, was calculated to see if perceptions meet or fall below the minimum leadership expectations. In addition, the disparity in scores between the actual performance of leadership and the genuine expectations of leadership (realistic gap) was assessed to determine if the perceptions align with or fall below the genuine leadership expectations.



KC= Knowledge Competency, TC= Technical Competency, NS= Negotiation Skill, V=Visionary, R=Responsiveness, MLE = Minimum Leadership Expectation; DLE = Desired Leadership Expectation; RLE = Real Leadership Expectation; ALP = Actual Leadership Performance; AG = Adequacy Gap; SG = Superiority Gap; RG = Realistic Gap

Figure 3.2: Conceptual Framework of Library Leadership Quality Gaps

The model presented a conceptual framework that encompasses three leadership quality gaps: the adequate gap, the superiority gap, and the realistic gap.

3.6.1 Adequacy Gap

Adequacy gap (AG) in this study refers the difference between actual leadership perception and minimum leadership expectation (ALP-MLE).

3.6.2 Superiority Gap

The superiority gap (SG) in this study refers to the difference between actual leadership perception and desired leadership expectation (ALP-DLE).

3.6.3 Realistic Gap

The realistic gap in this study refers to the difference between actual leadership perception and real leadership expectation (ALP-RLE).

3.7 Individual Difference in Library Leadership Quality Gaps

Various studies have analyzed individual differences in the adequacy and superiority gaps in library service quality globally (Asemi et al., 2010; Parasuraman et al., 1994). In Bangladesh, however, there has been limited research on these gaps, focusing mostly on differences between male and female users or among teachers, undergraduates, and graduate students (Shoeb, 2010; Shoeb & Ahmed, 2009). Shoeb and Ahmed (2009) found significant variations in gap scores among these groups. Despite this, no studies have investigated individual differences in the library leadership quality gap in Bangladesh across public, private, and international universities or among teachers, students, and researchers. This study aims to address this gap by examining individual differences in library leadership quality across user and university categories in Bangladesh.

3.7.1 Individual Difference in Adequacy Gap

Shoeb and Ahmed (2009) found that while there were no significant differences in overall or dimension-specific adequacy gap scores between male and female users, notable differences were observed among faculty members, undergraduates, and graduate students at the IUB Library. Their study also highlighted significant adequacy gaps among teachers, undergraduates, and graduate students. This study similarly examines the individual differences in the adequacy gap of library leadership quality across various user categories, including teachers, students, and researchers, and across public, private, and international universities.

3.7.1.1 Individual Difference in Adequacy Gap by User Category

The study calculated the individual difference in the adequacy gap of library leadership quality by user category among the teachers, students, and researchers to

assess the hypothesis.

3.7.1.2 Individual Difference in Adequacy Gap by University Category

The study computed the individual difference in the adequacy gap of library leadership quality by university category among the users of public, private, and international universities to measure the hypothesis.

3.7.2 Individual Difference in Superiority Gap

Shoeb and Ahmed (2009) demonstrated significant differences in overall and dimensional superiority gaps between female and male users. This study similarly evaluates the individual differences in the superiority gap of library leadership quality across various user categories, including teachers, students, and researchers, and among public, private, and international universities, to address the study objectives and test the hypothesis.

7.2.2.1 Individual Difference in Superiority Gap by User Category

The study calculated the individual difference in the superiority gap of library leadership quality by user category among the teachers, students, and researchers to assess hypothesis 7.

7.2.2.2 Individual Difference in Superiority Gap by University Category

The study computed the individual difference in the superiority gap of library leadership quality by university category among the users of public, private, and international universities to measure hypothesis 7.

3.7.3 Individual Difference in Realistic Gap

The realistic gap is defined for this study as the difference between actual leadership perception and real leadership expectation (ALP-RLE). Based on the available literature, no study has been found to calculate the individual difference in the realistic gap in the library leadership quality in Bangladesh. This study measured the individual difference in the realistic gap of library leadership quality by the user and university categories, including teachers, students, and researchers, as well as public, private, and international universities responding the objective-5 and assessing hypothesis-7.

3.7.3.1 Individual Difference in Realistic Gap by User Category

The study calculated the individual difference in the realistic gap in library leadership

quality by user category among the teachers, students, and researchers to assess hypothesis-7.

3.7.3.2 Individual Difference in Realistic Gap by University Category

The study computed the individual difference in the realistic gap of library leadership quality by university category among the users of public, private, and international universities to measure the hypothesis-7.

LeadQual +TM gap scores are used in the study to examine the user category and university library category. To determine whether the minimal level of leadership will be met or fall short, the scores between actual leadership performance and the minimum leadership expectation (adequacy gap) by user type and university category are computed. To determine whether perceptions will exceed expectations, it is computed to determine the superiority gap—the difference between actual leadership performance and desired leadership expectation—by user type and academic library category.

The variables of leadership quality and overall user satisfaction have taken from the available related literature. Then the variables of the modified LEADQUAL instrument and user satisfaction adapted as per local arrangement consulting with professional experts and panel members. A pilot survey conducted after preparing two sets of structured questionnaires sincerely as per local arrangements. For multiple regression analysis, five dimensions of leadership quality considered as independent variables whereas overall user satisfaction will be applied as the dependent variable. A 7-point likert scale will be considered as from 1 = Lowest to 7 = Highest for LEADQUAL statements. A multiple regression analysis will be done to evaluate the impacts of five dimensions of LEADQUAL on user satisfaction. The study will analyze the variance in perceived leadership quality by user category, and university category through ANOVA. Finally, the mean values of gap scores for user category and university category will be compared statistically by non-parametric Mann-Whitney U test and Kruskal-Wallis H test.

The modified version of LEADVQUAL model, three column formats are used to find out the gaps in leadership quality which are:

Chapter Three: Conceptual Framework

- Minimum leadership expectation: represents the level of leadership quality that the users expect.
- Desired leadership expectation: represents the level of leadership quality that the user hopes to have from library professionals.
- Actual leadership performance: represents the level of leadership quality that the users actually find.

The study has identified two gaps, zone of tolerance, satisfaction and dissatisfaction level which are:

Adequacy Gap: means the gap scores between Actual Leadership Performance (ALP) and Minimum Leadership Expectation (MLE). *Superiority Gap*: means the gap differences between Actual Leadership Performance (ALP) and Desired Leadership Expectation (DLE).

Zone of tolerance: means the area in between the minimum leadership quality expectation and desired leadership quality expectation. *Delighted*: A performance level above the tolerance zone could delight and pleasantly surprise users as well as strengthen their reliability and loyalty.

Satisfaction: The zone of tolerance represented the range of actual leadership performance which users consider satisfactory. *Dissatisfaction:* The actual leadership performance below the tolerance zone would create frustration, disappointment, and dissatisfaction as well as decreased user reliability and loyalty.

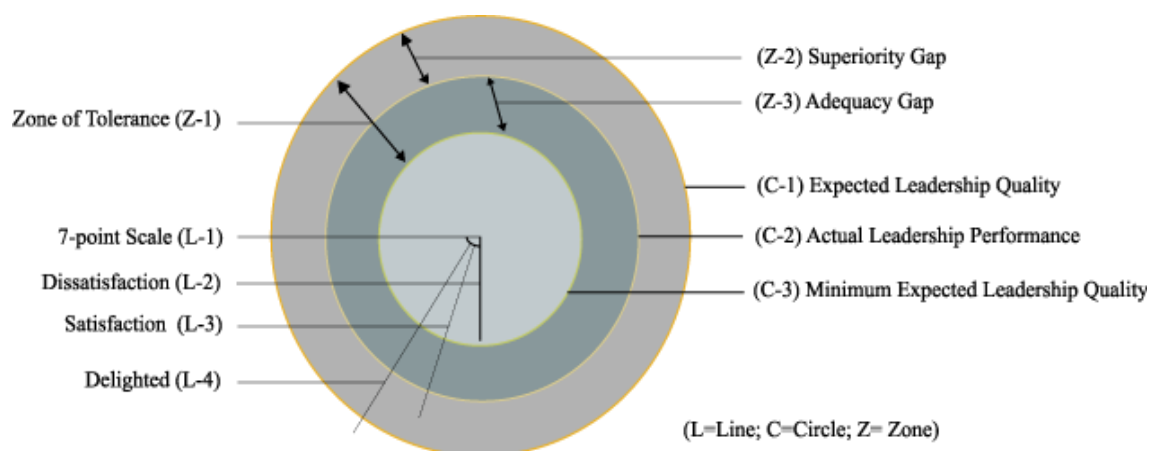


Figure 3.4: Quality Gap, Zone of Tolerance and Satisfaction Assessment Frameworks

3.8 Conclusion

Three conceptual frameworks were developed to evaluate the impact of library leadership quality dimensions on user satisfaction, assess leadership quality, and measure individual differences and gaps in leadership quality across user and university categories. Items for these dimensions and user satisfaction were adapted from SERVQUAL, SERVPERF, and LibQUAL literature, with adjustments made based on local conditions in consultation with LIS researchers. A pilot survey was conducted with teachers, students, and researchers from one public, one private, and one international university in Bangladesh. Path analysis was performed with user satisfaction as the dependent variable and five leadership quality dimensions as independent variables. The study analyzed individual differences and gaps in leadership quality by user and university categories, confirming the model's validity through sampling adequacy, reliability, and fitness statistics.

CHAPTER FOUR

CHAPTER FOUR

Research Methodology

4.1 Introduction

The literature analysis made it abundantly evident that, in Bangladesh's university libraries, there isn't much focus on assessing leadership quality and how it affects users' happiness. This study determined the individual differences in knowledge and leadership quality by the user and university categories, as well as the realistic, adequacy, and superiority gaps in knowledge and leadership quality by the user and university categories. These findings were based on the research gaps and their significance. Additionally, the study assessed the influence of leadership quality dimensions on user satisfaction. This study uses the SEM multivariate analytical technique to assess construct validity and reliability, as well as path analysis, confirmatory and exploratory component analysis, and the effect of knowledge and leadership quality on user satisfaction. To accomplish the research objectives and test the hypotheses, a proactive effort was taken to collect "qualitative and quantitative data" from "primary and secondary sources" of information. A preliminary poll was conducted after distributing two sets of carefully crafted questions. Next, a sample survey based on questionnaires was carried out utilizing the sets of structured questionnaires. The data was examined using SPSS 23rd edition and SmartPLS4. Several statistical techniques were employed to accomplish the study's objectives, test the hypotheses, and assess the model's fitness, validity, reliability, and sampling efficiency.

4.2 Research Design

A structural equation model was created using user happiness as the dependent variable and five leadership quality factors as the independent variables in order to assess the relationship between library professionals' leadership quality dimensions and user satisfaction. The equation for the model with predictor variables is $Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \varepsilon$. Where, the dependent variable Y is user satisfaction. The independent variables are as follows:

X1 = Knowledge Competency

X2 = Technical Competency

X3 = Negotiation Skill

X4 = Visionary

X5 = Responsiveness

α is the intercept term

$\beta_1, \beta_2, \beta_3, \beta_4$, and β_5 are the coefficients of the predictor variables.

ε is the error term.

To assess the expertise and leadership qualities of university library staff in Bangladesh, the study developed a model with four zones: the problematic zone, improvement zone, maintenance zone, and superiority zone. The problematic zone refers to the leadership performance that falls below the minimum leadership expectation ($ALP < MLE$). This implies that the minimal requirement is not being met and that there is a need for leadership performance to drive action for improvement. The improvement zone is characterized by leadership performance that equals or exceeds the minimum leadership expectation but falls short of the real leadership expectation ($ALP \geq MLE \neq RLE$). This signifies that the minimum requirement for leadership performance has been fulfilled, but there is still room for development. The maintenance zone refers to a level of leadership performance that equals to or exceeds the actual leadership expectation but falls short of the desired leadership expectation ($ALP \geq RLE \neq DLE$). This implies that the real expectation is being met and that leadership performance has to be maintained. The superiority zone is characterized by leadership performance that meets or exceeds the desired leadership expectation ($ALP \geq DLE$), indicating that the expectation has been surpassed and that sustained leadership performance is required.

To find the significant differences in minimum, desired, and real leadership expectations as well as perceived leadership quality among various groups of people, such as teachers, students, and researchers, the study used an analysis of variance (ANOVA). Additionally, the study examined the differences among users of public, private, and international universities. In addition, the user calculated the differences in the adequacy gap, superiority gap, and realistic gap of librarians' leadership quality based on user and university categories using ANOVA. This was done to determine if

there were significant differences among teachers, students, and researchers, as well as among users of public, private, and international universities.

4.3 Population and Sample

Currently, 114 private, 55 public, and 2 international universities are in Bangladesh (UGC, 2024). Among them, 11 public, 08 private, 01 international universities are selected for the study whose libraries presently having library automation, arranging and promoting professional course/workshop/training, providing most of all general library services, attaining rich library collection and having subscription of e-database/resource (Table 4.1).

Table 4.1: Selected 20 Universities of the Study

S	Name of university	Est.	ILS	DIR	e-Journals	e-Books	Type
1.	Asian University for Women (AUW)	2008	Koha	DSpace	e-Journals	e-Books	Intl.
2.	Bangladesh Agricultural University (BAU)	1961	Koha	DSpace	e-Journals	e-Books	Public
3.	Bangabandhu Sheikh Mujib Medical University (BSMMU)	1965	SLiMS	DSpace, SLiMS	e-Journals	e-Books	Public
4.	Bangladesh University of Engineering & Technology (BUET)	1962	Koha	DSpace	e-Journals	e-Books	Public
5.	Bangladesh University of Professionals (BUP)	2009	Koha		e-Journals	e-Books	Public
6.	BRAC University (BRACU)	2001	Koha	DSpace	e-Journals	e-Books	Private
7.	Chittagong University of Engineering & Technology (CUET)	2003	Koha	DSpace	e-Journals	e-Books	Public
8.	Chittagong Veterinary and Animal Sciences University (CVASU)	2006	Koha	DSpace	e-Journals	e-Books	Public
9.	Daffodil International University (DIU)	2002	Koha	DSpace	e-Journals	e-Books	Private
10.	Eastern University (EU)	2003	Koha	DSpace	e-Journals	e-Books	Private
11.	East West University (EWU)	1996	Koha	DSpace	e-Journals	e-Books	Private
12.	Independent University Bangladesh (IUB)	1993	Koha	DSpace	e-Journals	e-Books	Private
13.	International Islamic University Chittagong (IIUC)	1995	Koha	DSpace	e-Journals	e-Books	Private
14.	University of Science and Technology Chittagong (USTC)	2003	Koha	Customized	e-Journals	e-Books	Private
15.	Shahjalal University of Science & Technology (SUST)	1986	Koha	DSpace	e-Journals	e-Books	Public

16.	Sher-e-Bangla Agricultural University (SAU)	2001	ILS	DIR	e-Journals	e-Books	Public
17.	University of Chittagong (CU)	1966	Koha	planning	e-Journals	e-Books	Public
18.	University of Dhaka (DU)	1921	Koha	DSpace	e-Journals	e-Books	Public
19.	University of Liberal Arts Bangladesh (ULAB)	2004	Koha	DSpace	e-Journals	e-Books	Private
20.	University of Rajshahi (RU)	1953	Koha	DSpace	e-Journals	e-Books	Public

ILS = Integrated Library System, DIR = Digital Institutional Repository, Web = Website, Intl. = International

4.3.1 Population

The participants in this study were faculty members, students, and researchers from the chosen universities. Because they make up a very tiny percentage of all library visitors, library staff members were not included in the poll. Table 4.2 indicates that there were 286514 faculty, researchers and students enrolled in the 20 universities that were chosen.

4.3.2 Sample

A purposive sampling method was chosen for this study, given the large population size of the selected universities. This approach facilitated the collection of data from current users of the selected university libraries and made the study more manageable and convenient. The Krejcie and Morgan table is widely used by behavioral and social science researchers for determining sample size without requiring calculations. It applies to any defined population, suggesting that a sample of 384 is adequate for populations of 1,000,000 or more. As a result, 384 has become a commonly referenced sample size in numerous studies and academic works (Krejcie & Morgan, 1970; Memon et al., 2020). A research study would need to have a minimum sample size of 384 respondents if the entire population was 75,000 or higher (Sekaran & Bougie, 2010). According to Roscoe's (1975) recommendation, "sample sizes larger than 30 and less than 500" are appropriate for the majority of research projects. Additionally, he recommended that if the samples are to be divided into subsamples, each subsample must have a minimum sample size of thirty. The sample size in multivariate research, which includes route analyses, should be several times larger than the total number of variables being studied. One dependent variable and five independent variables were included in the path analysis carried out by the study. The sample size of 513, including 67 teachers, 437 students, and 09 researchers, where 290 were from public universities, 190 were from private universities, and 33 were

from international universities, is suitable for conducting the study, which has fulfilled the criteria of Krejcie and Morgan, Sekaran as well as Roscoe.

4.4 Data Collection Tools

To carry out the study, two sets of structured questions were created. In order to gather information about the information, current collections, systems, services, facilities, and personnel of the chosen university libraries, questionnaire set-1 was created. Additionally, the purpose of questionnaire set-2 was to gather information from library patrons about their satisfaction and the quality of the library's knowledge management system.

4.4.1 Questionnaire Set-1

General information about the universities and libraries, such as the name of the institution and library, the year it was established, its category, the number of staff members and students, the number of faculty members and students, the library committee, membership in organizations, the use of social media, the library's hours, seating capacity, collections, and the number of employees, were all included in the development of the questionnaire set-1. Knowledge and leadership quality performance included knowledge competency, professional training, and engagement with the professional body. The library collection included 13 types of printed resources, 14 online journal databases, 12 e-books databases, five other e-resources databases, membership with e-resources consortiums, and four activities to update collections. Library services included 15 general services and 15 innovative services. The use of 11 social media was also incorporated in the questionnaire. The library systems incorporated library automation, website, RFID technology, institutional repository, cataloging code, classification scheme, and shelving system. The facilities incorporated 17 ICT facilities, library hours, library building, and membership with open access directories like OpenDOAR and ROAR. The number of library staff, their designation, LIS degrees, ICT degrees, training, and promotional activities were included to know the present status of the library staff. Lastly, the respondent's information is included in the questionnaire.

4.4.2 Questionnaire Set-2

Twenty-five statements under five leadership quality dimensions, ten statements of user satisfaction, and demographic data, including university name, university

category, gender, user category, types of users, status, and age, were included in the questionnaire set-2 that was created for the study. Among the twenty-five items under five leadership quality dimensions, twenty items were included based on SERVQUAL and Leadership Quality literature.

All the items were then modified as per the local arrangements of the university libraries under the five leadership quality dimensions, including Knowledge competency, Technical competency, Negotiation skill, Visionary, and Responsiveness. The Knowledge competency dimension consists of five statements related to library professionals' theoretical and practical understanding of the subjects like their knowledge depth, providing promised service, emphasis on information literacy, organization of library resources, and accessibility to resources.

The Technical competency dimension focuses on the five statements related to abilities required to apply techniques in job functions like technical ability, handling technical issues, technical support, and ability to guide users and handling library automation functions.

The Negotiation skill dimension addresses the five statements related to the inherent qualities that help professionals and authorities agree to a common logical solution like budget allocation ability, ensuring infrastructural development, making sure library facility, confidentiality, and introducing new items.

The Visionary emphasizes the five statements related to thinking about or planning the future with imagination or wisdom; positive attitude to library development, attention to adopt modern technology, dealing with users in a considerate manner, vigorous to make top ranked university and positive mind for positive change.

Lastly, the Responsiveness comprises five statements related to the quality of reacting quickly and positively; willingness to assist, giving users priority, serving the users promptly, and regular update of library service and staff appearance.

Ten items of the satisfaction dimension were incorporated based on the available literature focusing on library professionals' overall knowledge competency, technical competency, negotiation skills, visionary, responsiveness, sufficient resources, library

environment, users' overall library experience, user's eagerness for future use, user's enthusiasm for using the library to others.

The respondents were asked to give their opinion on three segments, i.e., minimum leadership expectations, desired leadership expectations, and actual leadership performance, with three identical side-by-side scales regarding the knowledge and leadership performance by university library professionals. An agreement scale was administered with "1 lowest to 7 highest" corresponding to a "7-point Likert scale". Besides, a satisfaction scale was constructed containing "1 lowest to 7 highest" corresponding to a "7-point Likert scale". In the questionnaire, the purpose of the study was explained briefly but adequately. Respondent anonymity was made to ensure by requesting the respondents not to recognize themselves anywhere in the questionnaire.

4.5 Data Collection Technique

Information was gathered from the twenty university libraries that were chosen. Primary and secondary sources of information were used to compile the conceptual and textual data for this study.

4.5.1 Primary Sources of Data

Using a questionnaire, primary data were gathered from library patrons as well as librarians, heads of the library, and representatives of the library. When the researcher visited the chosen university libraries, she gave the first set of the questionnaires to the heads of the libraries, librarians, and other staff members who were representatives of the chosen university libraries. Additionally, 700 copies of questionnaire set-2 were given out to researchers, instructors, and students inside the libraries of the twenty universities that were chosen.

Twenty questionnaires from the twenty university libraries that were chosen were returned, and it was discovered that every one of them had been fully completed by the librarians, or heads of libraries, or representative person of librarians, and or library staff with regard to general information about the university and library, its founding year, its committee, its membership status, its use of social media, its current collections, systems, services, facilities, and staff. A total of 700 questionnaires were delivered to the students, teachers, and researchers of the selected universities. In

total, 513 (73.28%) questionnaires were returned from 437 students, 67 teachers, and 09 researchers. 50 percent response rate is adequate, 60 percent is good, and above 70 percent rated very well” (Mugenda & Mugenda, 2003). Therefore, the response rate of 73.28% was considered appropriate to derive the inferences regarding the research objectives (Table 4.2).

Table 4.2: Sampling of the Study

Name of university	Population			Category	Respondents (513)	Valid %
	Teacher	Student	Total			
AUW	40	1000	1040	International	33	6.4
BAU	600	7136	7736	Public	20	3.9
BSMMU	518	1500	2018	Public	30	5.8
BUET	500	12000	12500	Public	28	5.5
BUP	225	9000	9225	Public	22	4.3
BRACU	920	13488	14408	Private	21	4.1
CUET	200	4509	4709	Public	21	4.1
CVASU	150	1800	1950	Public	48	9.4
DIU	650	22000	22650	Private	20	3.9
EU	150	3500	3650	Private	20	3.9
EWU	400	11000	11400	Private	20	3.9
IUB	500	10000	10500	Private	20	3.9
IIUC	395	12000	12395	Private	38	7.4
USTC	355	42000	42355	Private	24	4.7
SUST	560	8496	9056	Public	23	4.5
SAU	322	5000	5322	Public	22	4.3
CU	1000	28000	29000	Public	33	6.4
DU	1900	40000	41900	Public	27	6.3
RU	1200	38300	39500	Public	22	4.3
ULAB	200	5000	5200	Private	21	4.1
Total	10785	275729	286514	20	513	101.1

Abbreviation is used for the name of the universities

4.5.2 Secondary Sources of Data

In order to collect secondary data, a variety of pertinent publications were first examined, including journal articles, research papers, conference proceedings, theses,

websites, pertinent text books, and reference books. Information was gathered about user satisfaction, leadership gaps, quality assessment tools, knowledge and leadership quality, and library service quality.

4.6 Pilot Survey

Prior to finishing the questionnaires, a pilot survey was conducted among 60 library users (11.69% of the total samples) from three different types of libraries in Bangladesh: the CVASU Library, the IIUC Library, and the AUW Library. The libraries are public, private, and international universities. A successful pilot study would employ one percent to ten percent of the actual sample size, according to Mugenda (2008). Of the participants, twenty (33.3%) came from private universities, sixteen (26.6%) from international universities, and twenty (four) from state universities. Students made up 40, or 66.6% of the responders, followed by professors (16, or 26.6%) and researchers (4, or 6.6%). Twenty (33.3%) and forty (66.6%) of the respondents were female.

4.7 Statistical Methods

The statistical analysis of the study was carried out using the SPSS 23 and the SmartPLS4. The SmartPLS performed confirmatory factor analysis and route analysis under the SEM approach to achieve goal and test the hypotheses in order to assess the substantial influence of leadership quality dimensions on user satisfaction. Using descriptive statistics, such as mean and standard deviation, the SPSS was used to quantify user happiness, overall leadership quality, and gaps in the leadership quality. It was also used to measure hypotheses and achieve the goal by computing the individual differences in leadership quality by user and university groups using ANOVA. With the use of an ANOVA, the program assessed the individual differences in the superiority, sufficiency, and realistic gaps in leadership quality by user and university categories in order to react to objectives and to evaluate hypotheses. The study's sample adequacy was assessed using the Kaiser-Meyer-Olkin (KMO) and the Bartlett's Test of Sphericity by SPSS. The Cronbach's alpha coefficient, RHO_A coefficient, and composite reliability using SPSS and SmartPLS were used to gauge the study's reliability. The Durbin Watson statistic, factor analysis, scree plot, variance inflation factor (VIF), convergent validity via average variance extracted (AVE), items loading, commonalities, and collinearity statistics were used

by SPSS and SmartPLS to calculate the study's validity. Using SmartPLS, the confirmatory factor analysis (CFA) assessed the structural equation modeling's fitness.

4.8 Sampling Adequacy, Descriptive State, Reliability, and Validity

To evaluate the sampling adequacy, reliability, and validity of the study, several statistical methods were utilized in the study.

4.8.1 Sampling Adequacy

This study applied the KMO and Bartlett's Test of Sphericity to check the sample size's adequacy.

4.8.1.1 Kaiser-Meyer-Olkin (KMO) Value

Kaiser-Meyer-Olkin (KMO) is used to measure sampling adequacy. The criteria for KMO value is "0.90s = marvelous, 0.80s = meritorious, 0.70s = middling, 0.60s = mediocre, 0.50s = miserable, and below 0.50 = unacceptable" (Kaiser, 1974). The KMO value matrix is 0.848 for five statements of knowledge competency, 0.866 for five statements of technical competency, 0.844 for five statements of negotiation skill, 0.872 for five statements of visionary, 0.875 for five statements of responsiveness, 0.929 for ten statements of satisfaction, which indicated that the 513 samples are statistically significant for conducting factor analysis (Table 4.5). A KMO value within the range of 0.6 - 0.7 is a typically good measure of factor-suitability, but a high KMO value is associated with moderate values of coefficient of multiple determination (Leech et al., 2005; Nkansah, 2018). The overall value of KMO is 0.848, which is greater than the threshold of 0.7 indicating the sample size is adequate for factor analysis.

4.8.1.2 Bartlett's Test of Sphericity

Value of Bartlett's Test of sphericity should be 0.05 or less (Schierholz & Laukkanen, 2007; Shkeer & Awang, 2019). The result of Bartlett's test (7079.170, $df = 15$, $p < 0.001$) explains that the "correlation is meaningfully different from the identity matrix, and the correlations among the factors are not zero". Table 4.3 shows that Bartlett's test has ($p < 0.001$) for 25 items of leadership quality, ($p < 0.001$) for five items of Knowledge Competency, ($p < 0.001$) for five items of Technical competence, ($p < 0.001$) for five items of Negotiation skill, ($p < 0.001$) for five items of Visionary,

($p < 0.001$) for five items of Responsiveness, ($p < 0.001$) for ten items of satisfaction, and the overall ($p < 0.001$) for 35 variables indicated that the internal consistency of these data is appropriate.

Table 4.3: Sampling Adequacy Statistics

SL	Dimensions	KMO Value	“Bartlett’s Test	Items
		<i>Sig: 0.7 or above</i>	<i>Sig: 0.05 or less</i>	
1	Knowledge Competency	0.848	0.001	5
2	Technical Competency”	0.866	0.001	5
3	Negotiation Skill	0.844	0.001	5
4	Visionary	0.872	0.001	5
5	Responsiveness	0.875	0.001	5
6	Satisfaction	0.929	0.001	10
7	Overall	0.848	0.001	35

KMO = Kaiser-Meyer-Olkin, Sig. = Significance

4.8.2 Descriptive Statistics

The overall mean of minimum leadership expectation was 4.46, desired leadership expectation was 5.98, and actual leadership performance was 5.06 indicated that the users of the selected university libraries were satisfied with the leadership performance provided by their library personnel (Table 4.4).”

Table 4.4: Descriptive Statistics of the Model

	N	Minimum	Maximum	Mean	SD
Minimum Leadership Expectation	513	1.44	6.96	4.4603	1.03124
Desired Leadership Expectation	513	1.12	7.00	5.9789	.83192
Actual Leadership Performance	513	1.52	7.00	5.0653	1.08262
Valid N (list wise)	513				

4.8.3 Reliability

To assess the reliability of the data, three key measures were utilized: Cronbach’s alpha coefficient, RHO_A, and composite reliability. These metrics are widely used to evaluate the internal consistency of the data, ensuring that the variables are measured accurately and reliably throughout the study.

4.8.3.1 Cronbach's Alpha

For every construct, Cronbach's alpha offers a consistency index with values ranging from 0 to 1. An alpha value of 0.70 or more is considered acceptable (Sijtsma, 2008; Vaske et al., 2017). As shown in Table 4.6, the internal consistency for the 35 items measuring knowledge and leadership quality was high ($\alpha=0.890$). Specifically, five items on knowledge competency ($\alpha=0.864$), five on technical competency ($\alpha=0.884$), five on negotiation skills ($\alpha=0.854$), five on visionary traits ($\alpha=0.904$), five on responsiveness ($\alpha=0.912$), and ten on satisfaction ($\alpha=0.926$) all demonstrated excellent reliability. These results indicate strong reliability across the questionnaire items used in the study.

4.8.2.2 RHO_A Coefficient

The reliability indices for each construct were determined using the RHO_A coefficient (Dijkstra & Henseler, 2015; Walter et al., 1998). According to Dijkstra and Henseler (2015), the recommended criterion of 0.7 exceeds by the RHO_A values of knowledge competency (0.867), technical competency (0.885), negotiation skill (0.858), visionary (0.906), responsiveness (0.912), and satisfaction (0.931). As can be seen in Table 4.6, these findings demonstrate the internal consistency and reliability of each construct.

4.8.2.3 Composite Reliability

Scale item internal consistency is measured by construct reliability. All of the variables are internally consistent and reliable, as shown by the construct reliability values of knowledge competency (0.864), technical competency (0.885), negotiation skill (0.853), visionary (0.904), responsiveness (0.912), and satisfaction (0.926) exceeding the threshold value of 0.7 (Dijkstra & Henseler, 2015). (Table 4.5).

Table 4.5 Reliability Statistics

"Dimensions	Cronbach's Alpha	RHO_A A Coefficient	Composite Reliability	AVE	Items "
	<i>Sig: 0.7 or greater</i>	<i>Sig: 0.7 or greater</i>	<i>Sig: 0.7 or greater</i>	<i>Sig: 0.5 or greater</i>	
Knowledge Competency	0.864	0.867	0.864	0.561	5
Technical Competency	0.884	0.885	0.885	0.606	5
Negotiation Skill	0.854	0.858	0.853	0.539	5
Visionary	0.904	0.906	0.904	0.654	5

Responsiveness	0.912	0.913	0.912	0.676	5
Satisfaction	0.926	0.931	0.926	0.558	10
Overall	0.890				35

4.8.4 Validity

Following the assessment of sampling adequacy and reliability, various statistical techniques were applied to validate the model. These methods included discriminant validity, factor analysis, scree plot, Durbin-Watson statistic, convergent validity, item loadings, commonalities, and collinearity statistics. Each of these tests contributed to ensuring the robustness and validity of the model used in the study.

4.8.4.1 Discriminant Validity (Correlation Matrix)

If the "correlation between one scale and another is not as high as each scale's coefficient alpha," discriminant validity is attained (Andaleeb & Simmonds, 1998) Table 4.6 demonstrates that each factor's alpha coefficient (0.773 to 0.685) was as high as the correlation between a factor and another, indicating that the model's discriminating validity was validated. According to the findings, "all constructs exhibit sufficient or satisfactory discriminant validity, where the square root of AVE (diagonal) is larger than the correlations (off-diagonal) for all reflective constructs" (Fornell & Larcker, 1981). This suggests that the model's construct validity is supported by both convergent and discriminant validities.

Table 4.6: Discriminant Validity (Correlation Matrix)

		KC	TC	NS	V	R	S
Correlation	KC	1.000	.773	.720	.707	.687	.577
	TC	.773	1.000	.753	.714	.706	.599
	NS	.720	.753	1.000	.764	.743	.608
	V	.707	.714	.764	1.000	.827	.659
	R	.687	.706	.743	.827	1.000	.685
	S	.577	.599	.608	.659	.685	1.000
Sig. (1-tailed)	KC		.000	.000	.000	.000	.000
	TC	.000		.000	.000	.000	.000
	NS	.000	.000		.000	.000	.000
	V	.000	.000	.000		.000	.000
	R	.000	.000	.000	.000		.000
	S	.000	.000	.000	.000	.000	

KC= Knowledge Competency, TC= Technical Competency, NS= Negotiation Skill, V= Visionary, R= Responsiveness, S= Satisfaction.

4.8.4.2 Factor Analysis

The purpose of factor analysis is to determine if the measures on the chosen constructs loaded as predicted. Table 4.8 presents the results of a factor analysis using Principal Component Analysis (PCA), which provides strong evidence of the dataset's suitability for path analysis. The initial eigenvalues indicate that the first four components explain a significant portion of the variance, with Component 1 accounting for 49.253% of the variance, Component 2 for 6.897%, Component 3 for 4.300%, and Component 4 for 2.983%. After rotation, these components collectively explain 63.433% of the total variance, which highlights the presence of distinct factors that can be effectively used in path analysis. The rotation sums of squared loadings show that the variance is more evenly distributed among these components post-rotation, enhancing the interpretability of the data. This distribution suggests that the factors are well-defined and distinct, making them suitable for inclusion in a path model.

Additionally, factors with eigenvalues greater than 1 are typically considered significant in factor analysis, and in this dataset, the first four components meet this criterion. In factor analysis, “only factors having latent roots [eigenvalues] greater than one are considered significant”. The substantial drop in eigenvalues after the fourth component further supports focusing on these components for path analysis. By capturing the most significant underlying structures within the data, these components ensure that the path analysis will be based on the most relevant variables, thereby enhancing the robustness and validity of the model.

Overall, the high percentage of explained variance by the initial components, coupled with their clarity post-rotation, demonstrates that the dataset is well-suited for path analysis. This method will leverage the identified significant factors to assess the relationships among variables, providing a comprehensive understanding of the impact of leadership quality dimensions on user satisfaction in university libraries (Table 4.7).

Table 4.7: Factor Analysis

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	<i>Total</i>	<i>% of Variance</i>	<i>Cumulative %</i>	<i>Total</i>	<i>% of Variance</i>	<i>Cumulative %</i>
1	17.239	49.253	49.253	7.342	20.978	20.978
2	2.414	6.897	56.150	7.197	20.562	41.541
3	1.505	4.300	60.450	4.906	14.017	55.557
4	1.044	2.983	63.433	2.756	7.875	63.433
5	.906	2.589	66.022			
6	.868	2.481	68.503			
7	.826	2.361	70.864			
8	.691	1.973	72.837			
9	.667	1.905	74.742			
10	.604	1.727	76.469			
11	.547	1.564	78.033			
12	.517	1.478	79.511			
13	.510	1.457	80.968			
14	.458	1.307	82.275			
15	.437	1.248	83.523			
16	.427	1.219	84.742			
17	.403	1.151	85.893			
18	.390	1.115	87.007			
19	.375	1.071	88.078			
20	.360	1.030	89.108			
21	.346	.989	90.097			
22	.340	.973	91.070			
23	.317	.906	91.976			
24	.292	.836	92.812			
25	.286	.818	93.630			
26	.271	.775	94.405			
27	.266	.759	95.164			
28	.259	.740	95.904			
29	.249	.713	96.617			
30	.225	.643	97.260			
31	.212	.605	97.864			
32	.204	.583	98.447			
33	.194	.556	99.003			
34	.177	.505	99.508			
35	.172	.492	100.000			
Extraction Method: Principal Component Analysis.						

4.8.4.3 Scree Plot

The variables were significant enough to do the route analysis, as indicated by the Scree plot, which reveals that the necessary loading factors had an eigenvalue of larger than one (Figure 4.1).

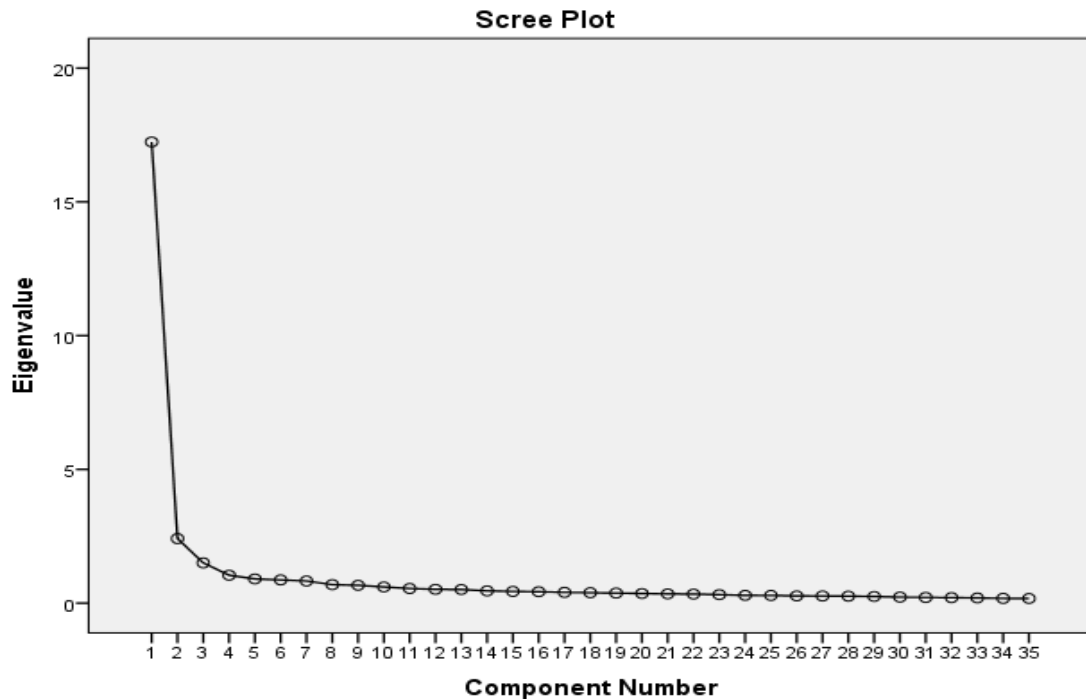


Figure 4.1: Scree Plot in the Factor Analysis

4.8.4.4 Regression Analysis: Durbin Watson Statistic

A test for autocorrelation in the residuals from a statistical regression study that consistently yields "a value between 0 and 4" is the Durbin-Watson statistic. A score of 2 indicates that there was no evidence of autocorrelation in the data. According to Kenton (2019), values between 0 and less than 2 signify positive autocorrelation, while values between 2 and 4 signify negative autocorrelation. Table 4.6 shows that the Durbin-Watson value was 1.419, indicating positive autocorrelation in the residuals of the regression analysis.

Additionally, the table presents the summary statistics for the regression analysis examining the impact of leadership quality dimensions on user satisfaction in university libraries. The predictors—knowledge competency, technical competency, negotiation skill, visionary, and responsiveness—are strongly correlated with user satisfaction, as indicated by the correlation coefficient (R) of 0.726. The model

explains approximately 52.7% of the variance in satisfaction (R Square = 0.527), with an adjusted R Square of 0.522, reflecting a robust explanatory power. The standard error of the estimate is 0.78350, indicating a reasonable fit of the model to the data.

Table 4.8 Durbin Watson Statistic

Model	“R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson”
1	.726 ^a	.527	.522	.78350	1.419

a. Predictors: (Constant) “Knowledge competency, Technical Competency, Negotiation skill, Visionary and Responsiveness

b. Dependent Variable: Satisfaction

4.8.4.5 Commonalities

All commonalities of a perfectly sufficient sample above 0.5 are acceptable (Cheung et al., 2024; Nadiri, 1970). For 35 out of 35 statements, the commonality of the variables collected ranged from 0.601 to 0.774, suggesting that most of the statements' variation falls within an appropriate range (Table 4.10).

4.8.4.6 Collinearity Statistics

In a SEM model, if the requirements for data normality are satisfied, multicollinearity must be tested. A well-designed structural equation model (SEM) should not exhibit multicollinearity or correlation among its independent variables. "If the variance inflation factor (VIF) value lies between 1 and 10, then there is no multicollinearity problem," states Spsstest.com (2020). nevertheless, "if the VIF <1 or > 10, then there is a multicollinearity problem" . According to Minitab.com (2013), "If the VIF = 1 there is no correlation, if the VIF = 1 < VIF < 5 there is moderate correlation, and if the VIF = > 5 to 10 there is high correlation between predictors". These variables are used in SEM models to explain multicollinearity, or the degree of correlation between predictors. All of the items in Table 4.10 have VIF values between 2.967 and 3.958, which suggests that there is no multicollinearity symptom among them. Based on the coefficients output – collinearity statistics, obtained VIF values are 2.967 for knowledge competency, 3.266 for technical competency, 3.275 for negotiation skill, 3.958 for visionary, and 3.642 for responsiveness indicating there are no multicollinearity symptoms. There is no multicollinearity in the SEM model, and the VIF values between 2.627 and 3.958 showed a moderate correlation between the predictors.

Table 4.9 Communalities and Collinearity Statistics

Dimensions	Communalities					VIF
	Items	Raw		Rescaled		
		Initial	Extraction	Initial	Extraction	
Knowledge competency	KC1A	1.904	1.144	1.000	.601	2.967
	KC2A	1.920	1.223	1.000	.637	
	KC3A	1.982	1.164	1.000	.587	
	KC4A	1.851	1.042	1.000	.563	
	KC5A	2.093	1.183	1.000	.565	
Technical competency	TC6A	2.255	1.567	1.000	.695	3.266
	TC7A	2.077	1.421	1.000	.684	
	TC8A	2.045	1.369	1.000	.669	
	TC9A	2.045	1.201	1.000	.587	
	TC10A	1.943	1.125	1.000	.579	
Negotiation skill	NS11A	2.016	1.462	1.000	.725	3.275
	NS12A	1.964	1.366	1.000	.696	
	NS13A	2.185	1.407	1.000	.644	
	NS14A	1.960	1.126	1.000	.575	
	NS15A	2.785	2.060	1.000	.740	
Visionary	V16A	2.294	1.509	1.000	.658	3.958
	V17A	2.386	1.703	1.000	.714	
	V18A	2.159	1.507	1.000	.698	
	V19A	2.345	1.703	1.000	.726	
	V20A	2.265	1.549	1.000	.684	
Responsiveness	R21A	2.223	1.719	1.000	.774	3.642
	R22A	2.166	1.595	1.000	.737	
	R23A	1.989	1.493	1.000	.750	
	R24A	2.213	1.402	1.000	.633	
	R25A	2.337	1.481	1.000	.634	
Satisfaction	S26	2.128	1.579	1.000	.742	
	S27	2.074	1.572	1.000	.758	
	S28	2.109	1.512	1.000	.717	
	S29	2.349	1.798	1.000	.766	
	S30	2.140	1.481	1.000	.692	
	S31	2.291	1.578	1.000	.689	
	S32	2.548	1.872	1.000	.735	
	S33	1.978	1.463	1.000	.740	
	S34	1.705	1.169	1.000	.685	
	S35	1.984	1.499	1.000	.755	
	Extraction Method: Principal Component Analysis.					

VIF = Variance Inflation Factor

4.9 Conclusion

This research developed a framework to evaluate the impact of multiple leadership quality aspects on customer satisfaction. It also aimed to determine the variations in

leadership quality and the gap in leadership quality between users and universities based on individual characteristics. The statements were sourced from the existing leadership quality, SERVQUAL, and LibQUAL literature pertaining to the five dimensions of leadership quality and user happiness. These statements were modified to align with the specific setup of the university libraries, in consultation with LIS researchers. Following the distribution of two sets of structured questionnaires, a pilot survey was carried out to refine the technical and technological terminology used in the context of Bangladesh. Subsequently, a sample survey was conducted using two sets of structured questionnaires, yielding the desired outcomes. The statistical approaches employed in this study utilized the SPSS and SmartPLS4 software to assess the sufficiency of the sample, the reliability and validity of the data, and the overall fit of the structural equation model (SEM). Hence, it can be inferred that the methodology employed in this study is suitable.

CHAPTER FIVE

CHAPTER: FIVE

Data Analysis

5.1 Introduction

This chapter examines the effects of leadership quality dimensions on user satisfaction, individual differences in leadership quality, and leadership quality gaps of library professionals in Bangladesh's university libraries. The researcher went to each of the libraries that were chosen, giving out questionnaire set-2 to the researchers, teachers, and students that were there. Additionally, the heads of the chosen university libraries or librarians or senior library professionals received questionnaire set-1. Only survey questionnaires that were fully completed were taken into consideration for analysis after the returned responses were verified. From the users end, a total of 513 respondents were considered suitable for conducting the study.

The most practical and straightforward way to evaluate professional performance as well as information institutions and their systems is to measure leadership quality, and SEM is quickly becoming a globally recognized and effective way to do so. Data analysis was done using SmartPLS4 and the 23rd edition of SPSS. Descriptive statistics were used to assess user happiness and overall leadership quality. Path analysis was used to assess the important influence of library leadership quality aspects on user happiness.

An ANOVA analysis was used to determine the variation in leadership quality by user and university category. Using ANOVA, it was possible to determine the leadership quality gaps that were practical, adequate, and superior among the user and university groups. To verify the appropriateness of the sample, the study used the KMO and Bartlett's Test of Sphericity. The researcher assessed the data's dependability using composite reliability and Cronbach's alpha coefficient. As well as these methods, the Durbin Watson Test, Factor Analysis, Discriminant Validity, Normal Probability Plot with Histogram, and Commonalities were used to evaluate the study's validity. The chapter includes the demographic information, present status, usages of library and library services, leadership quality, user satisfaction, impact of leadership quality

dimensions on user satisfaction, individual difference in leadership quality, and individual difference in leadership quality gaps.

5.2 Demographic Information of Respondents

The impact of leadership quality on user satisfaction in Bangladeshi university libraries was assessed using primary data obtained from 513 users of the twenty universities that were chosen. The questionnaire set-2 was utilized for this purpose. Based on the 513 respondents' demographic data, the majority of respondents (290, 56.5%) were from public universities, followed by those from private (190, 47%) and overseas universities (33, 6.4%). The majority of the respondents were from CVASU (48, 9.4%), followed by IIUC (38, 7.4%), AUW (36, 6.4%), CU (33, 6.4%), BSMMU (30, 5.8%), BUET (27, 5.3%), DU (27, 6.3%), USTC (24, 4.7%), SUST (23, 4.5%), RU (22, 4.3%), SAU (22, 4.3%), BUP (22, 4.3%), BRACU (21, 4.1%), CUET (21, 4.1%), ULAB (21, 4.1%), BAU (20, 3.9%), DIU (20, 3.9%), EU (20, 3.9%), EWU (20, 3.9) and IUB (20, 3.9%).

The majority of the respondents were students (437, 85.2%), followed by teachers (67, 13.1%) and researchers (9, 1.8%). Of the respondents, 8 (1.6%) were professors, 15 (2.9%) were associate professors, 19 (3.7%) were assistant professors, 26 (5.1%) were lecturers, 8 (1.6%) were MPhil/PhD researchers, 113 (22.0%) were graduate students, and 324 (63.1%) were undergraduate students. Of the respondents, 269 (52.4%) were male, and 244 (47.6%) were female. The age group with the highest percentage of respondents was 20–29 years (43, 8.4%), followed by 30–39 years (30, 8.4%), 40–49 years (18, 3.5%), below 20 years (16, 3.1%), and 50–49 years (3.6%). The demographic information of the respondents indicated that a large cross-section of the population replied. Table 5.1 shows that among the 20 universities, the highest numbers of the respondents were from the CVASU whereas the lowest numbers of the respondents were from IUB, EU, EWU and DIU.

Table 5.1: Demographic Information of Respondents

Category	Respondents	N (513)	Valid %
User type	Student	437	85.2
	Teacher	67	13.1
	Researcher	9	1.8
University	AUW	36	6.4
	BAU	20	3.9
	BSMMU	30	5.8

	BUET	28	5.5
	BUP	22	4.3
	BRACU	21	4.1
	CUET	21	4.1
	CVASU	48	9.4
	DIU	20	3.9
	EU	20	3.9
	EWU	20	3.9
	IUB	20	3.9
	IIUC	38	7.4
	USTC	24	4.7
	SUST	23	4.5
	SAU	22	4.3
	CU	33	6.4
	DU	27	6.3
	RU	22	4.3
	ULAB	21	4.1
University category	Public	290	56.5
	Private	190	37.0
	International	33	6.4
Status	Professor	8	1.6
	Associate Professor	15	2.9
	Assistant Professor	19	3.7
	Lecturer	26	5.1
	M.Phil/PhD Researcher	8	1.6
	Graduate Student	113	22.0
	Undergraduate Student	324	63.1
Gender	Male	269	52.4
	Female	244	47.6
Age group	Below 20	16	3.1
	20-29 Years	433	84.4
	30-39 Years	43	8.4
	40-49 Years	18	3.5
	50-59 Years	3	.6

Abbreviation is used for the name of the universities

5.3 Present Status of the Selected University Libraries in Bangladesh

In order to comprehend knowledge and leadership quality and how it affects user satisfaction in Bangladeshi university libraries, the study provided an illustration of the current state of the chosen university libraries and the library professionals working there. This section covered the following topics: maintenance, staff quality, training, promotional activities, services, facilities, space, seating capacity, opening hours, automation, website, RFID integration, and use of social media, library

collections, and access. It also covered the university library's use of social media, membership in consortiums, professional training, knowledge competency, and resources, including access to e-resources.

5.3.1 Library Staff

The Dhaka University Library employed the most number of people (185) out of the twenty university libraries, while the Asian University for Women employed the fewest people (five). There were 663 library staff members working in the twenty-two university libraries that were chosen. Among them, 19 were Librarian/Equivalent, 63 were Deputy Librarians/Equivalent, 84 were Assistant Librarians/ Equivalent, 91 were Executive/ Library Officers/ Equivalent, and 57 were Assistant Executive / Assistant Library Officers / Equivalent, 127 were Library Assistant / Attendant / Book Sorters/Equivalent, and 212 were Peon / MLSS / Gate keeper / Equivalent in the twenty university libraries of Bangladesh (Table 5.2).

Table 5.2: Library Staff of the Selected University Libraries

SL	University	Librarian/ equivalent	Deputy/ Joint/ Additional Librarian/ equivalent	Assistant/ Senior Assistant Librarian/ equivalent	Executive/ Library Officer/Ju nior Assistant Librarian/ equivalent	Assistant Executive/ Library Officer//e quivalent	Library assistan t/attendant/Boo k Sorter/e quivalente nt	Peon/ LMSS/ Bag/Gate Keeper/ equivalent	Total
1	AUW	1	0	0	4	0	0	0	5
2	BAU	1	9	4	0	6	15	22	57
3	BSMMU	1	0	7	5	0	10	5	28
4	BUET	1	1	3	2	16	3	17	43
5	BUP	1	0	0	3	2	6	2	14
6	BRACU	1	1	9	1	0	3	5	20
7	CUET	1	1	1	2	4	3	5	17
8	CVASU	1	0	1	1	0	3	4	10
9	DIU	1	0	2	6	4	4	10	27
10	EU	0	1	1	1	2	0	3	8
11	EWU	1	2	7	4	0	0	5	19
12	IUB	1	3	1	3	0	2	6	16
13	IIUC	1	0	2	4	7	4	6	24
14	USTC	1	1	0	0	0	4	2	8
15	SUST	1	5	2	3	1	8	7	27
16	SAU	1	2	2	2	0	0	8	15
17	CU	1	2	2	8	7	7	15	42
18	DU	1	29	30	25	0	50	50	185
19	RU	1	5	10	11	7	4	36	74
20	ULAB	1	1	0	6	1	1	4	14
Total		19	63	84	91	57	127	212	653

Abbreviation is used for the name of the universities

This table offers valuable insights into the organizational structure and human resource allocation within university libraries, facilitating a deeper understanding of staffing dynamics and resource management practices in the academic library sector.

5.3.2 Library Space, Seating Capacity, and Library Hours

Table 5.3 reveals that 55% of the university libraries have separate buildings dedicated solely to library functions, while the remaining libraries operate within a section of the main building. Seating capacity varies across institutions, with values ranging from 78 to 1500 seats, reflecting differences in library size and user demand. Opening hours also vary, with libraries operating for durations ranging from 10.5 to 14 hours per day, and opening days spanning approximately six days per week on average.

Table 5.3: Library Space, Seating Capacity, and Opening Hours

SL	University	Library Building		Library Hours	
		Separate/ Part	Seating Capacity	Opening Hours	Time
1	AUW	Part of MB	78	9am-12pm	15
2	BAU	Part of MB	150	8am-8pm	12
3	BSMMU	Part of MB	750	8am-9pm	13
4	BUET	Separate	300	8am-10pm	14
5	BUP	Part of MB	226	8am-8pm	12
6	BRACU	Separate	200	9am-10pm	13
7	CUET	Separate	300	9am-8pm	11
8	CVASU	Part of MB	100	9am-8pm	11
9	DIU	Separate	750	8am-8pm	12
10	EU	Part of MB	200	8.30am-7pm	10.5
11	EWU	Part of MB	350	8:30-10pm	13.5
12	IUB	Part of MB	500	8:30am-9.30pm	13
13	IIUC	Separate	480	8am-9pm	13
14	USTC	Separate	263	8am-10pm	14
15	SUST	Separate	700	8am-10pm	14
16	SAU	Separate	150	8am-9pm	13
17	CU	Separate	1000	8.30am-9pm	12.5
18	DU	Separate	1500	8am-10pm	14

19	RU	Separate	600	9am-8pm	11
20	ULAB	Part of MB	168	8:30am-9:30pm	13
Overall			438		

MB= Main Building

5.3.3 Library Automation and Digitization

Table 5.4 presents information on library automation and digitization efforts across the selected university libraries. It includes data on whether libraries have implemented automation systems, digital institutional repositories, and official websites. Additionally, details on the specific software used for automation, RFID technology adoption, and collection size within digital repositories, registration in OpenDOAR and ROAR, and website presence are provided. The study identified that all the university libraries used Koha Integrated Library System to build automation, whereas only Bangabandhu Sheikh Mujib Medical University (BSMMU) used SLiMS software. Among them, 45.45 percent of the university libraries integrated the RFID system with Koha software. Furthermore, the majority of libraries have established digital institutional repositories using DSpace, facilitating access to scholarly resources and promoting open access initiatives. Some libraries have also registered their repositories in OpenDOAR and ROAR directories. Additionally, most universities have official websites to enhance accessibility to library services and resources. Except Bangladesh University of Professionals (BUP), University of Science and Technology Chittagong (USTC) and University of Chittagong (CU), all the university libraries developed their Digital Institutional Repository using DSpace software. Each of the repositories had overall 6176 resources. It is found that 45 percent of the institutional repositories were registered with OpenDOAR or ROAR. (Table 5.4).

Table 5.4: Library Automation and Digitization

SL	University	Automation			Digital Institutional Repository				Website
		Yes/ No	Software	RFID Yes/No	Yes/No	Software	Collection	Registration	Yes/No
1	AUW	Yes	Koha	No	Yes	DSpace	94		Yes
2	BAU	Yes	Koha	Yes	Yes	DSpace	200		Yes
3	BSMMU	Yes	SLiMS	No	Yes	DSpace	1500		Yes
4	BUET	Yes	Koha	Yes	Yes	DSpace	6000		Yes
5	BUP	Yes	Koha	Yes	No	N/A	0		Yes
6	BRACU	Yes	Koha	Yes	Yes	DSpace	70525		Yes

7	CUET	Yes	Koha	No	Yes	DSpace	283		Yes
8	CVASU	Yes	Koha	Yes	Yes	DSpace	2465	OpenDOAR	Yes
9	DIU	Yes	Koha	Yes	Yes	DSpace	11570	OpenDOAR	Yes
10	EU	Yes	Koha	Yes	Yes	DSpace	12215	OpenDOAR, ROAR	Yes
11	EWU	Yes	Koha	No	Yes	DSpace	3489	OpenDOAR, ROAR	Yes
12	IUB	Yes	Koha	No	Yes	DSpace	2433	OpenDOAR, ROAR	Yes
13	IIUC	Yes	Koha	No	Yes	DSpace	5651	OpenDOAR, ROAR	Yes
14	USTC	Yes	Koha	No	No	N/A	0	OpenDOAR, ROAR	Yes
15	SUST	Yes	Koha	Yes	Yes	DSpace	0		Yes
16	SAU	Yes	Koha	Yes	Yes	DSpace	4501	OpenDOAR	Yes
17	CU	Yes	Koha	No	No	N/A	0		Yes
18	DU	Yes	Koha	Yes	Yes	DSpace	1293	OpenDOAR	Yes
19	RU	Yes	Koha	Yes	Yes	DSpace	100		Yes
20	ULAB	Yes	Koha	No	Yes	DSpace	1200		Yes
Total		20	20	11	17	17	123519	09	20

Abbreviation is used for the name of the universities, OpenDOAR = Directory of Open Access Repositories, ROAR = Registry of Open Access Repositories, RFID = Radio Frequency Identification

5.3.4 Use of Social Media by University Library

Table 5.5 presents an analysis of social media usage among selected university libraries in Bangladesh, encompassing platforms such as Facebook, YouTube, Twitter, LinkedIn, Instagram, and Telegram. Among these platforms, Facebook emerges as the most widely utilized, with 75% of total libraries incorporating it into their online presence. Following closely, YouTube stands as the second most popular platform, utilized by 30% of libraries. Twitter and LinkedIn find more traction among private and international university libraries, with 15% and 20% usage respectively. Meanwhile, Instagram and Telegram see a moderate adoption rate of 10% each across all library categories. Overall, the table delineates the diverse landscape of social media adoption by university libraries in Bangladesh, with Facebook reigning supreme in terms of widespread utilization. The table highlights that the highest proportion of the private university libraries (42.86%) have engaged with social media, followed by international university libraries (14.28%) and public university libraries (10.39%).

However, public university libraries lag behind in their adoption of Twitter, LinkedIn, Instagram, and Telegram. International university libraries, though fewer in number,

exhibit a comparable level of engagement with social media platforms to private university libraries.

Table 5.5: Use of Social Media by University Libraries in Bangladesh

SL	Name of Consortium	Public (11)		Private (9)		Int. (1)		Total	
		T	%	T	%	T	%	T	%
1.	Facebook	6	54.55	8	100	1	100	15	75
2.	YouTube	1	9.09	5	62.5	0	0	6	30
3.	Twitter	0	0	3	37.5	0	0	3	15
4.	LinkedIn	1	9.09	3	37.5	0	0	4	20
5.	Instagram	0	0	2	25	0	0	2	10
6.	Telegram	0	0	2	25	0	0	2	10
7.	Pinterest	0	0	1	12.5	0	0	1	5
Overall			10.39		42.86		14.28		23.57

Int. = International, T = Total

Overall, the data underscores the importance of social media as a communication and engagement tool for university libraries in Bangladesh. These platforms offer opportunities for libraries to connect with their users, share resources and events, and promote their services effectively in the digital age. As the digital landscape continues to evolve, the strategic use of social media is likely to remain integral to the outreach efforts of university libraries.

5.3.5 Membership with Digital Library Consortia in Bangladesh

This table provides an overview of the membership status of university libraries in Bangladesh with three prominent digital library consortia: Library Consortium of Bangladesh (LiCoB), UGC Digital Library (UDL), and Bangladesh Research and Education Network (BdREN). The data is presented in terms of the number of public, private, and international university libraries that are members of each consortium, along with the corresponding percentages.

Among the three consortiums, i.e., Library Consortium of Bangladesh (LiCoB), UGC Digital Library (UDL), and Bangladesh Research and Education Network (BdREN) in Bangladesh, the highest proportion of the public university libraries (78.78%) have membership in the consortiums, followed by international university libraries

(66.66%) and private university libraries (62.5%). It is found that overall, 71.66 percent of university libraries have membership in the consortiums (Table 5.6).

Table 5.6: Membership with Digital Library Consortia in Bangladesh

SL	Name of Consortium	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Library Consortium of Bangladesh (LiCoB)	7	63.63	4	50	1	100	12	60
2.	UGC Digital Library (UDL)	10	90.90	7	87.5	1	100	18	90
3.	Bangladesh Research and Education Network (BdREN)	9	81.81	4	50	-	0	13	65
Overall			78.78		62.5		66.66		71.66

Int. = International, *T* = Total

5.4 Knowledge Competency of Library Professionals

The library representatives were asked to reply regarding the highest professional degree of the library professionals of their libraries. The following tables demonstrate the overall scenario of professional education in Library and Information Science (LIS) and Information Communication Technology (ICT) background.

5.4.1 Library Staff Having Highest LIS Degrees

This table presents the distribution of library staff based on their highest professional degree in Library and Information Science (LIS) across public, private, and international university libraries in Bangladesh. The degrees considered include Certificate courses, Diplomas, Bachelor's, Master's, MPhil, and PhD in LIS.

Table 5.7 illustrates that a total of 61 library staff members have completed Certificate courses in LIS, with 57 from public universities and 4 from private universities. There are 71 library staff members who hold Diplomas in LIS, with 56 from public universities and 15 from private universities. A total of 70 library staff members have Bachelor's degrees in LIS, with 44 from public universities and 26 from private universities. The highest number of library staff members, totaling 146, holds Master's degrees in LIS, with 81 from public universities, 61 from private universities, and 4 from international universities. Seven library staff members have MPhil degrees in LIS, with 3 from public universities, 3 from private universities, and 1 from an

international university. Six library staff members have attained PhD degrees in LIS, with 4 from public universities and 2 from private universities.

Overall, out of the total 653 library professionals, 361 (55.28%) members hold degrees in Library and Information Science. Public universities contribute the highest number of staff with LIS degrees, followed by private universities. International university libraries have a smaller proportion of staff with LIS degrees compared to their counterparts.

Table 5.7: Number of Library Staff having Highest LIS Degrees

SL	Degree	Public	Private	International	Total
1	Certificate course in LIS	57	4	0	61
2	Diploma in LIS	56	15	0	71
3	Bachelor in LIS	44	26	0	70
4	Master in LIS	81	61	4	146
5	MPhil in LIS	3	3	1	7
6	PhD in LIS	4	2	0	6
Total (out of 653)		245 (37.52%)	111 (17.0%)	5 (0.76%)	361 (55.28%)

LIS = Library and Information Science

5.4.2 Library Staff having Highest ICT Degrees

Table 5.8 illustrates that a total of 40 library staff members have completed Certificate courses in ICT, with 28 from public universities, 7 from private universities, and 5 from international universities. There are 42 library staff members holding Diplomas in Computer Science/ICT, with 33 from public universities and 9 from private universities. Five library staff members possess Bachelor's degrees in ICT, with 2 from public universities and 3 from private universities. Two library staff members have Master's degrees in ICT, with 1 each from public and private universities. There are no library staff members reported to have attained MPhil or PhD degrees in ICT among the surveyed institutions.

Overall, out of the total 653 library staff, 89 (13.62%) staff holds degrees in Information and Communication Technology. Public universities contribute the highest number (64, 9.80%) of staff with ICT degrees, followed by private universities (20, 3.06%), while international university libraries have a smaller proportion (5, 0.76%) of staff with ICT degrees compared to their counterparts.

Table 5.8: Library Staff having Highest ICT Degrees

SL	Degree	Public	Private	Int.	Total
1	Certificate course in ICT	28	7	5	40
2	Diploma in Computer science/ICT	33	9	0	42
3	Bachelor in ICT	2	3	0	5
4	Master in ICT	1	1	0	2
5	MPhil in ICT	0	0	0	0
6	PhD in ICT	0	0	0	0
Total (out of 653 staff)		64 (9.80%)	20 (3.06%)	5 (.76%)	89 (13.62%)

ICT = Information and Communication Technology, Int. = International

5.4.3 Professional Course/Workshop/Training

Table 5.9 provides an overview of the engagement of library staff in professional courses, workshops, and training programs across public, private, and international university libraries in Bangladesh. The study found that workshop on library automation software and Digital library software had the highest overall participation rate, with 23.2% of staff members from all universities attending. a significant participation rate of 14.6% involved with the course of plagiarism checker, Around 13.4% of library staff participated in Database management course, Approximately 11% of staff members attended in Archives Management course, Training on Statistical Analysis had a participation rate of 11.2%, and the workshop on Reference Management Software had the lowest participation rate, with only 2.4% of staff members attending.

Private universities showed the highest overall participation rate, with 47.6% of staff members attending various courses. Public universities closely followed, with a participation rate of 46.3%. Although fewer in number, international universities had a participation rate of 6.1%.

Overall, there is active engagement among library staff from all types of universities in various professional courses, workshops, and training programs, indicating a commitment to enhancing their skills and competencies in library management and information services.

Table 5.9: Engagement with Professional Courses/Workshop/Training

SL	Training program	Public	Private	Int.	Total
1.	Workshop on library automation software like koha, CDS-ISIS, SLiMS	10 (90%)	8 (100%)	1 (100%)	19 (23.2%)
2.	Workshop on digital library software like DSpace, Greenstone, SLiMS	11 (100%)	7 (87.5%)	1 (100%)	19 (23.2%)
3.	Course on archives management.	4 (36.4%)	4 (50%)	1 (100%)	9 (11%)
4.	Course on database management	4 (36.4%)	6 (75%)	1 (100%)	11 (13.4%)
5.	Training on Statistical Analysis like SPSS, STATA, R, Python, excel etc.	3 (27.3%)	6 (75%)	1 (100%)	10 (11.2%)
6.	Training on plagiarism checker like turniting, grammarly, duplichecker, etc.	6 (54.5%)	6 (75%)	0 (0%)	12 (14.6)
7.	Workshop on reference management software like Zotero, Mendeley, etc.	0 (0%)	2 (25%)	0 (0%)	2 (2.4%)
Total (out of 20 universities)		38 (46.3%)	39 (47.6%)	5 (6.1%)	82 (100%)

The study revealed that seminars organized by Professional bodies had the highest participation rate among library staff, with 16.2% attending seminars organized by professional bodies like Library Association of Bangladesh (LAB), Bangladesh Association of Librarians, Information Scientists and Documentalists (BALID), and Medical Library Association of Bangladesh (MEDLAB). Following closely, seminars organized at the national level saw a participation rate of 16.2%. Similar to seminars, conferences organized by professional bodies also had a high participation rate of 16.2%. Around 15.3% of library staff participated in conferences organized by universities. Seminars organized by other skilled development programs had a participation rate of 14.4%. Approximately 13.6% of library staff attended international conferences held abroad. Conferences organized by associations like Association for Information Science and Technology (ASIS&T), The International Federation of Library Associations and Institutions (IFLA), etc. had the lowest participation rate, with only 8.1% of library staff attending.

Library staff from public universities had the highest overall participation rate, with 51.4% attending various seminar and conference programs. Following closely, library staff from private universities had a participation rate of 46.8%. Although fewer in number, library staff from international universities had a participation rate of 1.8% (Table 5.10).

Table 5.10: Participations in Seminar and Conference Program by Library Staff

SL	Program	Public	Private	Int.	Total
1	Seminars organized nationally	10 (9.0%)	8 (7.2%)	0 (0%)	18 (16.2%)
2	Seminar organized by Professional body like LAB, BALID, MEDLAB	9 (8.1%)	8 (7.2%)	1 (0.9%)	18 (16.2%)
3	Seminar organized by other skilled development programs	7 (6.3%)	8 (7.2%)	1 (0.9%)	16 (14.4%)
4	Conference organized by Universities	9 (8.1%)	8 (7.2%)	0 (0%)	17 (15.3%)
5	Conference organized by Professional body like LAB, BALID, MEDLAB	10 (9.0%)	8 (7.2%)	0 (0%)	18 (16.2%)
6	Attended Int'l conference held in abroad	7 (6.3%)	8 (7.2%)	0 (0%)	15 (13.6%)
7	Conference organized by associations like ASIS&T, IFLA etc.	5 (4.5%)	4 (3.6%)	0 (0%)	9 (8.1%)
Total (out of 20 universities)		57 (51.4%)	52 (46.8%)	2 (1.8%)	111 (100%)

5.5 Engagement with Professional Body

5.5.1 Status of Library Staff in Professional Bodies

The study identified that Library Association of Bangladesh (LAB) had the highest number of library staff engagement, with 125 participants, accounting for 62.81% of the total. Following closely, BALID saw participation from 67 library staff members, constituting 33.66% of the total. Medical Library Association of Bangladesh (MEDLAB) had minimal participation, with only 1 member. IFLA (International Federation of Library Associations and Institutions) had 4 participants, representing 2.01% of the total. Association of Information Science and Technology (ASIS&T) had 1 participant. The American Library Association (ALA), The British Library Association (BLA), and The Asian Library Association (ASIALA) these associations had no participation, Special Library Association (SLA): SLA had 1 participant.

Library staff from public universities had the highest participation rate in professional bodies, with 64.82% of the total participants. Library staff from private universities followed, with 33.66% of the total participants. Engagement from international universities was minimal, with only 1.50% of the total participants (Table 5.11).

Table 5.11: Status of Library Staff Engaged in Professional Body

SL	Professional body	Public	Private	Int.	Total
	Library Association of Bangladesh (LAB)	73	51	1	125
1	Bangladesh Association of Librarians, Information Scientists and Documentalists (BALID)	53	13	1	67
2	Medical Library Association of Bangladesh (MEDLAB)	1	0	0	1
3	IFLA (International Federation of Library Associations and Institutions)	1	2	1	4
4	Association of Information Science and Technology (ASIS&T)	1	0	0	1
5	The American Library Association (ALA)	0	0	0	0
6	The British Library Association (BLA)	0	0	0	0
7	The Asian Library Association (ASIALA)	0	0	0	0
8	Special Library Association (SLA)	0	1	0	1
Total		129 (64.82%)	67 (33.66%)	3 (1.50%)	199 (100%)

5.5.2 Positional Status of Library Staff in Professional Bodies

The study found that there were a total of 3 (7.7%) presidents across the participating universities, with 2 from private universities and 1 from a public university, making up 7.7% of the total positions. 6 (15.7%) vice presidents were identified, with an equal distribution of 3 each from public and private universities. No vice presidents were reported from international universities. 2 (5.1%) general secretaries were identified, with one each from public and private universities. The majority of positions, constituting 12 (30.8%) of the total, were held by members, with an almost equal distribution between public and private universities and one member from an international university. 4 (10.3%) treasurers were identified, with 3 from public universities and 1 from a private university. 7 (17.9%) councilors were identified, with 5 from public universities and 2 from private universities. Country Co-coordinator/Representative/Chapter Chair held 4 (10.3%) positions, with 1 from a public university and 3 from private universities. Officer/Social Media Officer/Webmaster/Equivalent held by 1 (2.6%) individual from a private university.

Across all positions, there was an equal distribution between public and private universities, with each category accounting for 48.7% of the total positions. Only one position (2.7%) was held by a member from an international university (Table 5.12).

Table 5.12: Positional Status of Library Staff in Professional Body

SL	Position	University category			Total
		Public	Private	Int.	
1.	President	1 (2.6%)	2 (5.1%)	0 (0%)	3 (7.7%)
2.	Vice president	3 (7.7%)	3 (7.7%)	0 (0%)	6 (15.7%)
3.	General secretary	1 (2.6%)	1 (2.6%)	0 (0%)	2 (5.1%)
4.	Member	5 (12.8%)	6 (15.4%)	1 (2.6%)	12 (30.8%)
5.	Treasurer	3 (7.7%)	1 (2.6%)	0 (0%)	4 (10.3%)
6.	Councilor	5 (12.8%)	2 (5.1%)	0 (0%)	7 (17.9%)
7.	Country co-coordinator/ representative / Chapter chair	1 (2.6%)	3 (7.7%)	0 (0%)	4 (10.3%)
8.	Officer/Social Media Officer/Webmaster/Equivalent	0 (0%)	1 (2.6%)	0 (0%)	1 (2.6%)
Overall		19 (48.7%)	19 (48.7%)	1 (2.7%)	39 (100%)

5.6 Training and Promotional Activities

5.6.1 Training Programs for Library Staff Organized by the Library

The study revealed that overall, 76.88 percent of the training programs were done in the university libraries of Bangladesh. The height proportion of the training programs arranged in the private university libraries (93.75%) followed by public university libraries (65.89%) and international university libraries (62.5%) in Bangladesh. Among the eight training programs, the highest number of university libraries (19, 95.0%) organized in-house training program on library automation and digital library management system for their library staff, whereas the lowest number of university libraries (12, 60.0%) in Bangladesh arranged managerial training program for their staff (Table 5.13).

Table 5.13: Training Programs for Library Staff Organized by the Library

		University category						Total	
SL	Training program	Public		Private		Int.			
		T	%	T	%	T	%	T	%
1.	In-house training program on library automation	10	90.9	8	100	1	100	19	95.0
2.	In-house training program on digital library management system	10	90.9	8	100	1	100	19	95.0
3.	Soft skill training	6	54.5	6	75.0	1	100	13	65.0
4.	Managerial training	5	45.5	7	87.5	0	0	12	60.0
5.	Technical training	7	63.6	8	100	0	0	15	75.0
6.	Library orientation program	8	72.7	8	100	1	100	17	85.0

7.	Webinar on different issues	6	54.5	8	100	0	0	14	70.0
8.	Assign staff for attending training organized by other organizations	6	54.5	7	87.5	1	100	14	70.0
Overall			65.89		93.75		62.5		76.88

These figures highlight the proactive approach universities take in enhancing the skills of their library staff through diverse training programs.

5.6.2 Promotional Activities Organized by the Library

According to the study, the overall, 63.57 percent of the promotional activities were done in the university libraries of Bangladesh. The height proportion of the promotional activities were done in the private university libraries (82.14%) followed by international university libraries (57.14%) and public university libraries (51.94%) in Bangladesh. Among the seven promotional activities, the highest number of university libraries (18, 90.0%) arranged library orientation program for the library users, whereas the lowest number of university libraries (7, 35.0%) in Bangladesh published newsletter (Table 5.14).

Table 5.14: Promotional Activities Organized by the Library

SL	Promotional activity	University category						Total	
		Public		Private		Int.			
		T	%	T	%	T	%	T	%
1.	Organizing seminar/workshop/webinar for library professionals/users	7	63.6	8	100	0	0	15	75.0
2.	Conducting library information literacy program	7	63.6	8	100	1	100	16	80.0
3.	Arranging library orientation program	9	81.8	8	100	1	100	18	90.0
4.	Publishing library brochure	7	63.6	6	75.0	0	0	13	65.0
5.	Providing library orientation guide	4	36.4	6	75.0	1	100	11	55.0
6.	Publishing newsletter	3	27.3	4	62.5	0	0	7	35.0
7.	Arranging exhibition and special display	3	27.3	5	62.5	1	100	9	45.0
Overall			51.94		82.14		57.14		63.57

5.7 Infrastructural Development

According to the study, overall, 71.5 percent of infrastructural developments were ensured in the selected university libraries of Bangladesh. The height proportion of

the infrastructural development was ensured in the international university libraries (80.0%) followed by private university libraries (76.25%) and public university libraries (67.26%) in Bangladesh. Among the 10 infrastructural developments, the highest number of university libraries (18, 90.0%) provided air conditioning facilities and teachers' corners for the library users, whereas the lowest number of university libraries (1, 5.0%) in Bangladesh ensured sleeping room for the users (Table 5.15).

Table 5.15: Infrastructural Development Ensured by the Library

		University category							
SL	Infrastructural development	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Individual study carrels	6	54.5	8	100	1	100	15	75.0
2.	Group study room	10	90.9	7	87.5	1	100	18	90.0
3.	Seminar room	8	72.7	6	75.0	1	100	15	75.0
4.	Air condition facility	10	90.9	8	100	1	100	19	95.0
5.	Teachers Corner	10	90.9	8	100	1	100	19	95.0
6.	Baggage counter	9	81.8	7	87.5	1	100	17	85.0
7.	Library Café	2	18.2	2	25.0	0	0	4	20.0
8.	CC Camera	10	90.9	7	87.5	1	100	18	90.0
9.	Fire control system	9	81.8	7	87.5	1	100	17	85.0
10.	Sleeping room	0	0	1	12.5	0	0	1	5.0
Overall			67.26		76.25		80.0		71.5

Int. = International, *T* = Total

5.8 Shelving System

Table 5.16 presents data on the shelving systems employed by selected libraries, categorized by university types. Among public universities, 53.6% utilize an open-shelf system, 14.3% use a close-shelf system, and 10.7% employ a semi-open-shelf system. In private universities, 42.9% opt for an open-shelf system, 10.7% for a close-shelf system, and 7.1% for a semi-open-shelf system. Interestingly, international universities predominantly favor the open-shelf system at 3.6%. Overall, the majority of libraries (57.1%) implement an open-shelf system, followed by 25.0% with a close-shelf system and 17.9% with a semi-open-shelf system.

Table 5.16: the Shelving System of the Selected Library

SL	Shelving system	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Open-shelf system	8	28.6	7	25.0	1	3.6	16	57.1

2.	Close-shelf system	4	14.3	3	10.7	0	0	7	25.0
3.	Semi-open-shelf system	3	10.7	2	701	0	0	5	17.9
Overall			53.6		42.9		3.6		100

5.9 Automation Status

The table 5.17 illustrates the automation status of selected university libraries, categorized by university types. Among public universities, 36.4% are fully automated, while 63.6% are semi-automated. In private universities, 87.5% are fully automated, and 12.5% are semi-automated. Interestingly, all international universities are fully automated. Overall, 60.0% of the selected libraries are fully automated, and 40.0% are semi-automated.

Table 5.17: the Automation Status of the Selected Library

SL	Automation status	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Fully automated	4	36.4	7	87.5	1	100	12	60.0
2.	Semi-automated	7	63.6	1	12.5	0	0	8	40.0
Overall		11	100	8	100	1	100	20	100

The table 5.18 outlines the automation software utilized by the selected libraries, segmented by university categories. Among public universities, 90.9% utilize Koha, while 9.1% use SLiMS. In private universities, all libraries (100%) use Koha. Similarly, in international universities, there is a sole utilization of Koha. Overall, Koha is the predominant automation software across all categories, with 95% of libraries employing it, while SLiMS is used by only 5% of the libraries.

Table 5.18: the Automation Software Used by the Selected Library

SL	Software	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Koha	10	90.9	8	100	1	100	19	95
2.	SLiMS	1	9.1	0	0	0	0	1	5
Overall		11	100	8	100	1	100	20	100

Int. = International, *T* = Total

The table 5.19 illustrates the digital library software utilized by the selected libraries, categorized by university types. Among public universities, 81.8% utilize DSpace, while none use Web link. In private universities, 87.5% of libraries use DSpace, and 12.5% use Web link. Conversely, in international universities, there is a sole utilization of DSpace. Overall, DSpace is the predominant digital library software

across all categories, employed by 85% of the libraries, while Web link is used by only 5% of the libraries.

Table 5.19: the Digital Library Software Used by the Selected Library

SL	Software	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	DSpace	9	81.8	7	87.5	1	100	17	85
2.	Web link	0	0	1	12.5	0	0	1	5
Overall		9	81.8	8	100	1	100	18	90

Int. = International, *T* = Total

The table 5.20 outlines the distribution of library automation and digitization work based on the team involved, categorized by university types. Among public universities, 25% of the work is done by the own library team, while 15% is done with the assistance of someone from other institutions. In private universities, 35% of the work is accomplished by the own library team, and there's no involvement of external experts. Conversely, international universities have 5% of work done by the own library team and 5% with the help of an expert from another institution. Overall, the majority of the work, 60%, is carried out by the own library team, followed by 20% with the assistance of an external expert, and 15% involves a combination of both.

Table 5.20: Library Automation and Digitization Work

SL	Team	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Own library team	5	25	7	35	0	0	12	60
2.	With the help of someone or expert from other institution	3	15	0	0	1	5	4	20
3.	Both 1 and 2	2	10	1	5	0	0	3	15
4.	CSE department	1	5	0	0	0	0	1	5
Overall		11	55	8	40	1	5	20	100

Int. = International, *T* = Total

5.10 Library Services

The study illustrates the general and innovative services to understand the existing services in the selected university libraries of Bangladesh.

5.10.1 General Services in the University Libraries

An overview of the general services provided by a few university libraries is given in the study. Among the fifteen general services, circulation services were offered by all

of the Bangladeshi university libraries that were chosen. Conversely, just 40.0% of university libraries offered their patrons Inter-Library Loans services. Of the fifteen general services offered, 81.7 percent came from private university libraries, 68.46 percent from public university libraries, and 46.66 percent from international university libraries. In Bangladesh, university libraries offered 69.06 percent of all library services (Table 5.21).

Table 5.21: General Services in the University Libraries

SL	General Services	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Circulation service	11	100	8	100	1	100	20	100
2.	Current Awareness Service (CAS)	9	81.8	7	87.5	1	100	17	85.0
3.	Selective Dissemination of Information (SDI) service	9	81.8	7	87.5	1	100	17	85.0
4.	Bibliographical services	8	72.7	6	75.	0	0	14	70.0
5.	Research support services	11	100	7	87.5	1	100	19	95.0
6.	Photocopy service	11	100	7	87.5	0	0	18	90.0
7.	Printing service	7	63.6	6	75.0	0	0	13	65.0
8.	Scanning service	7	63.6	7	87.5	0	0	14	70.0
9.	Inter-Library Loans	3	27.3	5	62.5	0	0	8	40.0
10.	Resources sharing	6	54.5	6	75.0	0	0	12	60.0
11.	News clipping	3	27.3	7	87.5	1	100	11	55.0
12.	Referral service	8	72.7	7	87.5	1	100	16	80.0
13.	Indexing services	6	54.5	5	62.5	0	0	11	55.0
14.	Abstracting services	6	54.5	6	75.5	0	0	12	60.0
15.	Instruction of library use	8	72.7	7	87.5	1	100	16	80.0
Overall			68.46		81.7		46.66		69.06

Int. = International, *T* = Total

5.10.2 Innovative Services in the University Libraries

Among the seven innovative services, the highest proportion (15, 75%) of the selected university libraries of Bangladesh provided anti-plagiarism software service. On the other hand, the lowest proportion (4, 20.0%) of the selected university libraries provided paraphrasing software to their users. The private university libraries provided 60.71 percent of the innovative services, whereas international university libraries provided 42.85 percent and public university libraries provided 38.97

percent. The study revealed that overall, 47.86 percent of the innovative services were provided in the university libraries (Table 5.22).

Table 5.22: Innovative Services in the University Libraries

SL	Innovative Library Service	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Anti-Plagiarism software	1	63.6	7	87.5	1	100	15	75.0
2.	Grammar checking software	3	27.3	5	62.5	1	100	9	45.0
3.	Remote access	5	45.5	6	75.0	1	100	12	60.0
4.	Discovery tools	4	36.4	7	87.5	0	0	11	55.0
5.	Citation & reference software	6	54.5	5	62.5	0	0	11	55.0
6.	Paraphrasing software	2	18.2	2	25.0	0	0	4	20.0
7.	Data analysis software	3	27.3	2	25.0	0	0	5	25.0
Overall			38.97		60.71		42.85		47.86

Int. = International, *T* = Total

5.11 Facilities in the University Libraries

5.11.1 ICT Facilities in the University Libraries

All of the selected university libraries in Bangladesh had Wi-Fi internet access among their fourteen ICT facilities. Conversely, only 40.0% of the chosen university libraries offered web 2.0 interactive sharing and virtual reference service options to their users, which was the lowest proportion. Overall, private universities tend to offer a slightly higher average percentage of ICT facilities (76.78%) compared to public universities (61.66%), with international institutions falling in between at 57.14%. According to the report, the university libraries in Bangladesh had a total of 67.85 percent ICT facilities available (Table 5.23).

Table 5.23: ICT Facilities in the University Libraries

SL	ICT facilities	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Computer Lab	11	100	7	87.5	0	0	18	90.0
2.	OPAC Service	10	90.9	8	100	1	100	19	95.0
3.	Electronic content download and printing	7	63.6	7	87.5	0	0	14	70.0
4.	Web 2.0 interactive sharing	4	36.4	4	50.0	0	0	8	40.0
5.	Email notification	9	81.8	7	87.5	1	100	17	85.0
6.	SMS notification	3	27.3	3	37.5	0	0	6	30.0

7.	Receipt printing service while check-in and check-out of books	6	54.5	6	75.0	0	0	12	60.0
8.	Online book reservation facility	7	63.6	7	87.5	1	100	15	75.0
9.	online self-renewal facility	2	18.2	6	75.0	1	100	9	45.0
10.	Online document delivery service	5	45.5	5	62.5	1	100	11	55.0
11.	Virtual reference service	3	27.	5	62.5	0	0	8	40.0
12.	Wi-Fi	11	90.9	8	100	1	100	20	100
13.	LAN	10	90.9	7	87.5	1	100	18	90.0
14.	Multimedia projector	8	72.7	6	75.0	1	100	15	75.0
Overall			61.66		76.78		57.14		67.85

Int. = International, *T* = Total

5.11.2 Library Resources Selection facility

The study outlines the availability of library resource selection facilities across public, private, and international universities. The study found that 75 percent of the university libraries have a recommendation/complain box. 95 university libraries allow their teachers to submit book purchase suggestions, whereas 70 percent of the university libraries allow their students, and 60 percent of the university libraries allow their MPhil/PhD researchers to submit book purchase suggestions. Overall, private universities tend to offer a slightly higher average percentage of library resource selection facilities (78.13%) compared to public universities (74.98%), with international institutions at 50.0% (Table 5.24).

Table 5.24: Library Resources Selection Facility

SL	Suggestion	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Availability of Recommendation/complain box	8	72.7	7	87.5	0	0	15	75.0
2.	Book purchase suggestion by students	7	63.6	7	87.5	0	0	14	70.0
3.	Book purchase suggestion by Teacher	10	90.9	8	100	1	100	19	95.0
4.	Book purchase suggestion by MPhil/PhD researchers	8	72.7	3	37.5	1	100	12	60.0
Overall			74.98		78.13		50.0		75.0

Int. = International, *T* = Total

5.12 Library Collections and Access

5.12.1 Library Resources

The study presents the availability of various library resources across public, private, and international universities. Among the thirteen types of library resources, it is found that all the university libraries maintained the books and journals. On the other hand, only 65 percent of university libraries maintained manuscripts and archival materials. Overall, 89.23 percent of the library resources were maintained in the university libraries of Bangladesh. Overall, private and international universities tend to have a higher average percentage of library resources available compared to public universities, with private universities at 93.27% and international universities at 92.30%, while public universities stand at 84.48% (Table 5.25).

Table 5.25: Status of Library Resources

SL	Items	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Books	11	100	8	100	1	100	20	100
2.	Journals	11	100	8	100	1	100	20	100
3.	Reports	9	81.8	7	87.5	1	100	17	85.0
4.	Conference proceedings	9	81.8	7	87.5	1	100	17	85.0
5.	Theses and dissertations	10	90.9	8	100	1	100	19	95.0
6.	Research papers	9	81.8	8	100	1	100	18	90.0
7.	Internship/Project/Term Papers	9	52.9	7	87.5	1	100	17	85.0
8.	Magazines	10	90.9	8	100	1	100	19	95.0
9.	Newspapers	10	90.9	8	100	1	100	19	95.0
10.	Reference collections	10	90.9	7	87.5	1	100	18	90.0
11.	Audio-visual items	10	90.9	7	87.5	1	100	18	90.0
12.	Muktijoddha/Ekushy/Career Corner	9	81.8	8	100	0	0	17	85.0
13.	Manuscripts and archival materials	7	63.6	6	75.0	1	100	13	65.0
Overall			84.48		93.27		92.30		89.23

Int. = International, *T* = Total

5.12.2 Access to Online Journals

Out of the eleven online journal databases, it was discovered that the Springer online journal databases had the highest subscription rate among university libraries in Bangladesh, with 17 libraries (85%) subscribing to it. On the other hand, the Elsevier online journal database had the lowest subscription rate, with only 11 libraries (55%) subscribing to it.

Overall, the university libraries in Bangladesh subscribed to 66.36% of the online journal databases available. Public university libraries had the highest proportion of subscriptions, with 75.55%, followed by private university libraries with 54.54%, and international university libraries with 45.45% (Table 5.26).

Table 5.26: Access to Online Journals

SL	Online Journal Database	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	ACM Digital Library	9	91.8	4	50.0	0	0	13	65.0
2.	EBSCO	7	63.6	3	37.5	1	100	11	55.0
3.	Cambridge University Press	10	66.7	4	50.0	1	100	15	75.0
4.	Emerald	9	81.8	7	87.5	0	0	16	80.0
5.	Elsevier	7	63.6	4	50	0	0	11	55.0
6.	IEEE	8	72.7	5	62.5	0	0	13	65.0
7.	JSTOR	8	72.7	7	87.5	1	100	16	80.0
8.	Oxford University Press	8	81.8	3	37.5	0	0	12	60.0
9.	Sage	7	63.6	2	25.0	1	100	10	50.0
10.	Springer	10	90.9	6	75.0	1	100	17	85.0
11.	Taylor and Francis	9	81.8	3	37.5	0	0	12	60.0
Overall			75.55		54.54		45.45		66.36

Int. = International, *T* = Total

5.12.3 Access to E-books Database

Out of the eleven e-book databases, the Oxford University Press and Springer e-book database had the highest subscription rate among university libraries in Bangladesh, with 12 libraries (65%) subscribing to it. On the other hand, the Elsevier e-book databases had the lowest subscription rate, with just 9 libraries (45%) subscribing to them. In general, public university libraries had the largest share of subscriptions to e-book databases, accounting for 67.74% of the total. Private university libraries followed with a subscription rate of 43.18%, while international university libraries had the lowest rate at 18.18%.

The study revealed that the university libraries in Bangladesh had subscribed to a total of 55.45 percent of the available e-book databases out of the 11 databases shown in Table 5.27.

Table 5.27: Status of Access to E-books

SL	E-book Database	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Cambridge University Press	9	81.8	3	37.5	0	0	12	60.0
2.	Emerald	8	72.7	3	37.5	0	0	11	55.0
3.	Elsevier	6	54.5	3	37.5	0	0	9	45.0
4.	McGraw-Hill	8	72.7	3	37.5	0	0	11	55.0
5.	Oxford University Press	9	81.8	4	50	0	0	13	65.0
6.	Pearson	7	63.6	3	37.5	0	0	10	50.0
7.	ProjectMUSE	5	45.5	5	62.5	0	0	10	50.0
8.	Sage	7	63.6	2	25.0	1	100	10	50.0
9.	Springer	9	81.8	4	50.0	0	0	13	65.0
10.	Taylor and Francis	8	72.7	2	25.0	1	100	11	55.0
11.	Wiley	6	54.5	6	75.0	0	0	12	60.0
Overall			67.74		43.18		18.18		55.45

Int. = International, *T* = Total

5.12.4 Access to other E-resources Database

The survey found that of the six e-resource databases, the theses and dissertations e-resource database had the greatest subscription rate among university libraries in Bangladesh, with 14 libraries (70%) subscribing to it. Conversely, the Clinical reports and Synopsis e-resource databases had the lowest membership rate, with only 2 libraries (10%) subscribing to them. Private university libraries, on average, held the majority of subscriptions to e-resource databases, representing 67.74% of the overall amount. Public university libraries exhibited a subscription rate of 31.83%, whereas international university libraries demonstrated the lowest rate at 16.66%. According to the survey, the university libraries in Bangladesh had subscribed to 35 percent of the accessible e-book databases out of the 6 e-resource databases mentioned in Table 5.28.

Table 5.28: Access to other E-resources

SL	Other e-resources Database	Public		Private		Int.		Total	
		T	%	T	%	T	%	T	%
1.	Clinical reports	1	9.1	1	12.5	0	0	2	10.0
2.	Encyclopedia	3	27.3	4	50	0	0	7	35.0
3.	Magazines	5	45.5	7	87.5	0	0	12	60.0

4.	Newspapers	3	27.3	2	25.0	0	0	5	25.0
5.	Synopses	1	9.1	1	12.5	0	0	2	10.0
6.	Theses and Dissertations	8	72.7	8	100	1	100	14	70.0
Overall			31.83		47.92		16.66		35.0

Int. = International, *T* = Total

5.13 Usages of Library and Library Services

The study examines the frequency at which respondents utilize the library, classifying it into six categories: daily, twice weekly, weekly, fortnightly, monthly, and occasionally. An analysis was conducted to determine the disparity in library usage frequency among different university categories, such as public, private, and international institutions, as well as among other user categories, including teachers, students, and researchers.

5.13.1 Frequency of Library Use

The survey reveals that the majority of respondents, specifically 166 individuals (32.4%), utilized their libraries twice a week. This was followed by 123 respondents (24%) who used the library on a daily basis, 105 respondents (20.5%) who used it weekly, 56 respondents (10.9%) who used it occasionally, 33 respondents (6.4%) who used it monthly, and 30 respondents (5.8%) who used it fortnightly (as shown in table 5.29).

Table 5.29: Frequency of Library Use

Library Use	“Frequency	Percent	Valid Percent	Cumulative Percent”
Daily	123	24.0	24.0	24.0
Twice in a week	166	32.4	32.4	56.3
Weekly	105	20.5	20.5	76.8
Fortnightly	30	5.8	5.8	82.7
Monthly	33	6.4	6.4	89.1
Occasionally	56	10.9	10.9	100.0
Total	513	100.0	100.0	

5.13.2 Frequency of Library Use by User Category

According to study, 9 teachers, which represents 13.4% of the total number of teachers surveyed, acknowledged using the product on a daily basis. Among students, the library is used on a daily basis by a substantial number of individuals, specifically

108 students, which accounts for 24.7% of the student population. Researchers make everyday use of the library, comprising 6 individuals (66.4%). 23 professors (34.3%), 142 students (32.5%), and 1 researcher (11.1%) report using the library twice a week. Weekly usage is recorded for a total of 105 individuals, consisting of 17 professors (25.4%), 87 pupils (19.9%), and 1 researcher (11.1%). Fortnightly usage is less prevalent, as indicated by 4 professors (6.0%), 25 students (5.7%), and 1 researcher (11.1%). The monthly utilization of the library is documented by 5 educators, accounting for 7.5% of the total, as well as 28 pupils, representing 6.4% of the total. There are no researchers included in the data. Out of the total number of teachers, 13.4% reported using the library occasionally. Similarly, 10.8% of students reported occasional library usage. However, no researchers reported using the library. The cumulative number of participants in each group amounts to 513, comprising of 67 educators, 437 learners, and 9 scholars. The majority of library users, accounting for 85.2%, are students. Teachers make up 13.1% of library users, while researchers constitute only 1.8% (Table 5.30).

Table 5.30: Frequency of Library Use by User Category

SL	Frequency	Teacher		Student		Researcher		Total	
		N	%	N	%	N	%	N	%
1	Daily	9	13.4	108	24.7	6	66.4	123	24.0
2	Twice a week	23	34.3	142	32.5	1	11.1	166	32.4
3	Weekly	17	25.4	87	19.9	1	11.1	105	20.5
4	Fortnightly	4	6.0	25	5.7	1	11.1	30	5.8
5	Monthly	5	7.5	28	6.4	0	0	33	6.4
6	Occasionally	9	13.4	47	10.8	0	0	56	10.9
Total		67	100	437	100	9	100	513	100
Overall			13.1		85.2		1.8		100

N = Number

5.13.3 Frequency of Library Use by University Category

The table 5.31 presents the frequency of library use categorized by university types: public, private, and international. Among public universities, daily library usage is reported by 58 individuals, accounting for 20.0% of respondents in this category. In private universities, 53 individuals (27.9%) use the library daily, while in international universities, 12 individuals (36.4%) report daily usage. Twice a week library usage is most common among public universities, with 108 individuals (37.2%) using the

library at this frequency. In private universities, 54 individuals (28.4%) report using the library twice a week, and in international universities, 4 individuals (12.1%) report the same. Weekly library usage is reported by 57 individuals (19.7%) from public universities, 39 individuals (20.5%) from private universities, and 9 individuals (37.3%) from international universities. Fortnightly usage is less common, reported by 17 individuals (5.9%) from public universities, 11 individuals (5.8%) from private universities, and 2 individuals (6.1%) from international universities. Monthly library usage is reported by 20 individuals (6.9%) from public universities, 12 individuals (6.3%) from private universities, and 1 individual (0.2%) from an international university. Occasional library usage is reported by 30 individuals (10.3%) from public universities, 21 individuals (11.1%) from private universities, and 5 individuals (15.2%) from international universities. The total number of respondents in each university category sums up to 513, with 290 from public universities, 190 from private universities and 33 from international universities. Overall, the highest percentage of respondents is from public universities at 56.5%, followed by private universities at 37.0%, and international universities at 6.4%.

Table 5.31: Frequency of Library Use by University Category

SL	Frequency	Public		Private		International		Total	
		N	%	N	%	N	%	N	%
1	Daily	58	20.0	53	27.9	12	36.4	123	24.0
2	Twice in a week	108	37.2	54	28.4	4	12.1	166	32.4
3	Weekly	57	19.7	39	20.5	9	37.3	105	20.5
4	Fortnightly	17	5.9	11	5.8	2	6.1	30	5.8
5	Monthly	20	6.9	12	6.3	1	0.2	33	6.4
6	Occasionally	30	10.3	21	11.1	5	15.2	56	10.9
Total		290	100	190	100	33	100	513	100
Overall			56.5		37.0		6.4		100

N = Number

5.14 Analyze of Knowledge and Leadership Quality

To analyze the knowledge and leadership quality of the university library professionals of Bangladesh on users, the overall leadership quality, dimensional leadership quality, and item-wise leadership quality were calculated. Besides, the zone of tolerance and actual leadership performance were also compared to know how well users perceive leadership quality against their expectations.

5.14.1 Overall Leadership Quality of the University Library Professionals

Table 5.32 provides an overview of the overall leadership quality in the university libraries, as perceived by the users. It includes four key metrics: Minimum Leadership Expectation (MLE), Desired Leadership Expectation (DLE), Real Leadership Expectation (RLE), and Actual Leadership Performance (ALP).

Minimum Leadership Expectation (MLE) reflects the lowest level of leadership quality expected by users, ranging from 1.44 to 6.96, with a mean of 4.460 and a standard deviation (SD) of 1.03. Desired Leadership Expectation (DLE) indicates the ideal level of leadership quality desired by users, with values ranging from 1.12 to 7.00. The mean DLE is 5.978, with a SD of 0.83. Real Leadership Expectation (RLE) represents the perceived level of leadership quality currently provided by library professionals. It ranges from 1.28 to 6.98, with a mean of 5.219 and a SD of 0.93. Actual Leadership Performance (ALP) reflects the users' assessment of the actual leadership performance exhibited by library professionals. ALP values range from 1.52 to 7.00, with a mean of 5.065 and a SD of 1.08.

Overall, the data suggests that users of the selected university libraries are generally satisfied with the leadership performance demonstrated by their library professionals, as the mean scores for RLE and ALP are both above 5, indicating a positive perception of leadership quality.

Table 5.32: Overall Leadership Quality in the University Libraries

Expectation and Perception	N	Minimum	Maximum	Mean	SD
Minimum Leadership Expectation	513	1.44	6.96	4.460	1.03
Desired Leadership Expectation	513	1.12	7.00	5.978	.83
Real Leadership Expectation	513	1.28	6.98	5.219	0.93
Actual Leadership Performance	513	1.52	7.00	5.065	1.08

N = Number, SD = Standard Deviation

5.14.2 Dimensional Leadership Quality of the University Library Professionals

Table 5.33 presents the dimensional leadership quality of university library professionals across five key dimensions: Knowledge Competency, Technical Competency, Negotiation Skill, Visionary, and Responsiveness. Each dimension is assessed based on four key metrics: Minimum Leadership Expectation (MLE),

Desired Leadership Expectation (DLE), Real Leadership Expectation (RLE), and Actual Leadership Performance (ALP), along with their respective standard deviations (SD).

In terms of Knowledge Competency, the MLE is reported at 4.44, indicating the minimum expected level of competency, while the DLE and RLE stand at 5.98 and 5.21 respectively, representing the desired and real levels of competency expected. The Actual Leadership Performance (ALP) in this dimension is slightly lower at 5.08, suggesting that while library professionals demonstrate a satisfactory level of knowledge competency, there is room for improvement.

Among the five dimensions of leadership quality, the highest overall performance was 5.12 for Responsiveness, followed by 5.08 for Knowledge Competency, 5.05 for Technical Competency, and 5.05 for Visionary; 5.00 for Negotiation Skill formed the lowest perceived score (Table 5.34). The actual leadership performance is 4.86 (MLE=4.44-DLE=5.98) for Knowledge Competency, 5.05 (MLE=5.92-DLE=5.92) for Technical Competency, 5.00 (MLE=4.41-DLE=5.96) for Negotiation Skill, 5.05 (MLE=5.50-DLE=6.00) for Visionary, and 5.12 (MLE=4.58-DLE=6.02) for Responsiveness. "It is found that all dimensions existed within the tolerance zone of the respective dimensions indicating the users were satisfied with the Library professionals' knowledge competency, technical competency, negotiation skill, visionary and responsiveness."

Besides, the actual leadership performance of all dimensions, i.e., Knowledge Competency (ALP=5.08, RLE=5.21), Technical Competency (ALP=5.05, RSE=5.15), Negotiation Skill (ALP=5.01, RLE=5.18), Visionary (ALP=5.05, RLE=5.25), and Responsiveness (ALP=5.12, RLE=5.30) are less than the real leadership expectation, compares the Actual Leadership Performance (ALP) with the Real Leadership Expectation (RLE) for each dimension. It shows that all dimensions existed within the tolerance zone of their respective expectations, indicating overall user satisfaction. However, the ALP for each dimension was slightly lower than the RLE, suggesting that none of the dimensions fully met the real leadership expectations of users.

Table 5.33: Dimensional Leadership Quality of the University Library Professionals

Dimension	MLE	SD	DLE	SD	RLE	SD	ALP	SD
Knowledge Competency	4.44	1.07	5.98	.901	5.21	.772	5.08	1.13
Technical Competency	5.92	1.18	5.92	.937	5.15	.868	5.05	1.19
Negotiation Skill	4.41	1.14	5.96	.926	5.18	.817	5.01	1.17
Visionary	4.50	1.22	6.00	.889	5.25	.889	5.05	1.29
Responsiveness	4.58	1.23	6.02	.950	5.30	.893	5.12	1.28

MLE = "Minimum Leadership Expectation, DLE = Desired Leadership Expectation, RLE = Real Leadership Expectation, ALP = Actual Leadership Performance, SD = Standard Deviation"

5.14.3 Assessment of Leadership Quality on Each Item

Table 5.34 provides an in-depth assessment of the leadership quality in university libraries across twenty-five statements categorized into five dimensions: Knowledge Competency (KC), Technical Competency (TC), Negotiation Skill (NS), Visionary (V), and Responsiveness (R).

The table displays the perceived mean scores for the twenty-five statements related to the five dimensions of leadership quality. The statement "They are available to get library service" had the highest perceived mean score of 5.28. The next top-five perceived services were "The library resources are organized in a standard format" with a score of 5.22, "All resources are easily accessible" with a score of 5.19, "Makes sure library facilities" with a score of 5.17, "Deal with users in a considerate manner" with a score of 5.13, and "They give priority to the user's interest" with a score of 5.13.

However, the service statement "Library officials are able to achieve sufficient budget" had the lowest perceived mean score of 4.80. The next lowest perceived services were "Library professionals are knowledgeable" with a score of 4.87, "Library officers are technically sound" with a score of 4.95, "Give attention to adopt modern technology" with a score of 4.95, "Introduce new items and services in time" with a score of 4.97, and "Vigorous to make top ranked university" with a score of 4.99. Responses from the participants suggested a range of opinions regarding the leadership quality of library professionals. On a scale of 1 to 7, some respondents expressed dissatisfaction with the current leadership performance, while others were

more satisfied. Furthermore, it is noteworthy that all the assertions addressing the minimum and desirable leadership expectations have been fulfilled across the whole spectrum of respondents' opinions. Specifically, on a scale of 1 to 7, it was evident that the expectations of all users regarding the current leadership performance were not uniform. The actual leadership performance of all items that existed within the tolerance zone of the particular items indicated that the users were satisfied with each of the knowledge and leadership performance performed by the library professionals. Besides, the actual leadership performances of all items are less than their real leadership expectation, indicating that no items meet the real leadership expectations of the library users.

Table 5.34: Leadership Quality of Each Item in the University Libraries

Items	Statements	MLE	SD	DLE	SD	RLE	SD	ALP	SD
KC1	Library professionals are knowledgeable	4.33	1.36	5.88	1.20	5.10	1.05	4.87	1.39
KC2	They provide services as promised	4.46	1.36	5.97	1.10	5.21	.965	5.10	1.39
KC4	They emphasis on information literacy	4.45	1.37	5.93	1.13	5.18	1.00	5.06	1.42
KC4	The library resource are organized in standard format	4.49	1.41	6.06	1.14	5.27	1.02	5.22	1.37
KC5	All resources are easily accessible	4.49	1.43	6.07	1.14	5.27	1.02	5.19	1.45
TC6	Library officers are technically sound	4.29	1.42	5.83	1.24	5.05	1.10	4.95	1.51
TC7	Able to handle the technical issues	4.42	1.39	5.88	1.18	5.15	1.05	5.08	1.44
TC8	They ensure technical support promptly to the users	4.33	1.43	5.96	1.15	5.14	1.06	5.09	1.43
TC9	Able to guide users in technical problem	4.40	1.42	5.99	1.15	5.19	1.06	5.06	1.44
TC10	Handles the library automation function properly	4.38	1.46	5.98	1.11	5.18	1.05	5.09	1.40
NS11	Library officials are able to achieve sufficient budget	4.26	1.41	5.78	1.24	5.02	1.06	4.80	1.43
NS12	Ensure infrastructural development”	4.37	1.39	6.00	1.14	5.18	.990	5.01	1.40
NS13	Makes sure library facilities”	4.53	1.41	6.17	1.08	5.35	.957	5.17	1.49
NS14	Looks confident	4.46	1.36	5.90	1.13	5.18	1.01	5.11	1.40
V15	Introduce new item and services in time	4.43	1.55	5.96	1.27	5.19	1.16	4.97	1.67
V16	Library staffs are always positive to library development	4.39	1.46	5.92	1.21	5.15	1.09	5.02	1.52

V17	Give attention to adopt modern technology”	4.49	1.44	5.99	1.13	5.24	1.05	4.95	1.54
V18	Deal with users in a considerate manner	4.60	1.41	5.99	1.19	5.29	1.08	5.13	1.47
V19	Vigorous to make top ranked university	4.45	1.48	5.98	1.18	5.21	1.08	4.99	1.53
V20	Hold positive mind for positive change	4.56	1.40	6.11	1.08	5.33	1.00	5.18	1.51
R21	Library professionals have willingness to assist users	4.49	1.47	5.92	1.19	5.20	1.11	5.03	1.49
R22	They give priority of the user’s interest	4.64	1.41	6.03	1.13	5.33	1.03	5.13	1.47
R23	They serve the users promptly	4.57	1.43	5.97	1.12	5.27	1.04	5.12	1.42
R24	Make sure the regular update of library service”	4.61	1.43	6.05	1.17	5.32	1.07	5.08	1.50
R25	They are available to get library service	4.60	1.45	6.15	1.09	5.37	1.03	5.28	1.54

MLE = “Minimum Leadership Expectation, *DLE* = Desired Leadership Expectation, *RLE* = Real Leadership Expectation, *ALP* = Actual Leadership Performance, *SD* = Standard Deviation, *KC* = Knowledge Competency, *TC* = Technical Competency, *NS* = Negotiation Skill, *V* = Visionary, *R* = Responsiveness

5.14.4 Zone of Tolerance in Leadership Quality of Library Professionals

Table 5.35 illustrates the zone of tolerance in the leadership quality of each item of university library professionals of Bangladesh. The minimum leadership expectation and desired leadership expectation appear at both ends of the tolerance zone, which represents the range of satisfactory leadership performance. A performance level upper tolerance zone could delight users, or leadership performance below the tolerance zone would cause dissatisfaction.” In this specific analysis, all items demonstrate actual leadership performance within the zone of tolerance, suggesting that users are generally satisfied with the knowledge and leadership performance exhibited by university library professionals across various dimensions.

Table 5.35: Zone of Tolerance in Leadership Quality in the University Libraries

Items	Statements	Zone of Tolerance	ALP	Within or Without
KC1	Library professionals are knowledgeable	4.33 - 5.88	4.87	Within
KC2	They provide services as promised	4.46 - 5.97	5.10	Within
KC4	They emphasis on information literacy	4.45 - 5.93	5.06	Within
KC4	The library resource are organized in standard format	4.49 - 6.06	5.22	Within
KC5	All resources are easily accessible	4.49 - 6.07	5.19	Within

TC6	Library officers are technically sound	4.29 - 5.83	4.95	Within
TC7	Able to handle the technical issues	4.42 - 5.88	5.08	Within
TC8	They ensure technical support promptly to the users	4.33 - 5.96	5.09	Within
TC9	Able to guide users in technical problem	4.40 - 5.99	5.06	Within
TC10	Handles the library automation function properly	4.38 - 5.98	5.09	Within
NS11	Library officials are able to achieve sufficient budget	4.26 - 5.78	4.80	Within
NS12	Ensure infrastructural development”	4.37 - 6.00	5.01	Within
NS13	Makes sure library facilities”	4.53 - 6.17	5.17	Within
NS14	Looks confident	4.46 - 5.90	5.11	Within
V15	Introduce new item and services in time	4.43 - 5.96	4.97	Within
V16	Library staffs are always positive to library development	4.39 - 5.92	5.02	Within
V17	Give attention to adopt modern technology”	4.49 - 5.99	4.95	Within
V18	Deal with users in a considerate manner	4.60 - 5.99	5.13	Within
V19	Vigorous to make top ranked university	4.45 - 5.98	4.99	Within
V20	Hold positive mind for positive change	4.56 - 6.11	5.18	Within
R21	Library professionals have willingness to assist users	4.49 - 5.92	5.03	Within
R22	They give priority of the user’s interest	4.64 - 6.03	5.13	Within
R23	They serve the users promptly	4.57 - 5.97	5.12	Within
R24	Make sure the regular update of library service”	4.61 - 6.05	5.08	Within
R25	They are available to get library service	4.60 - 6.15	5.28	Within

ALP = Actual Leadership Performance, KC = Knowledge Competency, TC = Technical Competency, NS= Negotiation Skill, V = Visionary, R = Responsiveness

5.14.5 Leadership Quality Evaluation Model

The study presents the Leadership Quality Evaluation Model, which categorizes items based on their Actual Leadership Performance (ALP) relative to Minimum Leadership Expectation (MLE), Desired Leadership Expectation (DLE), and Real Leadership Expectation (RLE). The model defines four zones like Evaluation Zones (EZ), Action Zones (AZ) and Implementation Zones (IZ):

Table 5.36 demonstrates that all items fall within the Improvement Zone (EZ2), indicating that there is room for enhancing leadership quality. No items are in the Problematic Zone, Maintenance Zone, or Superiority Zone, suggesting that significant issues or exceptional leadership performance are not observed. The table emphasizes

the need for actions to seek improvement in leadership quality across all types of university libraries and user categories.

Table 5.36: Leadership Quality Evaluation Model

		Evaluation Zone (EZ)					
		Problematic Zone (EZ1) ALP<MLE	Improvement Zone (EZ2) ALP>=MLE≠RLE	Maintenance Zone (EZ3) ALP>=RLE≠DLE	Superiority Zone (EZ4) ALP>=DLE		
S T U D Y Z O N E (SZ)	Overall		1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25			AZ1	A C T I O N Z O N E (AZ)
	Public		1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25			AZ2	
	Private		1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25			AZ3	
	International		1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25			AZ4	
	Teachers		1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25			AZ5	
	Students		1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25			AZ6	
	Researchers		1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25			AZ7	
		Prompt action to recover leadership quality (IZ1)	Seeking improvement of leadership quality (IZ2)	Maintain leadership quality strictly (IZ3)	Sustain leadership quality as it is (IZ4)”		
		Implementation Zone (IZ)					

ALP = Actual Leadership Performance, MLE = “Minimum Leadership Expectation, DLE = Desired Leadership Expectation, RLE = Real Leadership Expectation

5.15 User Satisfaction in the University Libraries of Bangladesh

The average satisfaction score was 5.28 out of 7, suggesting that library patrons were generally satisfied. Out of the ten satisfaction claims, the statement "I would like to use the library in the future" had the greatest average rating of 5.75, while the statement "The library professionals' Knowledge Competency is satisfactory" had the lowest average rating of 4.89 (Table 5.37). The statement "I would like to use the library in the future" received the second-highest mean score of 5.73. This was followed by "I am satisfied with their responsive behaviour" with a score of 5.40. The statement "Overall, I am satisfied with my library experience" received a score of 5.33. The statement "The library environment is satisfactory" received a score of 4.28. The statement "The visionary performance of the library staff is satisfactory" received a score of 5.19. The statement "The library has sufficient resources which are satisfactory" received a score of 5.15. The statement "The library has sufficient resources which are satisfactory" received a score of 4.15. The statement "I am satisfied with their negotiation skills" received a score of 5.13. Finally, the statement "I am satisfied with the professionals' technical competency" received a score of 5.01. All respondents expressed their degree of satisfaction with the library services on a scale of 1 to 7. The results showed that not all users were equally satisfied with the services offered by their libraries. Overall, the table provides insights into the areas where university library professionals excel in satisfying users and areas where improvements may be needed to enhance user satisfaction.

Table 5.37: User Satisfaction on leadership quality of the University Library Professionals

Item No	Satisfaction Items	Mini	Maxi	Mean	SD
Satisfaction 26	The library professionals' Knowledge Competency is satisfactory	1	7	4.89	1.46
Satisfaction 27	I am satisfied with the professionals' Technical Competency	1	7	5.01	1.44
Satisfaction 28	I am satisfied with the their Negotiation Skills	1	7	5.13	1.45
Satisfaction 29	The Visionary performance of the library staff is satisfactory	1	7	5.19	1.52
Satisfaction 30	I am satisfied with their Responsive Behavior	1	7	5.40	1.47
Satisfaction 31	The library has sufficient resources which are satisfactory	1	7	5.15	1.51

Satisfaction 32	The library environment is satisfactory	1	7	5.28	1.58
Satisfaction 33	Overall, I am satisfied with my library experience	1	7	5.33	1.41
Satisfaction 34	I would like to use the library in future	1	7	5.73	1.31
Satisfaction 35	I would like to suggest others to use the library	1	7	5.75	1.41
Overall User Satisfaction		1.00	7.00	5.28	1.46

Mini = Minimum, Maxi = Maximum, SD = Standard Deviation

5.15.1 User Satisfaction in the University Libraries by User Category

Table 5.38 shows the summary results for user satisfaction on library professionals' leadership quality in the university libraries of Bangladesh by the category of users, including teachers, students, and researchers. It is found that the mean of each satisfaction statement is not similar by user category, indicating that the teachers, students, and researchers were not similarly satisfied with the service provided by their university libraries.

Researchers expressed the highest level of satisfaction with an overall mean score of 5.65. They rated their satisfaction particularly high for "Responsive Behavior" (Mean: 6.33) and "Likelihood to Use the Library in the Future" (Mean: 6.33), indicating a strong endorsement of library services. Teachers showed a solid level of satisfaction overall, with an average score of 5.34. They rated their satisfaction highest for "Likelihood to Use the Library in the Future" (Mean: 5.72) and "Likelihood to Recommend the Library" (Mean: 5.76), indicating a positive outlook on future library engagement. Students exhibited the lowest overall satisfaction level, with an average score of 5.17. While they rated their satisfaction highest for "Responsive Behavior" (Mean: 5.36), they rated "Library Resources' Sufficiency" (Mean: 4.16) and "Library Environment" (Mean: 5.27) relatively lower compared to the other user categories.

Table 5.38: User Satisfaction on the Leadership Quality by User Category

Satisfaction Items	Teachers		Students		Researchers	
	Mean	SD	Mean	SD	Mean	SD
Satisfaction 26	5.15	1.09	4.85	1.51	5.33	1.32
Satisfaction 27	5.15	1.25	5.00	1.46	4.78	1.78
Satisfaction 28	5.22	1.11	5.12	1.51	5.33	1.22
Satisfaction 29	5.24	1.30	5.19	1.56	5.11	1.26

Satisfaction 30	5.51	1.18	5.36	1.51	6.33	0.86
Satisfaction 31	5.04	1.19	4.16	1.56	5.56	1.42
Satisfaction 32	5.33	1.18	5.27	1.64	5.44	1.81
Satisfaction 33	5.31	1.10	5.33	1.46	5.33	0.70
Satisfaction 34	5.72	1.11	5.73	1.34	6.11	1.16
Satisfaction 35	5.76	1.07	5.74	1.45	6.33	1.11
Overall	5.34		5.17		5.56	

SD = Standard Deviation

5.15.2 Overall User Satisfaction on Leadership Quality by User Category

Table 5.39 shows the overall satisfaction means by the user category in the university libraries. It is identified that the researchers (5.56) were comparatively most satisfied, followed by the teachers (5.34) and students (5.17) based on the overall satisfaction mean by user category. With a sample size of 67, teachers reported an average satisfaction mean of 5.34. The standard deviation (SD) indicates the variability of responses around this mean, with a value of .93. The standard error provides an estimate of the variability of sample means if multiple samples were taken, with a value of .11. The satisfaction scores ranged from a minimum of 2.80 to a maximum of 6.80. The largest user group, consisting of 437 respondents, had an overall satisfaction mean of 5.17. The standard deviation (SD) was 1.16, indicating some variability in satisfaction levels among students. The standard error was .05, suggesting a relatively stable estimate of the mean satisfaction score. Satisfaction scores ranged from a minimum of 1.40 to a maximum of 7.00. Although the smallest user category with only 9 respondents, researchers demonstrated the highest overall satisfaction mean of 5.56. The standard deviation (SD) was .76, indicating relatively less variability in satisfaction levels among researchers. The standard error was .25, reflecting the variability of sample means if multiple samples were taken. Satisfaction scores ranged from a minimum of 3.90 to a maximum of 6.40.

Table 5.39: Overall User Satisfaction in the University Libraries by User Category

User Category	“N	Mean	SD	Std. Error	Minimum	Maximum
Teacher	67	5.34	.93	.11	2.80	6.80
Student	437	5.17	1.16	.05	1.40	7.00

Researcher	09	5.56	.76	.25	3.90	6.40
Total	513	5.28	1.13	.05	1.40	7.00

N = Number, *SD* = Standard Deviation

5.15.3 ANOVA of Overall User Satisfaction by User Category

The user category computed the user responses for the satisfaction level on leadership quality of the university library professionals of Bangladesh through ANOVA. The table provides information on the variation in overall user satisfaction between the different user categories. The sum of squares (SS) between groups is 0.999, with 2 degrees of freedom (df). The mean square (MS) represents the variance between the groups and is calculated by dividing the sum of squares by the degrees of freedom. In this case, the mean square is 0.499. The table describes the variation in overall user satisfaction within each user category. The sum of squares within groups is 657.383, with 510 degrees of freedom. The significance value (p-value) indicates the probability of obtaining the observed results if the null hypothesis is true. In this analysis, the p-value is greater than 0.05 ($p > 0.679$), suggesting that there is no significant difference in overall user satisfaction among the user categories (Table 5.40).

Table 5.40: ANOVA of Overall User Satisfaction by User Category

	“Sum of Squares	df	Mean Square	F	Sig.”
“Between Groups	0.999	2	0.499	0.387	0.679
Within Groups””	657.383	510	1.289		
Total	658.382	512			

DF = Degrees of Freedom, *F* = F-value, *Sig.* = Significance

5.15.4 ANOVA of Item Wise User Satisfaction by User Category

In the ANOVA analysis of item-wise user satisfaction by user category, the variability in satisfaction scores across different user categories was examined. Table 5.41 presents the results, showing the sum of squares, degrees of freedom, mean square, F-value, and significance level (Sig.) for each satisfaction item. The study found no statistically significant difference in satisfaction scores among teachers, students, and researchers regarding their satisfaction with the professionals' responsive behavior. Overall, the p-values provide insight into the significance of differences in satisfaction scores among user categories for each satisfaction item.

Table 5.41: ANOVA of Item Wise User Satisfaction by User Category

Satisfaction Items		Sum of Squares	df	Mean Square	F	Sig.
Satisfaction 26	Between Groups	7.081	2	3.540	1.658	.192
	Within Groups	1089.235	510	2.136		
	Total	1096.316	512			
Satisfaction 27	Between Groups	1.876	2	.938	.447	.640
	Within Groups	1068.054	509	2.098		
	Total	1069.930	511			
Satisfaction 28	Between Groups	1.025	2	.512	.240	.787
	Within Groups	1086.676	509	2.135		
	Total	1087.701	511			
Satisfaction 29	Between Groups	.203	2	.102	.043	.957
	Within Groups	1192.304	510	2.338		
	Total	1192.507	512			
Satisfaction 30	Between Groups	9.257	2	4.628	2.143	.118
	Within Groups	1101.620	510	2.160		
	Total	1110.877	512			
Satisfaction 31	Between Groups	2.282	2	1.141	.494	.611
	Within Groups	1178.552	510	2.311		
	Total	1180.834	512			
Satisfaction 32	Between Groups	.465	2	.233	.092	.912
	Within Groups	1292.673	510	2.535		
	Total	1293.138	512			
Satisfaction 33	Between Groups	.025	2	.012	.006	.994
	Within Groups	1025.640	510	2.011		
	Total	1025.665	512			
Satisfaction 34	Between Groups	1.310	2	.655	.379	.684
	Within Groups	878.565	509	1.726		
	Total	879.875	511			
Satisfaction 35	Between Groups	3.119	2	1.560	.784	.457
	Within Groups	1014.440	510	1.989		
	Total	1017.559	512			

DF = Degrees of Freedom, F = F-value, Sig. = Significance

5.15.5 User Satisfaction in the University Libraries by University Category

Table 5.42 illustrates the summary results for user satisfaction on the leadership performance of the university library professionals of Bangladesh by the university category, including public, private, and international universities. It is found that the mean of each satisfaction statement is not similar to the university category, indicating that the users of the public, private and international universities were not

similarly satisfied with the professional leadership performed by their university library professionals.

Based on the overall mean satisfaction scores, private universities tend to have the highest satisfaction levels (mean = 5.50), followed by international universities (mean = 5.42), and then public universities (mean = 5.13). This rank-based analysis offers insights into the varying levels of user satisfaction across different types of university libraries.

Table 5.42 User Satisfaction in the University Libraries by University Category

Satisfaction Items	Public		Private		International	
	Mean	SD	Mean	SD	Mean	SD
Satisfaction 26	4.59	1.40	5.31	1.40	5.21	1.70
Satisfaction 27	4.83	1.35	5.22	1.54	5.42	1.41
Satisfaction 28	5.00	1.39	5.33	1.51	5.19	1.59
Satisfaction 29	4.97	1.52	5.51	1.47	5.39	1.51
Satisfaction 30	5.23	1.47	5.60	1.43	5.70	1.55
Satisfaction 31	5.04	1.55	5.29	1.46	5.39	1.43
Satisfaction 32	5.18	1.55	5.45	1.64	5.15	1.54
Satisfaction 33	5.19	1.39	5.54	1.40	5.36	1.55
Satisfaction 34	5.58	1.28	5.95	1.31	5.88	1.33
Satisfaction 35	5.70	1.36	5.86	1.42	5.55	1.67
Overall	5.13		5.50		5.42	

SD = Standard Deviation

5.15.6 Overall User Satisfaction by University Category

Table 5.43 presents an overview of overall user satisfaction means categorized by the type of university libraries in Bangladesh: public, private, and international. Users from private university libraries reported the highest overall satisfaction mean of 5.50 (SD = 1.17), indicating a high level of satisfaction with the leadership performance. This was followed by users from international university libraries, with an overall satisfaction mean of 5.41 (SD = 1.12). Users from public university libraries reported a lower overall satisfaction mean of 5.12 (SD = 1.08) compared to the other categories. The standard errors and confidence intervals provide additional insights

into the reliability and precision of the satisfaction means. The confidence intervals indicate the range within which the true population means are likely to fall.

Table 5.43 Overall User Satisfaction by University Category

University Category	N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Public	290	5.12	1.08	.06361	5.00	5.25	1.50	7.00
Private	190	5.50	1.17	.08530	5.33	5.67	1.40	7.00
International	33	5.41	1.12	.19625	5.01	5.81	2.40	6.90
Total	513	5.28	1.13	.05005	5.18	5.38	1.40	7.00

N = Number, *SD* = Standard Deviation

5.15.7 Item Wise User Satisfaction by University Category

Table 5.44 displays the item-wise user satisfaction scores segmented by university category, comprising public, private, and international universities in Bangladesh. Each satisfaction item (S26 to S35) is assessed across these categories, revealing notable differences in satisfaction levels. For instance, public universities tend to have lower satisfaction scores compared to private and international counterparts across most items, with mean scores ranging from 4.59 to 5.70. Conversely, private universities exhibit higher satisfaction scores, ranging from 5.31 to 5.95, while international universities fall somewhere in between, with mean scores ranging from 5.15 to 5.88. These variations indicate differing perceptions of leadership quality among users from different university categories. The standard deviation (SD) values highlight the degree of variability in satisfaction scores within each category, suggesting varying levels of consensus among users. Additionally, the 95% confidence intervals provide insight into the precision of the mean estimates. Overall, the table underscores the importance of considering university category when evaluating user satisfaction with library professionals' leadership quality.

Table 5.44: Item Wise User Satisfaction by University Category

University Category	N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
S26 Public	290	4.59	1.402	.082	4.42	4.75	1	7

Chapter Five: Data Analysis

	Private	190	5.31	1.400	.102	5.11	5.51	1	7
	Int'l	33	5.21	1.709	.298	4.61	5.82	1	7
	Total	513	4.89	1.463	.065	4.77	5.02	1	7
S27	Public	289	4.83	1.356	.080	4.67	4.98	1	7
	Private	190	5.22	1.548	.112	5.00	5.44	1	7
	Int'l	33	5.42	1.415	.246	4.92	5.93	2	7
	Total	512	5.01	1.447	.064	4.89	5.14	1	7
S28	Public	290	5.00	1.395	.082	4.84	5.16	1	7
	Private	190	5.33	1.516	.110	5.11	5.55	1	7
	Int'l	32	5.19	1.595	.282	4.61	5.76	1	7
	Total	512	5.13	1.459	.064	5.01	5.26	1	7
S29	Public	290	4.97	1.524	.090	4.79	5.14	1	7
	Private	190	5.51	1.476	.107	5.30	5.72	1	7
	Int'l	33	5.39	1.519	.265	4.86	5.93	1	7
	Total	513	5.19	1.526	.067	5.06	5.33	1	7
S30	Public	290	5.23	1.474	.087	5.06	5.40	1	7
	Private	190	5.60	1.432	.104	5.40	5.80	1	7
	Int'l	33	5.70	1.551	.270	5.15	6.25	1	7
	Total	513	5.40	1.473	.065	5.27	5.53	1	7
S31	Public	290	5.04	1.557	.091	4.86	5.22	1	7
	Private	190	5.29	1.464	.106	5.08	5.50	1	7
	Int'l	33	5.39	1.435	.250	4.89	5.90	1	7
	Total	513	5.15	1.519	.067	5.02	5.29	1	7
S32	Public	290	5.18	1.553	.091	5.00	5.36	1	7
	Private	190	5.45	1.644	.119	5.21	5.68	1	7
	Int'l	33	5.15	1.544	.269	4.60	5.70	1	7
	Total	513	5.28	1.589	.070	5.14	5.42	1	7
S33	Public	290	5.19	1.391	.082	5.03	5.35	1	7
	Private	190	5.54	1.409	.102	5.34	5.74	1	7
	Int'l	33	5.36	1.558	.271	4.81	5.92	1	7
	Total	513	5.33	1.415	.062	5.21	5.45	1	7
S34	Public	290	5.58	1.287	.076	5.43	5.72	1	7
	Private	190	5.95	1.319	.096	5.76	6.14	1	7
	Int'l	32	5.88	1.338	.237	5.39	6.36	3	7
	Total	512	5.73	1.312	.058	5.62	5.85	1	7
S35	Public	290	5.70	1.365	.080	5.55	5.86	1	7
	Private	190	5.86	1.426	.103	5.66	6.07	1	7
	Int'l	33	5.55	1.679	.292	4.95	6.14	1	7
	Total	513	5.75	1.410	.062	5.63	5.87	1	7

N = Number, *SD* = Standard Deviation, *Int'l* = International

5.15.8 Item Wise User Satisfaction by University Category

Table 5.45 provides a comprehensive overview of item-wise user satisfaction across different user categories—teachers, students, and researchers—within university libraries in Bangladesh. Each satisfaction item (S26 to S35) is evaluated, highlighting variations in mean satisfaction scores, standard deviation (SD), standard error, and 95% confidence intervals for the mean. Notably, researchers generally exhibit higher satisfaction scores across most items compared to teachers and students. For instance, researchers demonstrate the highest mean satisfaction score for item S30 (6.33), indicating a notably high level of satisfaction with library services. Conversely, teachers and students tend to display slightly lower mean satisfaction scores across several items, indicating potential areas for improvement in addressing their needs and expectations. Additionally, the table underscores the variability in satisfaction levels among different user categories, emphasizing the importance of tailored approaches to enhance user experience and satisfaction within university libraries.

Table 5.45: Item Wise User Satisfaction by User Category

User Category		N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
S26	Teacher	67	5.15	1.091	.133	4.88	5.42	2	7
	Student	437	4.85	1.512	.072	4.70	4.99	1	7
	Researcher	9	5.33	1.323	.441	4.32	6.35	3	7
	Total	513	4.89	1.463	.065	4.77	5.02	1	7
S27	Teacher	67	5.15	1.258	.154	4.84	5.46	3	7
	Student	436	5.00	1.468	.070	4.86	5.13	1	7
	Researcher	9	4.78	1.787	.596	3.40	6.15	1	7
	Total	512	5.01	1.447	.064	4.89	5.14	1	7
S28	Teacher	67	5.22	1.112	.136	4.95	5.50	3	7
	Student	436	5.12	1.511	.072	4.97	5.26	1	7
	Researcher	9	5.33	1.225	.408	4.39	6.27	4	7
	Total	512	5.13	1.459	.064	5.01	5.26	1	7
S29	Teacher	67	5.24	1.304	.159	4.92	5.56	2	7
	Student	437	5.19	1.565	.075	5.04	5.34	1	7
	Researcher	9	5.11	1.269	.423	4.14	6.09	3	7
	Total	513	5.19	1.526	.067	5.06	5.33	1	7
S30	Teacher	67	5.51	1.185	.145	5.22	5.80	2	7
	Student	437	5.36	1.517	.073	5.22	5.50	1	7

	Researcher	9	6.33	.866	.289	5.67	7.00	5	7
	Total	513	5.40	1.473	.065	5.27	5.53	1	7
S31	Teacher	67	5.04	1.199	.146	4.75	5.34	1	7
	Student	437	5.16	1.565	.075	5.02	5.31	1	7
	Researcher	9	5.56	1.424	.475	4.46	6.65	2	7
	Total	513	5.15	1.519	.067	5.02	5.29	1	7
S32	Teacher	67	5.33	1.186	.145	5.04	5.62	3	7
	Student	437	5.27	1.641	.078	5.11	5.42	1	7
	Researcher	9	5.44	1.810	.603	4.05	6.84	1	7
	Total	513	5.28	1.589	.070	5.14	5.42	1	7
S33	Teacher	67	5.31	1.104	.135	5.04	5.58	3	7
	Student	437	5.33	1.469	.070	5.20	5.47	1	7
	Researcher	9	5.33	.707	.236	4.79	5.88	4	6
	Total	513	5.33	1.415	.062	5.21	5.45	1	7
S34	Teacher	67	5.72	1.112	.136	5.45	5.99	3	7
	Student	436	5.73	1.344	.064	5.60	5.86	1	7
	Researcher	9	6.11	1.167	.389	5.21	7.01	4	7
	Total	512	5.73	1.312	.058	5.62	5.85	1	7
S35	Teacher	67	5.76	1.074	.131	5.50	6.02	3	7
	Student	437	5.74	1.459	.070	5.60	5.88	1	7
	Researcher	9	6.33	1.118	.373	5.47	7.19	4	7
	Total	513	5.75	1.410	.062	5.63	5.87	1	7

N = Number, *SD* = Standard Deviation

5.15.9 ANOVA of Overall User Satisfaction by University Category

Table 5.46 presents the results of an analysis of variance (ANOVA) conducted to assess overall user satisfaction across different university categories. The table delineates the sources of variation, including the sum of squares and degrees of freedom (df), both between groups and within groups. The mean squares for both sources of variation are provided, along with the computed F-value and the associated significance level (Sig.). The F-value indicates the ratio of the variance between groups to the variance within groups. In this instance, the ANOVA yielded a significant result ($p < .001$), suggesting that there are statistically significant differences in overall user satisfaction among the university categories. Additionally, the degrees of freedom (DF) are provided to contextualize the analysis, enabling a deeper understanding of the statistical inference drawn from the ANOVA.

Table 5.46 ANOVA of Overall User Satisfaction by University Category

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16.886	2	8.443	6.717	.001
Within Groups	641.066	510	1.257		
Total	657.953	512			

DF = Degrees of Freedom, F = F-value, Sig. = Significance

5.15.10 ANOVA of Item Wise User Satisfaction by University Category

Table 5.47 presents the results of an analysis of variance (ANOVA) conducted to examine the item-wise user satisfaction across different university categories. Each satisfaction item (Satisfaction 26 to Satisfaction 35) is analyzed separately. For each satisfaction item, the table provides the sum of squares and degrees of freedom both between groups and within groups. It also includes the mean square, F-value, and significance level (Sig.) for each satisfaction item. The F-value represents the ratio of the variance between groups to the variance within groups. In this table, the significance level (Sig.) indicates the probability of obtaining the observed F-value if the null hypothesis (no difference between groups) were true. The degrees of freedom (DF) are also provided for each satisfaction item, helping to interpret the statistical results. Overall, the ANOVA results suggest that for some satisfaction items, there are statistically significant differences in user satisfaction among the university categories, while for others, there are not.

Table 5.47: ANOVA of Item Wise User Satisfaction by University Category

Satisfaction Items		Sum of Squares	df	Mean Square	F	Sig.
Satisfaction 26	Between Groups	7.081	2	3.540	1.658	.192
	Within Groups	1089.235	510	2.136		
	Total	1096.316	512			
Satisfaction 27	Between Groups	1.876	2	.938	.447	.640
	Within Groups	1068.054	509	2.098		
	Total	1069.930	511			
Satisfaction 28	Between Groups	1.025	2	.512	.240	.787
	Within Groups	1086.676	509	2.135		
	Total	1087.701	511			
Satisfaction 29	Between Groups	.203	2	.102	.043	.957
	Within Groups	1192.304	510	2.338		
	Total	1192.507	512			
Satisfaction 30	Between Groups	9.257	2	4.628	2.143	.118

	Within Groups	1101.620	510	2.160		
	Total	1110.877	512			
Satisfaction 31	Between Groups	2.282	2	1.141	.494	.611
	Within Groups	1178.552	510	2.311		
	Total	1180.834	512			
Satisfaction 32	Between Groups	.465	2	.233	.092	.912
	Within Groups	1292.673	510	2.535		
	Total	1293.138	512			
Satisfaction 33	Between Groups	.025	2	.012	.006	.994
	Within Groups	1025.640	510	2.011		
	Total	1025.665	512			
Satisfaction 34	Between Groups	1.310	2	.655	.379	.684
	Within Groups	878.565	509	1.726		
	Total	879.875	511			
Satisfaction 35	Between Groups	3.119	2	1.560	.784	.457
	Within Groups	1014.440	510	1.989		
	Total	1017.559	512			

DF = Degrees of Freedom, F = F-value, Sig. = Significance

5.16 Impact of Leadership Quality on User Satisfaction

Structural equation modeling (SEM) is used to build and test a causal relationship model. SEM usually combines exploratory and confirmatory factor analysis to calculate the structural relationship between latent variables, measure the loading value of the latent variables, and compute the path model of latent variables simultaneously (Che et al., 2013). A question is raised here which leadership quality dimensions have impacted the user satisfaction significantly in university libraries of Bangladesh. To evaluate the impact of library leadership quality dimensions on user satisfaction, SEM was developed where five knowledge and leadership quality dimensions were used as independent variables, and user satisfaction was applied as the dependent variable. The model combined exploratory and confirmatory factor analysis, path analysis, and construct reliability and validity. The confirmatory factor analysis (CFA) was used to generate the latent variables and test the fitness of the model. The Cronbach's alpha coefficient (CA), RHO_A coefficient, average variance extracted (AVE), and composite reliability (CR) were applied to test the internal consistency, reliability, and validity of the data. Finally, a path analysis was conducted for hypothesis testing. Statistical packages SPSS 23rd version and SmartPLS4 were used to perform the analysis.

5.16.1 Descriptive Statistics and Correlation Matrix

Table 5.48 presents the means, standard deviations, and Pearson correlation coefficients for the variables involved in the study on the impact of leadership quality dimensions on user satisfaction in university libraries of Bangladesh. The results show a very strong correlation ($p < 0.01$) among the variables. User satisfaction is positively and significantly correlated with six variables: knowledge competency, technical competency, negotiation skill, visionary, responsiveness, and satisfaction. Each variable's mean and standard deviation are provided, indicating the average score and variability within the dataset, respectively. It is also found that no correlation value exceeds the critical value of 0.90, indicating no multi-collinearity problem (Hair et al., 2010).

Moreover, the highest value of the Pearson correlation between responsiveness and visionary is 0.827, which is less than the recommended value of 0.90, alleviating the multi-collinearity concern of the five variables. The Pearson correlation coefficients, denoted by **, quantify the strength and direction of the linear relationship between pairs of variables. Significant correlations are highlighted at the 0.01 level (2-tailed), indicating a strong association between the variables.

This information is crucial for understanding which dimensions of leadership quality have a significant impact on user satisfaction in university libraries.

Table 5.48 Means, Standard Deviations, and Pearson Correlation”

Variables	Mean	SD	Knowledge Competency	Technical Competency	Negotiation Skill	Visionary	Responsiveness	Satisfaction
Knowledge Competency	4.44	1.07	1					
Technical Competency	5.92	1.18	.759**	1				
Negotiation Skill	4.41	1.14	.721**	.733**	1			
Visionary	4.50	1.22	.706**	.701**	.766**	1		
Responsiveness	4.58	1.23	.685**	.694**	.743**	.827**	1	
Satisfaction	5.28	1.13	.577**	.630**	.608**	.659**	.685**	1

**. “Correlation is significant at the 0.01 level (2-tailed), SD = Standard Deviation”

5.16.2 Structural Equation Modeling (SEM)

Finally, a Structural Equation Modeling (SEM) was conducted to examine whether the hypotheses were significant. Table 5.49 provides a model summary of the impact of leadership quality on user satisfaction through SEM. The table includes several key statistics for evaluating the model's performance. The Multiple R-value (R) of 0.726 indicates a strong relationship between the independent variables (knowledge competency, technical competency, negotiation skill, visionary, and responsiveness) and the dependent variable (satisfaction). This relationship is evaluated using Cohen's criteria (2003), where a value greater than 0.50 is considered strong (Alam & Mezbah-ul-Islam, 2019).

The R Square value (0.527) signifies that approximately 52.2% of the variation in user satisfaction can be explained by the leadership quality dimensions included in the model. The Adjusted R Square value (0.522) takes into account the number of predictors in the model, providing a more conservative estimate of the proportion of variance explained. The standard error of the estimate (0.78350) indicates the average difference between the observed values and the values predicted by the model. Lower values indicate better model fit. Additionally, the table includes change statistics, such as the R Square Change and F Change, which provide information about the improvement in model fit when adding predictors.

The overall model is deemed significant, as indicated by the F-statistic ($F(5,507)=112.961$, $p<0.001$), suggesting that the model as a whole has explanatory power in predicting user satisfaction and recommended that the entire model is recognized as significant.

Table 5.49: Model Summary of Impact of Leadership Quality on User Satisfaction

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.726 ^a	.527	.522	.78350	.527	112.961	5	507	.000

a. Predictors: (Constant), Knowledge Competency, Technical Competency, Negotiation Skill, Visionary and Responsiveness

b. Dependent Variable: Satisfaction

5.16.3 Sampling Adequacy, Reliability, and Validity Testing

The study employed various statistical methods to evaluate sampling adequacy, reliability, and validity. Sampling adequacy was confirmed using the Kaiser-Meyer-Olkin (KMO) test, with values above the 0.7 threshold indicating the suitability of the sample size for factor analysis. Bartlett's Test of Sphericity showed significant results ($p < 0.001$), further validating the correlations among factors.

Reliability was assessed through Cronbach's alpha, RHO_A, and composite reliability, all of which showed strong internal consistency for knowledge competency, technical competency, negotiation skill, visionary traits, responsiveness, and satisfaction, with values well above the 0.7 threshold. Validity was established through discriminant and convergent validity test, ensuring that the model accurately measured the intended constructs. These methods confirmed that the study's constructs are reliable and valid, supporting the study's overall framework for examining leadership quality and user satisfaction in university libraries.

5.16.4 Average Variance Extracted

Convergent validity refers to how well it correlates with other variables and measures of the same concept. The concept should not only correlate with related variables but also with distinct variables. The average variance extracted (AVE) is a measure of the "amount of variance" that is captured by a "construct in relation to the amount of variance due to measurement error". Table 5.50 demonstrates that the AVE values of knowledge competency (0.561), technical competency (0.606), negotiation skill (0.539), visionary (0.654), responsiveness (0.676), and satisfaction (0.558) were greater than the limit of 0.50 which supported the convergent validity among all the variables.

Table 5.50 Construct Reliability and Validity

Dimensions	Cronbach's Alpha	RHO_A A Coefficient	Composite Reliability	AVE	Items
	<i>Sig: 0.7 or greater</i>	<i>Sig: 0.7 or greater</i>	<i>Sig: 0.7 or greater</i>	<i>Sig: 0.5 or greater</i>	
Knowledge Competency	0.864	0.867	0.864	0.561	5
Technical Competency	0.884	0.885	0.885	0.606	5
Negotiation Skill	0.854	0.858	0.853	0.539	5

Visionary	0.904	0.906	0.904	0.654	5
Responsiveness	0.912	0.913	0.912	0.676	5
Satisfaction	0.926	0.931	0.926	0.558	10
Overall	0.890				35

AVE: Average Variance Extracted, Sig. = Significance

5.16.5 SEM Hypotheses

A low (significant) p-value ($p < 0.05$) in SEM indicates that a predictor is likely to be a meaningful addition to any model because changes in the predictor's value are related to changes in the response variable. Conversely, a larger (insignificant) p-value ($p > 0.05$) suggests that changes in the predictor are not associated with changes in the response.

Table 5.51 revealed the results of the conceptual model consisting of the findings of the hypothesized path, path coefficient (β), Sample Mean (SM), standard deviation (SD), t value, probability values (p), and decisions of the hypotheses. Table 5.51 presents the results of the structural equation modeling (SEM) hypotheses testing conducted to examine the hypothesized paths between leadership quality dimensions and user satisfaction in university libraries.

Each hypothesis is outlined along with its hypothesized path, beta coefficient (β), sample mean, standard deviation (SD), t-value, p-value, and decision based on significance.

Hypothesis H-1, which proposed a path from knowledge competency to satisfaction, yielded a beta coefficient of -0.068. However, the t-value (0.605) and p-value (0.545) indicated insignificance, leading to the decision that this hypothesis is not supported. Hypothesis H-2, suggesting a path from Technical Competence to Satisfaction, resulted in a significant beta coefficient of 0.331. The t-value (2.21) and p-value (0.027) met the criteria for significance, supporting the hypothesis. Hypotheses H-3 relating Negotiation Skill to Satisfaction, produced beta coefficients of -0.03, t-value = 0.199 and p-value = 0.842 indicates the insignificant impact on user satisfaction. Hypotheses H-4, relating Visionary to Satisfaction, respectively, produced beta coefficients of 0.139, t-value = 0.97 and p-value = 0.332 indicates the insignificant impacts on user satisfaction. Hypothesis H-5, proposing a path from Responsiveness

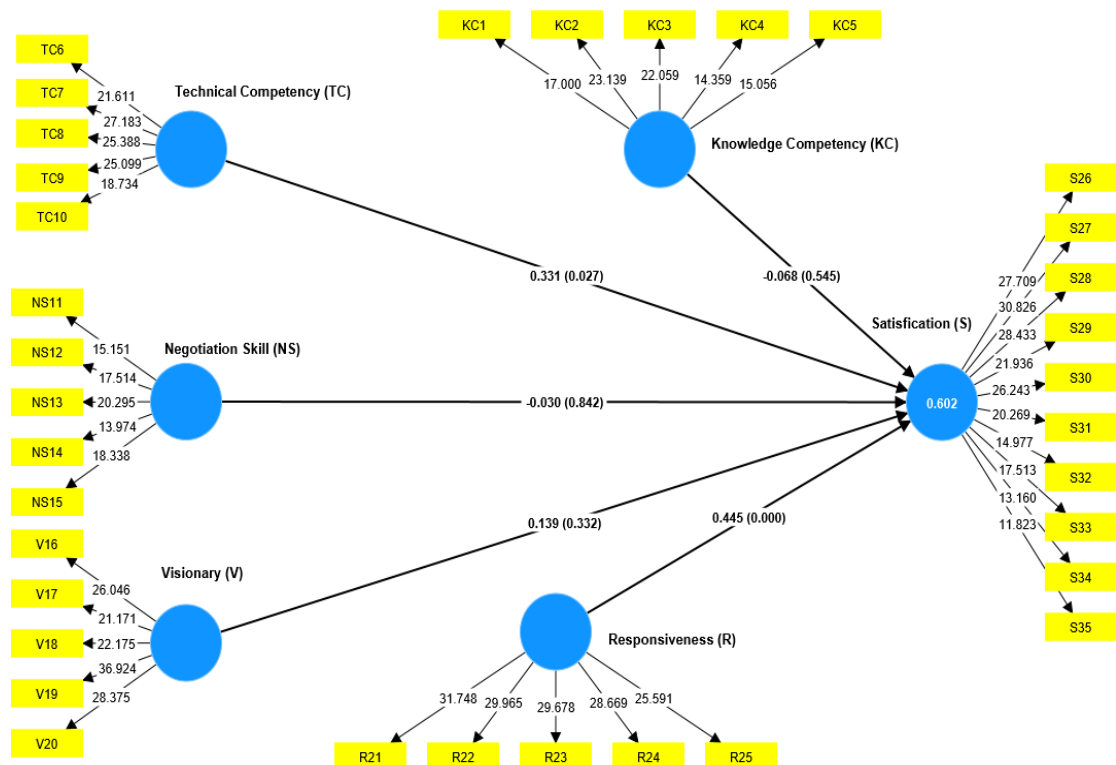
to Satisfaction, exhibited a significant beta coefficient of 0.445. The t-value (3.954) and p-value (0.000) indicated significance, supporting the hypothesis.

Overall, the table provides insights into the relationships between different dimensions of leadership quality and user satisfaction in university libraries, highlighting which dimensions significantly influence satisfaction and which do not.

Table 5.51: SEM Hypotheses

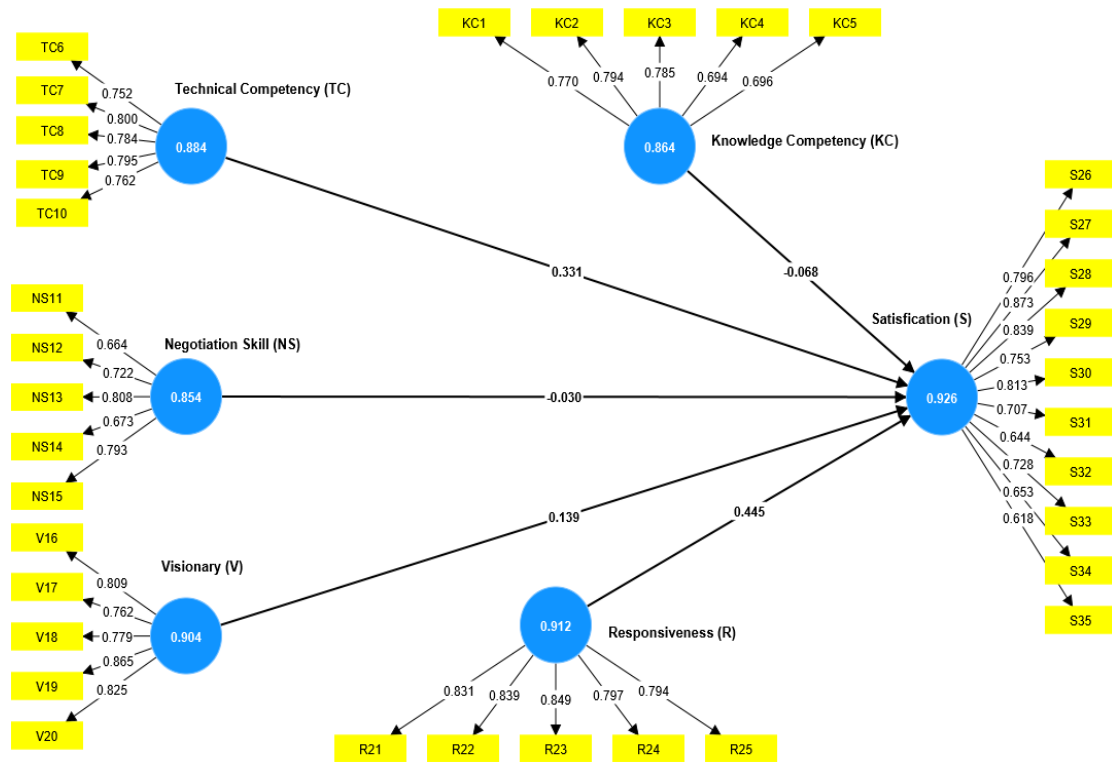
Hypotheses	Hypothesized Paths	β	Sample Mean	SD	t	p	Decisions
					Sig. >1.96	Sig. <0.05	
H-1	Knowledge Competence->Satisfaction	-0.068	-0.062	0.112	0.605	0.545	Insignificant
H-2	Technical Competence->Satisfaction	0.331	0.326	0.15	2.21	0.027	Significant
H-3	Negotiation Skill->Satisfaction	-0.03	-0.026	0.149	0.199	0.842	Insignificant
H-4	Visionary->Satisfaction	0.139	0.144	0.144	0.97	0.332	Insignificant
H-5	Responsiveness->Satisfaction	0.445	0.438	0.113	3.954	0.000	Significant

β = Beta, SD = Standard Deviation, Sig. = Significance, t = t-value, p = p-value



KC = Knowledge Competency, TC = Technical Competency, NS = Negotiation Skill, V = Visionary, R = Responsiveness, S = Satisfaction, Significance value: $p < 0.05$, $t > 1.96$

Figure 5.1: p-value Flowchart of the Structural Equation Modeling



KC = Knowledge Competency, TC = Technical Competency, NS = Negotiation Skill, V = Visionary, R = Responsiveness, S = Satisfaction, Significance value: $p < 0.05$, $t > 1.96$

Figure 5.2: β -value Flowchart of the Structural Equation Modeling

5.17 Variations in Knowledge and Leadership Quality

User responses for minimal, expected, and perceived leadership performance were computed based on the user category, which encompasses teachers, students, and researchers, as well as the university category, which comprises public, private, and international institutions. The ANOVA test was utilized to determine if there are any significant variations in overall, dimensional, and individual items among faculty members, students, and researchers, as well as among public, private, and international universities.

5.17.1 Minimum, Expected, and Perceived Leadership Quality by User Category

Table 5.52 presents the average and variability of leadership quality measures, such as the lowest expected leadership standards, desired leadership standards, and actual leadership performance. The data is organized by user type, which includes teachers, students, and researchers. The table displays significant discrepancies in the average ratings among these categories, suggesting disparities in the expectations and views of

leadership effectiveness among these user groups. Each row corresponds to a particular leadership quality item, while the columns indicate the average (M) and variation (SD) for each user type. Within the framework of leadership quality criteria for minimal, desired, and actual performance, a higher standard deviation (SD) indicates a larger range of user responses within each category.

Table 5.52: Minimum, Expected, and Perceived Leadership by User Category

Item	Minimum Leadership Expectation						Desired Leadership Expectation						Actual Leadership Performance					
	Teacher		Student		Researcher		Teacher		Student		Researcher		Teacher		Student		Researcher	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
KC1	4.52	1.22	4.31	1.38	3.78	1.39	6.27	.93	5.81	1.23	6.22	.97	4.90	1.13	4.87	1.44	4.67	1.00
KC2	4.75	1.07	4.42	1.40	4.00	1.58	6.34	.78	5.91	1.13	6.33	.86	5.03	1.15	5.11	1.43	5.22	.97
KC3	4.66	1.17	4.42	1.41	4.33	1.00	6.13	.99	5.90	1.16	6.11	.92	4.84	1.31	5.11	1.43	4.67	1.41
KC4	4.81	1.07	4.45	1.44	4.22	1.78	6.30	.98	6.01	1.16	6.44	1.01	5.24	1.33	5.22	1.37	5.11	1.26
KC5	4.76	1.07	4.45	1.48	4.67	1.32	6.21	.89	6.04	1.18	6.33	.86	5.10	1.26	5.20	1.48	5.11	1.36
TC6	4.73	1.17	4.23	1.44	4.11	1.83	6.22	.85	5.76	1.28	6.11	1.05	5.10	1.26	4.93	1.53	4.11	1.36
TC7	4.58	1.28	4.41	1.41	4.22	1.39	6.09	.94	5.84	1.22	6.00	.86	5.19	1.25	5.06	1.47	4.33	1.32
TC8	4.51	1.26	4.31	1.45	4.22	1.64	6.15	1.06	5.92	1.17	6.22	.97	5.09	1.31	5.09	1.46	4.56	1.59
TC9	4.67	1.22	4.36	1.45	4.11	1.26	6.12	.94	5.97	1.19	5.99	.86	5.21	1.20	5.04	1.46	4.67	1.41
TC10	4.75	1.33	4.33	1.48	4.11	1.45	6.18	1.02	5.95	1.12	6.00	1.41	5.16	1.39	5.08	1.40	5.00	1.58
NS11	4.40	1.44	4.25	1.40	3.67	1.50	6.04	1.28	5.74	1.23	6.00	1.22	4.67	1.39	4.82	1.44	4.33	1.41
NS12	4.46	1.35	4.36	1.40	4.11	1.16	6.13	1.14	5.97	1.15	6.33	.70	4.60	1.38	5.08	1.40	4.56	.88
NS13	4.70	1.25	4.52	1.43	3.89	1.76	6.33	.91	6.14	1.11	6.56	.72	4.97	1.32	5.19	1.52	5.67	1.00
NS14	4.78	1.19	4.43	1.38	3.89	1.45	6.25	.91	5.83	1.15	6.78	.44	4.97	1.20	5.12	1.43	5.56	1.23
NS15	4.66	1.26	4.40	1.59	4.11	1.45	6.15	1.14	5.92	1.29	6.67	.50	4.84	1.45	4.98	1.71	5.44	1.33
V16	4.81	1.20	4.35	1.48	3.67	1.65	6.24	1.05	5.86	1.23	6.67	.50	5.07	1.54	4.99	1.52	5.78	.97
V17	4.91	1.27	4.44	1.46	4.00	1.50	6.33	1.050	5.93	1.14	6.56	.52	5.01	1.38	4.94	1.57	5.78	1.09
V18	4.88	1.18	4.57	1.44	4.00	1.73	6.28	.884	5.93	1.23	6.78	.44	5.01	1.24	5.14	1.51	5.44	.88
V19	4.72	1.33	4.43	1.51	3.89	1.16	6.21	1.122	5.94	1.19	6.44	.52	4.69	1.52	5.03	1.53	5.22	1.56
V20	4.72	1.32	4.54	1.41	4.00	1.41	6.13	1.072	6.10	1.09	6.78	.44	5.01	1.24	5.20	1.55	5.44	1.50
R21	4.79	1.18	4.46	1.50	3.67	1.65	6.33	.877	5.84	1.23	6.56	.72	5.24	1.32	4.98	1.52	5.89	.78
R22	4.82	1.12	4.63	1.44	3.89	1.53	6.25	.975	5.99	1.15	6.56	.72	5.16	1.38	5.08	1.49	5.56	1.23
R23	4.82	1.14	4.55	1.45	3.67	1.80	6.27	.914	5.91	1.14	6.56	.72	5.13	1.35	5.12	1.44	5.33	1.11

R24	4.78	1.33	4.59	1.44	4.22	1.78	6.12	1.122	6.03	1.19	6.56	.72	5.10	1.26	5.07	1.54	5.11	1.36
R25	5.03	1.14	4.56	1.48	3.67	1.50	6.33	.911	6.11	1.12	6.33	.86	5.34	1.22	5.27	1.59	5.56	1.01

M = Mean, SD = Standard Deviation, KC = Knowledge Competency, TC = Technical Competency, NS= Negotiation Skill, V = Visionary, R = Responsiveness

5.17.2 Overall Leadership Quality Expectation by User Category

Table 5.53 displays the average and variability of the general knowledge and leadership ability across many categories: minimal leadership expectations, desired leadership expectations, genuine leadership expectations, and actual leadership performance. The data includes teachers, students, and researchers. The teachers had the greatest overall mean of minimal leadership expectation, with a score of 4.72. This was followed by students, who had a score of 4.42, and researchers, who had a score of 4.00. The researchers had the highest overall mean of desired leadership expectation, with a score of 6.39. Teachers had a slightly lower score of 6.21, while students had the lowest score of 5.93. Teachers had the greatest overall mean of genuine leadership expectation, with a score of 5.46. Researchers had a slightly lower score of 5.20, while students had a score of 5.18. Researchers had the greatest overall mean of actual leadership performance, with a score of 5.12. Students had a slightly lower score of 5.07, while teachers had the lowest score of 5.02. The findings indicated that there were significant differences in the average values of the minimum leadership expectations, desired leadership expectations, real leadership expectations, and actual leadership performance among the teachers, students, and researchers in the university libraries of Bangladesh.

Table 5.53: Overall Leadership Quality Expectation by User Category

Leadership Expectation and performance		N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Mini mum	Maxi mum
						Lower Bound	Upper Bound		
MLE	Teacher	67	4.72	1.00	.12	4.47	4.96	2.44	6.28
	Student	437	4.42	1.02	.04	4.33	4.52	1.44	6.96
	Researcher	9	4.00	1.18	.39	3.09	4.91	2.12	5.72
	Total	513	4.46	1.03	.04	4.37	4.54	1.44	6.96
DLE	Teacher	67	6.21	.80	.09	6.01	6.41	2.64	7.00
	Student	437	5.93	.83	.03	5.85	6.01	1.12	7.00
	Researcher	9	6.39	.43	.14	6.06	6.73	5.76	7.00
	Total	513	5.97	.83	.03	5.90	6.05	1.12	7.00

RLE	Teacher	67	5.46	.75	.09	5.28	5.65	2.66	6.60
	Student	437	5.18	.74	.03	5.11	5.25	2.28	6.98
	Researcher	9	5.20	.61	.20	4.72	5.67	4.36	6.04
	Total	513	5.21	.74	.03	5.15	5.28	2.28	6.98
ALP	Teacher	67	5.02	1.10	.13	4.75	5.29	2.56	6.96
	Student	437	5.07	1.08	.05	4.96	5.17	1.52	7.00
	Researcher	9	5.12	.81	.27	4.50	5.74	4.04	6.16
	Total	513	5.06	1.08	.04	4.97	5.15	1.52	7.00

MLE = Minimum Leadership Expectation, DLE = Desired Leadership Expectation, RLE = Real Leadership Expectation, ALP = Actual Leadership Performance, SD =Standard Deviation, N = Number

5.17.3 ANOVA of Overall Leadership Quality Expectation by User Category

The user category computed the user responses for the overall minimum leadership expectations, desired leadership expectations, real leadership expectations, and actual leadership performance by analysis of variance (ANOVA). Table 5.54 shows that there was significant difference ($p < 0.041$) among the teachers (4.72), students (4.42), and researchers (4.00) in the overall minimum leadership expectations. This study revealed that the overall desired leadership expectations differed significantly ($p < 0.011$) among the teachers (6.21), students (5.93), and researchers (6.39) in the university libraries of Bangladesh. The result shows that there was a significant difference ($p < 0.014$) among the teachers (5.46), students (5.18), and researchers (5.20) in the overall real leadership expectations. It is also found that there was no significant difference ($p > 0.932$) among the teachers (5.02), students (5.07), and researchers (5.12) in the overall actual leadership performance of library professionals in the university libraries of Bangladesh.

Table 5.54: ANOVA of Overall Leadership Quality Expectation by User Category

	Expectations	Sum of Squares	df	Mean Square	F	Sig.
MLE	Between Groups	6.795	2	3.398	3.222	.041
	Within Groups	537.698	510	1.054		
	Total	544.493	512			
DLE	Between Groups	6.240	2	3.120	4.571	.011
	Within Groups	348.109	510	.683		
	Total	354.349	512			
RLE	Between Groups	4.773	2	2.387	4.319	.014
	Within Groups	281.817	510	.553		
	Total	286.590	512			

ALP	Between Groups	.166	2	.083	.071	.932
	Within Groups	599.934	510	1.176		
	Total	600.100	512			

MLE = Minimum Leadership Expectation, DLE = Desired Leadership Expectation, RLE = Real Leadership Expectation, ALP = Actual Leadership Performance, F = F-value, Sig. = Significance, Significance value: $p < 0.05$

5.17.4 ANOVA of Dimensional Leadership Quality Expectation by User Category

The user category analyzed the user responses for the minimum leadership expectations, desired leadership expectations, real leadership expectations, and actual leadership performance using ANOVA. Table 5.55 and 5.56 indicate that there was no statistically significant difference ($p > 0.097$) among teachers (4.69), students (4.40), and researchers (4.20) in terms of their minimum leadership expectations for the Knowledge Competency of library professionals. The analysis reveals that there were no statistically significant differences among teachers, students, and researchers in their minimum leadership expectations for Knowledge Competency ($p > 0.097$), Technical Competency ($p > 0.104$), and Negotiation Skill ($p > 0.168$). However, significant differences were observed in the Visionary ($p < 0.037$) and Responsiveness ($p < 0.353$) dimensions. Furthermore, significant differences were found in desired leadership expectations across all dimensions: Knowledge Competency ($p < 0.016$), Technical Competency ($p > 0.089$), Negotiation Skill ($p < 0.024$), Visionary ($p < 0.009$), and Responsiveness ($p < 0.022$).

The findings indicate that there was a notable disparity in the leadership expectations of teachers, students, and researchers about the Knowledge Competency ($p < 0.011$), Technical Competency ($p < 0.037$), Visionary ($p < 0.026$), and Responsiveness ($p < 0.044$) approaches of the library staff. Nevertheless, there was no notable disparity observed between the teachers, students, and researchers regarding their actual expectations of leadership in relation to Negotiation Skill ($p > 0.089$).

It is also found that there was no significant difference among the teachers, students, and researchers in the actual leadership performance of Knowledge Leadership ($p > 0.807$), Technical Competency ($p > 0.333$), Negotiation Skill ($p > 0.318$), Visionary ($p > 0.451$), and Responsiveness ($p > 0.589$) facilities in the university libraries of Bangladesh.

Table 5.55: Descriptive Analysis of Dimensional Leadership Quality Expectation by User Category

		N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
MLE of KC	Teacher	67	4.69	.93768	.11456	4.4698	4.9272	2.20	6.00
	Student	437	4.40	1.09067	.05217	4.3063	4.5114	1.00	6.80
	Researcher	9	4.20	1.31909	.43970	3.1861	5.2139	2.20	6.60
	Total	513	4.44	1.07893	.04764	4.3494	4.5366	1.00	6.80
MLE of TC	Teacher	67	4.64	1.12174	.13704	4.3741	4.9214	2.20	6.80
	Student	437	4.32	1.18720	.05679	4.2161	4.4393	1.00	7.00
	Researcher	9	4.15	1.38484	.46161	3.0911	5.2200	2.60	6.00
	Total	513	4.36	1.18525	.05233	4.2637	4.4693	1.00	7.00
MLE of NS	Teacher	67	4.60	1.13831	.13907	4.3223	4.8777	1.80	6.20
	Student	437	4.39	1.13126	.05412	4.2847	4.4974	1.40	7.00
	Researcher	9	3.93	1.36382	.45461	2.8850	4.9817	2.20	6.00
	Total	513	4.41	1.13794	.05024	4.3116	4.5090	1.40	7.00
MLE of V	Teacher	67	4.80	1.15992	.14171	4.5230	5.0889	2.00	6.80
	Student	437	4.46	1.22696	.05869	4.3499	4.5807	1.00	7.00
	Researcher	9	3.91	1.36789	.45596	2.8597	4.9626	2.00	5.80
	Total	513	4.50	1.22638	.05415	4.3937	4.6064	1.00	7.00
MLE of R	Teacher	67	4.84	1.09826	.13417	4.5799	5.1156	2.20	7.00
	Student	437	4.55	1.24532	.05957	4.4388	4.6729	1.00	7.00
	Researcher	9	3.82	1.54092	.51364	2.6378	5.0067	1.60	5.60
	Total	513	4.58	1.23822	.05467	4.4737	4.6885	1.00	7.00
DLE of KC	Teacher	67	6.25	.76145	.09303	6.0650	6.4365	3.40	7.00
	Student	437	5.93	.91643	.04384	5.8484	6.0207	1.00	7.00
	Researcher	9	6.28	.80691	.26897	5.6686	6.9091	4.40	7.00
	Total	513	5.98	.90173	.03981	5.9039	6.0603	1.00	7.00
DLE of TC	Teacher	67	6.15	.85002	.10385	5.9449	6.3596	2.80	7.00
	Student	437	5.88	.94646	.04528	5.7990	5.9770	1.00	7.00
	Researcher	9	6.06	.94868	.31623	5.3374	6.7959	4.00	7.00
	Total	513	5.92	.93717	.04138	5.8443	6.0069	1.00	7.00
DLE of NS	Teacher	67	6.18	.93726	.11450	5.9535	6.4107	1.80	7.00
	Student	437	5.91	.92513	.04425	5.8321	6.0060	1.60	7.00
	Researcher	9	6.46	.46904	.15635	6.1061	6.8272	5.80	7.00
	Total	513	5.96	.92622	.04089	5.8827	6.0433	1.60	7.00
DLE of V	Teacher	67	6.23	.91203	.11142	6.0163	6.4613	2.00	7.00
	Student	437	5.95	.96427	.04613	5.8595	6.0408	1.00	7.00
	Researcher	9	6.64	.37118	.12373	6.3591	6.9298	6.00	7.00

Chapter Five: Data Analysis

	Total	513	6.00	.95815	.04230	5.9170	6.0832	1.00	7.00
DLE of R	Teacher	67	6.25	.84281	.10297	6.0541	6.4653	3.20	7.00
	Student	437	5.97	.96465	.04615	5.8860	6.0674	1.00	7.00
	Researcher	9	6.51	.64118	.21373	6.0183	7.0040	5.00	7.00
	Total	513	6.02	.95067	.04197	5.9405	6.1055	1.00	7.00
RLE of KC	Teacher	67	5.47	.70051	.08558	5.3038	5.6455	3.50	6.50
	Student	437	5.17	.78142	.03738	5.0982	5.2452	1.90	6.90
	Researcher	9	5.24	.48505	.16168	4.8716	5.6173	4.50	5.80
	Total	513	5.21	.77288	.03412	5.1455	5.2796	1.90	6.90
RE of TC	Teacher	67	5.40	.81557	.09964	5.2011	5.5989	2.80	6.70
	Student	437	5.10	.87464	.04184	5.0256	5.1901	2.00	7.00
	Researcher	9	5.11	.65277	.21759	4.6093	5.6129	4.20	6.30
	Total	513	5.14	.86807	.03833	5.0708	5.2213	2.00	7.00
RLE of NS	Teacher	67	5.39	.86475	.10565	5.1801	5.6020	1.80	6.60
	Student	437	5.15	.81122	.03881	5.0788	5.2313	2.20	7.00
	Researcher	9	5.20	.60415	.20138	4.7356	5.6644	4.40	6.00
	Total	513	5.18	.81781	.03611	5.1157	5.2576	1.80	7.00
RLE of V	Teacher	67	5.52	.88896	.10860	5.3056	5.7392	2.00	6.90
	Student	437	5.20	.88750	.04245	5.1243	5.2912	2.20	7.00
	Researcher	9	5.27	.68516	.22839	4.7511	5.8044	4.10	6.10
	Total	513	5.25	.88949	.03927	5.1729	5.3272	2.00	7.00
RLE of R	Teacher	67	5.55	.78186	.09552	5.3630	5.7444	3.20	7.00
	Student	437	5.26	.90453	.04327	5.1812	5.3513	2.00	7.00
	Researcher	9	5.16	.91378	.30459	4.4643	5.8691	3.70	6.30
	Total	513	5.30	.89347	.03945	5.2245	5.3795	2.00	7.00
ALP of KC	Teacher	67	5.02	1.08942	.13309	4.7552	5.2866	3.00	7.00
	Student	437	5.10	1.14304	.05468	4.9951	5.2100	1.40	7.00
	Researcher	9	4.95	.98883	.32961	4.1955	5.7156	2.80	6.20
	Total	513	5.08	1.13223	.04999	4.9911	5.1875	1.40	7.00
ALP of TC	Teacher	67	5.15	1.16155	.14191	4.8689	5.4356	2.80	7.00
	Student	437	5.04	1.19382	.05711	4.9285	5.1530	1.40	7.00
	Researcher	9	4.53	1.35647	.45216	3.4907	5.5760	2.20	6.00
	Total	513	5.04	1.19267	.05266	4.9429	5.1498	1.40	7.00
ALP of NS	Teacher	67	4.80	1.18036	.14420	4.5210	5.0969	1.80	7.00
	Student	437	5.03	1.17844	.05637	4.9286	5.1502	1.40	7.00
	Researcher	9	5.11	.97011	.32337	4.3654	5.8568	3.60	6.60
	Total	513	5.01	1.17605	.05192	4.9085	5.1125	1.40	7.00
ALP of V	Teacher	67	4.96	1.25202	.15296	4.6558	5.2666	2.00	7.00
	Student	437	5.05	1.30070	.06222	4.9367	5.1813	1.00	7.00
	Researcher	9	5.53	1.00499	.33500	4.7608	6.3058	4.00	7.00
	Total	513	5.05	1.28986	.05695	4.9427	5.1665	1.00	7.00
ALP	Teacher	67	5.19	1.18858	.14521	4.9071	5.4869	3.20	7.00

of R	Student	437	5.10	1.30134	.06225	4.9811	5.2258	1.00	7.00
	Researcher	9	5.48	.86088	.28696	4.8272	6.1506	3.80	7.00
	Total	513	5.12	1.28031	.05653	5.0114	5.2335	1.00	7.00

MLE = Minimum Leadership Expectation, DLE = Desired Leadership Expectation, RLE = Real Leadership Expectation, ALP = Actual Leadership Performance, N= Number, SD= Standard Deviation.

Table 5.56: ANOVA of Dimensional Leadership Quality Expectation by User Category

Expectations		“Sum of Squares	df	Mean Square	F	Sig.”
MLE of Knowledge Competency	Between Groups	5.416	2	2.708	2.339	.097
	Within Groups	590.598	510	1.158		
	Total	596.015	512			
MLE of Technical Competency	Between Groups	6.359	2	3.179	2.275	.104
	Within Groups	712.904	510	1.398		
	Total	719.263	512			
MLE of Negotiation Skill	Between Groups	4.620	2	2.310	1.789	.168
	Within Groups	658.375	510	1.291		
	Total	662.995	512			
MLE of Visionary	Between Groups	9.920	2	4.960	3.328	.037
	Within Groups	760.135	510	1.490		
	Total	770.054	512			
MLE of Responsiveness	Between Groups	10.226	2	5.113	3.366	.035
	Within Groups	774.760	510	1.519		
	Total	784.987	512			
DLE of knowledge Competency	Between Groups	6.670	2	3.335	4.152	.016
	Within Groups	409.645	510	.803		
	Total	416.315	512			
DLE of Technical Competency	Between Groups	4.239	2	2.119	2.427	.089
	Within Groups	445.447	510	.873		
	Total	449.685	512			
DLE of Negotiation Skill	Between Groups	6.344	2	3.172	3.737	.024
	Within Groups	432.894	510	.849		
	Total	439.238	512			
DLE of Visionary	Between Groups	8.643	2	4.321	4.777	.009
	Within Groups	461.398	510	.905		
	Total	470.041	512			
DLE of Responsiveness	Between Groups	6.837	2	3.418	3.824	.022
	Within Groups	455.892	510	.894		
	Total	462.729	512			
RLE of knowledge Competency	Between Groups	5.341	2	2.670	4.532	.011
	Within Groups	300.499	510	.589		

	Total	305.840	512			
RLE of Technical Competency	Between Groups	4.970	2	2.485	3.328	.037
	Within Groups	380.848	510	.747		
	Total	385.818	512			
RLE of Negotiation Skill	Between Groups	3.237	2	1.618	2.433	.089
	Within Groups	339.196	510	.665		
	Total	342.433	512			
RLE of Visionary	Between Groups	5.758	2	2.879	3.677	.026
	Within Groups	399.329	510	.783		
	Total	405.088	512			
RLE of Responsiveness	Between Groups	4.969	2	2.485	3.138	.044
	Within Groups	403.751	510	.792		
	Total	408.720	512			
ALP of knowledge Competency	Between Groups	.551	2	.275	.214	.807
	Within Groups	655.800	510	1.286		
	Total	656.351	512			
ALP of Technical Competency	Between Groups	3.134	2	1.567	1.102	.333
	Within Groups	725.162	510	1.422		
	Total	728.296	512			
ALP of Negotiation Skill	Between Groups	3.177	2	1.588	1.149	.318
	Within Groups	704.967	510	1.382		
	Total	708.143	512			
ALP of Visionary	Between Groups	2.656	2	1.328	.798	.451
	Within Groups	849.176	510	1.665		
	Total	851.832	512			
ALP of Responsiveness	Between Groups	1.739	2	.870	.529	.589
	Within Groups	837.533	510	1.642		
	Total	839.272	512			

MSE = Minimum Service Expectation, DSE = Desired Service Expectation, RSE = Real Service Expectation, ASP = Actual Service Performance, Sig. = Significance, F = F-value, Significance value: $p < 0.05$

5.17.5 ANOVA of Each Item in Leadership Quality Expectation by User Category

Table 5.57 presents the outcomes of ANOVA analyses conducted to explore the variances in leadership quality across different user categories in university libraries. It reveals significant differences in minimum leadership expectations (MLE), desired leadership expectations (DLE), real leadership expectations (RLE), and actual leadership performance (ALP) for various dimensions such as knowledge competency, technical competency, negotiation skill, visionary, and responsiveness. It is found that there was a significant difference in the six items TC6 ($p < 0.025$), V16

($p < 0.018$), V17 ($p < 0.027$), and R25 ($p < 0.007$) of minimum service expectations among teachers, students, and researchers. The study revealed a significant difference ($p < 0.001 - 0.015$) in the nine items (KC1, KC2, TC6, NS14, V16, V17, V18, R21 and R21) of desired leadership expectations among the teachers, students, and researchers. The result shows that there was a significant difference ($p < 0.004 - 0.022$) in the seven items (KC2, TC6, NS14, V16, C17, R21 and R25) of real leadership expectations among the teachers, students, and researchers. The study discovered that there was a significant difference ($p < 0.019$) in the only item NS12 of actual leadership performance among the teachers, students, and researchers (Table 5.57).

Table 5.57: ANOVA of Each Item in Leadership Quality by User Category

Items	Minimum Leadership Expectation		Desired Leadership Expectation		Real Leadership Expectation		Actual Leadership Performance	
	<i>F</i>	<i>Sig.</i>	<i>F</i>	<i>Sig.</i>	<i>F</i>	<i>Sig.</i>	<i>F</i>	<i>Sig.</i>
KC1	1.438	.238	4.576	.011	2.942	.054	.107	.899
KC2	2.151	.117	5.158	.006	4.634	.010	.134	.875
KC3	.913	.402	1.376	.254	1.636	.196	1.399	.248
KC4	2.055	.129	2.319	.099	2.920	.055	.034	.966
KC5	1.468	.231	.872	.419	1.836	.161	.134	.874
TC6	3.705	.025	4.378	.013	5.648	.004	1.775	.170
TC7	.564	.569	1.310	.271	1.182	.308	1.420	.243
TC8	.594	.553	1.362	.257	1.209	.299	.601	.549
TC9	1.581	.207	.511	.600	1.459	.234	.749	.474
TC10	2.473	.085	1.207	.300	2.755	.065	.123	.885
NS11	1.148	.318	1.912	.149	1.484	.228	.801	.449
NS12	.312	.732	1.009	.365	.536	.586	3.998	.019
NS13	1.426	.241	1.429	.241	1.174	.310	1.139	.321
NS14	2.741	.065	6.987	.001	4.352	.013	.792	.453
NS15	.986	.374	2.337	.098	1.374	.254	.591	.554
V16	4.046	.018	4.729	.009	4.464	.012	1.246	.288
V17	3.643	.027	4.732	.009	5.067	.007	1.352	.260
V18	2.246	.107	4.636	.010	2.798	.062	.417	.659
V19	1.780	.170	2.242	.107	1.967	.141	1.581	.207
V20	1.154	.316	1.758	.173	.332	.717	.562	.570
R21	2.911	.055	6.160	.002	4.008	.019	2.361	.095
R22	1.841	.160	2.631	.073	1.515	.221	.547	.579
R23	2.887	.057	4.214	.015	2.762	.064	.104	.901
R24	.819	.441	1.040	.354	.505	.604	.017	.983
R25	5.058	.007	1.243	.289	3.861	.022	.206	.814

Sig. = Significance, *KC* = Knowledge Competency, *TC* = Technical Competency, *NS* = Negotiation Skill, *V* = Visionary and *R* = Responsiveness

5.17.6 Minimum, Expected and Perceived Leadership Quality by University Category

Table 5.58 presents the average scores and standard deviations (SD) of leadership quality items categorized by users from public, private, and international university libraries. It compares the minimal leadership expectations, desired leadership expectations, and actual leadership performance across these user categories. The mean scores for each item vary across the different types of university libraries, indicating differences in perceptions of leadership quality. However, there is no consistent pattern observed across university categories in terms of minimal, desired, and actual leadership performance. These findings suggest that the expectations and perceptions of patrons from various university libraries regarding leadership quality do not align completely with the actual leadership roles enacted by library professionals in their respective institutions.

Table 5.58: Minimum, Expected, and Perceived Leadership Quality by University Category

Item	Minimum Leadership Expectation						Desired Leadership Expectation						Actual Leadership Performance					
	Public		Private		Int.		Public		Private		Int.		Public		Private		Int.	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
KC1	4.01	1.36	4.84	1.22	4.18	1.38	5.60	1.21	6.24	1.09	6.27	1.00	4.60	1.38	5.23	1.34	5.21	1.31
KC2	4.25	1.31	4.83	1.39	4.12	1.31	5.84	1.11	6.14	1.08	6.12	1.02	4.94	1.31	5.31	1.52	5.33	1.13
KC3	4.34	1.37	4.69	1.33	3.94	1.41	5.81	1.18	6.05	1.10	6.33	.77	4.89	1.42	5.33	1.41	5.06	1.22
KC4	4.44	1.39	4.76	1.36	3.36	1.24	6.00	1.11	6.13	1.20	6.21	1.13	4.99	1.37	5.56	1.28	5.30	1.44
KC5	4.31	1.39	4.84	1.45	4.09	1.33	5.92	1.15	6.26	1.12	6.27	.94	5.07	1.44	5.37	1.47	5.15	1.32
TC6	4.07	1.40	4.72	1.38	3.79	1.21	5.63	1.27	6.08	1.17	6.03	1.01	4.66	1.46	5.33	1.54	5.21	1.11
TC7	4.26	1.35	4.76	1.43	3.91	1.01	5.70	1.21	6.12	1.12	6.06	1.05	4.90	1.37	5.27	1.56	5.33	1.19
TC8	4.19	1.36	4.64	1.48	3.79	1.40	5.79	1.13	6.16	1.19	6.21	.96	4.92	1.39	5.33	1.55	5.09	1.07
TC9	4.33	1.42	4.59	1.44	3.79	1.16	5.85	1.22	6.14	1.06	6.33	.92	4.94	1.39	5.14	1.52	5.52	1.17
TC10	4.26	1.47	4.67	1.45	3.88	1.21	5.99	1.15	5.86	1.14	6.15	1.07	4.93	1.37	5.33	1.43	5.06	1.27
NS11	4.10	1.38	4.55	1.42	3.97	1.31	5.59	1.26	6.01	1.21	6.24	.75	4.63	1.35	5.01	1.54	5.00	1.36

NS12	4.25	1.32	4.69	1.43	3.61	1.19	5.89	1.15	6.13	1.14	6.18	.91	4.88	1.35	5.22	1.49	4.97	1.15
NS13	4.44	1.41	4.83	1.34	3.61	1.32	6.08	1.09	6.28	1.08	6.39	.86	5.07	1.46	5.31	1.51	5.30	1.51
NS14	4.27	1.32	4.83	1.35	4.06	1.32	5.66	1.19	6.19	.98	6.27	.97	4.83	1.37	5.47	1.36	5.39	1.27
NS15	4.30	1.53	4.80	1.54	3.42	1.22	5.87	1.33	6.05	1.21	6.30	.95	4.93	1.65	5.01	1.74	5.12	1.49
V16	4.25	1.37	4.72	1.55	3.79	1.36	5.76	1.20	6.09	1.22	6.33	.95	4.87	1.46	5.13	1.62	5.67	1.10
V17	4.43	1.35	4.72	1.59	3.76	1.00	5.89	1.09	6.15	1.20	6.06	1.02	4.95	1.48	4.97	1.71	5.00	1.06
V18	4.46	1.37	4.94	1.40	3.85	1.46	5.89	1.17	6.11	1.21	6.15	1.27	5.12	1.41	5.16	1.56	5.03	1.48
V19	4.33	1.40	4.78	1.59	3.61	.96	5.80	1.20	6.20	1.14	6.36	.85	4.88	1.50	5.12	1.62	5.24	1.17
V20	4.48	1.38	4.84	1.41	3.61	.99	6.00	1.10	6.25	1.03	6.33	1.10	5.06	1.49	5.36	1.57	5.18	1.21
R21	4.28	1.46	4.91	1.40	3.91	1.40	5.69	1.28	6.24	1.01	6.09	.91	4.88	1.48	5.28	1.50	5.28	1.50
R22	4.52	1.33	4.97	1.48	3.76	1.17	5.92	1.11	6.18	1.15	6.12	1.08	5.09	1.43	5.12	1.60	5.03	1.10
R23	4.44	1.34	4.91	1.48	3.76	1.41	5.82	1.15	6.18	1.04	6.03	1.04	5.07	1.37	5.23	1.52	4.97	1.23
R24	4.48	1.39	4.92	1.46	3.94	1.29	5.92	1.21	6.20	1.14	6.30	.91	4.92	1.51	5.28	1.52	5.24	1.14
R25	4.42	1.41	5.00	1.46	3.88	1.13	5.96	1.17	6.42	.92	6.21	.96	5.16	1.54	5.44	1.59	5.52	1.17

Int. = International, *M* = Mean, *SD* = Standard Deviation, *Sig.* = Significance, *KC* = Knowledge Competency, *TC* = Technical Competency, *NS* = Negotiation Skill, *V* = Visionary and *R* = Responsiveness

5.17.7 Overall Leadership Quality by University Category

Table 5.59 shows the mean and standard deviation of the overall leadership quality for minimum leadership expectations, desired leadership expectations, real leadership expectations, and actual leadership performance among the users of public, private, and international universities. the findings indicate significant variations in overall leadership quality among users from different types of universities. Specifically, the highest overall mean for minimum leadership expectation is observed among users from private universities (4.79), followed by public universities (4.31) and international universities (3.81). Similarly, for desired leadership expectation, the highest overall mean is reported among users from international universities (6.21), followed by private universities (6.16) and public universities (5.82).

The highest overall mean of real leadership expectation was 5.47 for the users of private universities, followed by 5.07 for the users of public universities and 5.01 for the users of international universities. The highest overall mean of actual leadership

performance was 5.25 for the users of private universities, followed by 5.18 for the users of international universities, and 4.92 for the users of public universities. Overall, the results suggest that there are notable differences in the overall leadership quality perceived and expected by users across public, private, and international universities in Bangladesh.

Table 5.59: Overall Leadership Quality by University Category

Expectation & Perception By University Category		N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Mini mum	Maxi mum
						Lower Bound	Upper Bound		
MLE	Public	290	4.31	.95	.05628	4.2068	4.4283	1.44	6.16
	Private	190	4.79	1.08	.07883	4.6347	4.9457	1.72	6.96
	International	33	3.81	.69	.12145	3.5672	4.0619	2.12	4.92
	Total	513	4.46	1.03	.04553	4.3708	4.5497	1.44	6.96
DLE	Public	290	5.82	.80	.04746	5.7359	5.9227	2.96	7.00
	Private	190	6.16	.84	.06166	6.0446	6.2878	1.12	7.00
	International	33	6.21	.66	.11548	5.9793	6.4498	4.08	7.00
	Total	513	5.97	.83	.03673	5.9067	6.0510	1.12	7.00
RLE	Public	290	5.07	.71	.04211	4.9905	5.1563	2.28	6.44
	Private	190	5.47	.76	.05561	5.3685	5.5879	2.66	6.98
	International	33	5.01	.45	.07908	4.8535	5.1756	3.94	5.70
	Total	513	5.21	.74	.03303	5.1547	5.2845	2.28	6.98
ALP	Public	290	4.92	1.04	.06119	4.8090	5.0498	1.52	6.88
	Private	190	5.25	1.15	.08354	5.0873	5.4169	1.88	7.00
	International	33	5.18	.85	.14855	4.8817	5.4868	3.52	6.44
	Total	513	5.06	1.08	.04780	4.9714	5.1592	1.52	7.00

MLE = Minimum Leadership Expectation, DLE = Desired Leadership Expectation, RLE = Real Leadership Expectation, ALP = Actual Leadership Performance, SD = Standard Deviation, N = Number

5.17.8 ANOVA of Overall Leadership Quality by University Category

The ANOVA analysis presented in Table 5.60 examines the overall leadership quality perceptions across different university categories, including public, private, and international universities. The analysis evaluates the variance in user responses for minimum leadership expectation (MLE), desired leadership expectation (DLE), real leadership expectation (RLE), and actual leadership performance (ALP).

For minimum leadership expectation (MLE), there is a significant difference among the university categories ($p < 0.000$), with an F-value of 20.410. This indicates significant variability in the average MLE across public, private, and international universities. Similarly, for desired leadership expectation (DLE), the ANOVA results show a significant difference ($p < 0.000$), with an F-value of 11.260, indicating substantial differences in the overall DLE among users from different university categories.

The analysis also indicates a significant difference ($p < 0.000$) in the overall real leadership expectation (RLE) among users from public, private, and international universities, with an F-value of 19.429. This result highlights notable discrepancies in the RLE perceived by users across university categories. Furthermore, for actual leadership performance (ALP), the ANOVA results reveal a significant difference ($p < 0.005$) among users of public, private, and international universities, with an F-value of 5.404. This suggests variations in the actual leadership performance of university libraries as perceived by users from different types of universities.

Overall, the ANOVA findings underscore the significant differences in overall service quality perceptions, including MLE, DLE, RLE, and ALP, among users of public, private, and international universities in Bangladesh.

Table 5.60: ANOVA of Overall Leadership Quality by University Category

Expectations & Perception		Sum of Squares	df	Mean Square	F	Sig.”
MLE	Between Groups	40.352	2	20.176	20.410	.000
	Within Groups	504.142	510	.989		
	Total	544.493	512			
DLE	Between Groups	14.986	2	7.493	11.260	.000
	Within Groups	339.363	510	.665		
	Total	354.349	512			
RLE	Between Groups	20.290	2	10.145	19.429	.000
	Within Groups	266.300	510	.522		
	Total	286.590	512			
ALP	Between Groups	12.453	2	6.226	5.404	.005
	Within Groups	587.648	510	1.152		
	Total	600.100	512			

MLE = Minimum Leadership Expectation, DLE = Desired Leadership Expectation, RLE = Real Leadership Expectation, ALP = Actual Leadership Performance, Sig. = Significance, F = F-value

5.17.9 ANOVA of Dimensional Leadership Quality by University Category

Table 5.61 presents the results of ANOVA analysis examining the dimensional leadership quality perceptions across different university categories: public, private, and international universities. The table highlights significant differences in user responses for dimensional minimum leadership expectations (MLE), desired leadership expectations (DLE), real leadership expectations (RLE), and actual leadership performance (ALP) among users from these university categories. For MLE, significant differences were found across all dimensions: knowledge competency ($p < 0.000$), technical competency ($p < 0.000$), negotiation skill ($p < 0.000$), visionary ($p < 0.000$), and responsiveness ($p < 0.000$). This suggests that users from public, private, and international universities perceive distinct levels of minimum leadership expectations across these dimensions. Similarly, significant differences were observed in DLE across all dimensions: knowledge competency ($p < 0.000$), technical competency ($p < 0.000$), negotiation skill ($p < 0.000$), visionary ($p < 0.001$), and responsiveness ($p < 0.000$). This indicates variations in desired leadership expectations among users from different university categories.

The analysis also revealed significant differences in RLE across all dimensions: knowledge competency ($p < 0.000$), technical competency ($p < 0.000$), negotiation skill ($p < 0.000$), visionary ($p < 0.000$), and responsiveness ($p < 0.000$). This suggests disparities in the real leadership expectations perceived by users from public, private, and international universities.

Furthermore, significant differences were found in ALP across dimensions of knowledge competency ($p < 0.000$), technical competency ($p < 0.001$), and negotiation skill ($p < 0.007$). However, no significant differences were observed in the visionary ($p > 0.258$) and responsiveness ($p > 0.121$) dimensions. This indicates that while users from different university categories perceive variations in actual leadership performance in certain dimensions, there are no significant differences in others.

Overall, the ANOVA results underscore the significant disparities in dimensional leadership quality perceptions among users from public, private, and international universities in Bangladesh, highlighting the need for tailored leadership approaches in university library settings.

Table 5.61: ANOVA of Dimensional Leadership Quality by University Category

Expectations & Perception		Sum of Squares	df	Mean Square	F	Sig.
MLE of Knowledge Competency	Between Groups	39.946	2	19.973	18.318	.000
	Within Groups	556.069	510	1.090		
	Total	596.015	512			
MLE of Technical Competency	Between Groups	34.028	2	17.014	12.663	.000
	Within Groups	685.235	510	1.344		
	Total	719.263	512			
MLE of Negotiation Skill	Between Groups	41.186	2	20.593	16.890	.000
	Within Groups	621.809	510	1.219		
	Total	662.995	512			
MLE of Visionary	Between Groups	40.649	2	20.325	14.211	.000
	Within Groups	729.405	510	1.430		
	Total	770.054	512			
MLE of Responsiveness	Between Groups	49.072	2	24.536	17.004	.000
	Within Groups	735.915	510	1.443		
	Total	784.987	512			
DLE of Knowledge Competency	Between Groups	14.581	2	7.291	9.256	.000
	Within Groups	401.734	510	.788		
	Total	416.315	512			
DLE of Technical Competency	Between Groups	17.079	2	8.539	10.067	.000
	Within Groups	432.606	510	.848		
	Total	449.685	512			
DLE of Negotiation Skill	Between Groups	15.032	2	7.516	9.036	.000
	Within Groups	424.206	510	.832		
	Total	439.238	512			
DLE of Visionary	Between Groups	12.089	2	6.045	6.732	.001
	Within Groups	457.952	510	.898		
	Total	470.041	512			
DLE of Responsiveness	Between Groups	17.531	2	8.765	10.041	.000
	Within Groups	445.198	510	.873		
	Total	462.729	512			
RLE of knowledge Competency	Between Groups	21.040	2	10.520	18.838	.000
	Within Groups	284.800	510	.558		
	Total	305.840	512			
RLE of Technical Competency	Between Groups	20.194	2	10.097	14.084	.000
	Within Groups	365.624	510	.717		
	Total	385.818	512			
RLE of Negotiation Skill	Between Groups	18.771	2	9.386	14.789	.000
	Within Groups	323.662	510	.635		
	Total	342.433	512			

RLE of Visionary	Between Groups	16.680	2	8.340	10.951	.000
	Within Groups	388.407	510	.762		
	Total	405.088	512			
RLE of Responsiveness	Between Groups	26.292	2	13.146	17.531	.000
	Within Groups	382.429	510	.750		
	Total	408.720	512			
ALP of Knowledge Competency	Between Groups	24.857	2	12.428	10.037	.000
	Within Groups	631.494	510	1.238		
	Total	656.351	512			
ALP of Technical Competency	Between Groups	20.555	2	10.277	7.406	.001
	Within Groups	707.741	510	1.388		
	Total	728.296	512			
ALP of Negotiation Skill	Between Groups	13.689	2	6.845	5.027	.007
	Within Groups	694.454	510	1.362		
	Total	708.143	512			
ALP of Visionary	Between Groups	4.516	2	2.258	1.359	.258
	Within Groups	847.316	510	1.661		
	Total	851.832	512			
ALP of Responsiveness	Between Groups	6.919	2	3.460	2.120	.121
	Within Groups	832.353	510	1.632		
	Total	839.272	512			

MLE = Minimum Leadership Expectation, DLE = Desired Leadership Expectation, RLE = Real Leadership Expectation, ALP = Actual Leadership Performance, Sig. = Significance, F = F-value

5.17.10 ANOVA of Each Item in Leadership Quality by University Category

Table 5.62 presents the results of ANOVA analysis conducted on each item of leadership quality across different university categories: public, private, and international universities. The table demonstrates significant differences in user responses for minimal leadership expectation, desired leadership expectation, real leadership expectation, and actual leadership performance among users from these university categories.

For minimal leadership expectation, significant differences ($p < 0.000$ – 0.006) were observed across all items, including knowledge competency (KC1-KC5), technical competency (TC6-TC10), negotiation skill (NS11-NS15), visionary (V16-V20), and responsiveness (R21-R25).

The twenty-one categories (KC1, KC2, KC3, KC5, TC6, TC7, TC8, TC9, TC10, NS11, NS12, NS14, V16, V17, V19, V20, R21, R22, R23, R24, and R25) of desirable

leadership expectations among teachers, students, and researchers showed a significant difference ($p < 0.000$ – 0.045). The findings indicate that among patrons of public, private, and international higher education institutions, there was a significant difference ($p < 0.000$ – 0.017) in all the elements of real leadership expectation. The study found that among users of public, private, and international university, there was a significant difference ($p < 0.001$ – 0.036) in fourteen elements (KC1, KC2, KC3, KC4, TC6, TC7, TC8, TC10, NS11, NS12, NS14, V16, R21, and R24) of the actual leadership performance (Table 5.62).

Table 5.62: ANOVA of Each Item in Leadership Quality by University Category

Items	Minimum Leadership Expectation		Desired Leadership Expectation		Real Leadership Expectation		Actual Leadership Performance	
	<i>F</i>	<i>Sig.</i>	<i>F</i>	<i>Sig.</i>	<i>F</i>	<i>Sig.</i>	<i>F</i>	<i>Sig.</i>
KC1	22.735	.000	19.066	.000	30.645	.000	13.038	.000
KC2	11.597	.000	4.426	.012	12.345	.000	4.556	.011
KC3	6.093	.002	4.743	.009	4.891	.008	5.504	.004
KC4	15.012	.000	1.050	.351	6.978	.001	10.498	.000
KC5	9.655	.000	5.664	.004	11.016	.000	2.456	.087
TC6	14.933	.000	8.292	.000	15.355	.000	12.516	.000
TC7	10.179	.000	7.637	.001	11.734	.000	4.413	.013
TC8	8.465	.000	6.886	.001	9.254	.000	4.655	.010
TC9	5.202	.006	5.230	.006	4.099	.017	2.877	.057
TC10	6.711	.001	4.414	.013	7.222	.001	4.718	.009
NS11	6.528	.002	9.262	.000	9.783	.000	4.435	.012
NS12	11.568	.000	3.122	.045	8.650	.000	3.342	.036
NS13	12.419	.000	2.864	.058	8.285	.000	1.626	.198
NS14	11.574	.000	15.225	.000	17.311	.000	13.486	.000
NS15	13.987	.000	2.353	.096	6.370	.002	.268	.765
V16	9.055	.000	6.413	.002	8.086	.000	5.096	.006
V17	7.081	.001	3.129	.045	5.684	.004	.018	.982
V18	12.126	.000	2.293	.102	7.453	.001	.134	.875
V19	11.444	.000	8.811	.000	10.051	.000	1.846	.159
V20	12.422	.000	3.965	.020	8.064	.000	2.394	.092
R21	13.946	.000	13.182	.000	18.103	.000	4.343	.013
R22	13.356	.000	3.263	.039	9.877	.000	.066	.936
R23	12.201	.000	6.079	.002	11.765	.000	.873	.418
R24	9.372	.000	4.191	.016	7.152	.001	3.431	.033
R25	14.045	.000	10.688	.000	17.311	.000	2.268	.105

Sig. = Significance, *F* = F-value, *KC* = Knowledge Competency, *TC* = Technical Competency, *NS* = Negotiation Skill, *V* = Visionary and *R* = Responsiveness

5.18 Individual Variations in the Leadership Quality Gaps

The overall, dimensional, and item-wise adequacy gap, superiority gap, and realistic gap were calculated. Finally, the individual difference in adequacy gap, superiority gap, and realistic gap among teachers, students, and researchers, as well as among the users of public, private, and international university libraries, were analyzed statistically using the analysis of variance (ANOVA) test.

5.18.1 Adequacy, Superiority, and Realistic Gaps in the Leadership Quality

The difference between Actual Leadership Performance and Minimum Leadership Expectation is known as the adequacy gap (ALP-MLE). The difference between desired leadership expectations and actual leadership performance is known as the superiority gap (ALP-DLE). For this study, the difference between Actual Leadership Performance and Real Leadership Expectation (ALP-RLE) is considered the realistic gap. For this study, the real leadership expectation is computed by taking the desired leadership expectation score, adding the minimal leadership expectation score, and dividing the result by two $[(MLE+DLE)/2]$.

With the exception of one item, it was discovered that there was no negative adequacy gap for any of the 24 leadership quality items among Bangladeshi university library professionals. The adequacy gaps for each item, however, were extremely close together, ranging from 0-.03 to 0.68, suggesting that the library professionals could provide their patrons with the minimal acceptable standards of leadership quality. Additionally, it was discovered that there was no positive superiority gap for any of the leadership quality components. On the other hand, all of the items' superiority gaps were extremely far from -0.80 to -1.03, suggesting that the library professionals did not fulfil the required standards of acceptable leadership quality for the patrons of the library. The result shows that there were no positive, realistic gaps for all the items of leadership quality. Thus, the realistic gaps of each item were far from -0.05 to -0.28, indicating that the library professionals did not meet the real leadership expectations of their users (Table 5.63).

This table demonstrates that while library professionals meet minimal acceptable standards (positive AG), they fall significantly short of both desired and realistic

expectations (negative SG and RG), indicating a need for improvement in leadership quality to better meet user expectations.

Table 5.63: Adequacy, Superiority, and Realistic Gaps in Leadership Quality

Items	Statements	AG	SD	SG	SD	RG	SD
KC1	Library professionals are knowledgeable	0.54	1.62	-1.00	1.49	-.23	1.37
KC2	They provide services as promised	0.64	1.60	-0.86	1.51	-.10	1.35
KC3	They emphasis on information literacy	0.61	1.61	-0.86	1.54	-.12	1.38
KC4	The library resources are organized in standard format	0.73	1.73	-0.83	1.49	-.05	1.41
KC5	All resources are easily accessible	-.03	1.30	-0.88	1.62	-.09	1.47
TC6	Library officers are technically sound	0.64	1.74	-0.88	1.60	-.11	1.49
TC7	Able to handle the technical issues	0.64	1.69	-0.80	1.62	-.08	1.48
TC8	They ensure technical support promptly to the users	0.74	1.69	-0.87	1.62	-.06	1.47
TC9	Able to guide users in technical problem	0.65	1.67	-0.93	1.50	-.13	1.41
TC10	Handles the library automation function properly	0.70	1.74	-0.89	1.54	-.09	1.45
NS11	Library officials are able to achieve sufficient budget	0.53	1.65	-0.98	1.63	-.22	1.43
NS12	Ensure infrastructural development”	0.63	1.66	-0.98	1.61	-.17	1.42
NS13	Makes sure library facilities”	0.63	1.75	-1.00	1.65	-.18	1.49
NS14	Looks confident	0.64	1.58	-0.79	1.46	-.07	1.34
NS15	Introduce new item and services in time	0.54	1.87	-0.99	1.76	-.22	1.63
V16	Library staffs are always positive to library development	0.62	1.64	-0.90	1.62	-.13	1.43
V17	Give attention to adopt modern technology”	0.46	1.78	-1.03	1.74	-.28	1.59
V18	Deal with users in a considerate manner	0.52	1.72	-0.85	1.64	-.16	1.51
V19	Vigorous to make top ranked university	0.53	1.74	-0.99	1.64	-.22	1.50
V20	Hold positive mind for positive change	0.61	1.70	-0.93	1.63	-.15	1.49
R21	Library professionals have willingness to assist users	0.55	1.65	-0.88	1.54	-.16	1.41
R22	They give priority of the user’s interest	0.55	1.65	-0.93	1.60	-.23	1.46
R23	They serve the users promptly	0.55	1.67	-0.84	1.56	-.14	1.43
R24	Make sure the regular update of library service”	0.46	1.71	-0.97	1.62	-.25	1.48
R25	They are available to get library service	0.68	1.75	-0.86	1.65	-.08	1.52

AG = Adequacy Gap, SG = Superiority Gap, RG = Realistic Gap, SD = Standard Deviation, KC = Knowledge Competency, TC = Technical Competency, NS = Negotiation Skill, V = Visionary and R= Responsiveness

5.18.2 Dimensional Adequacy, Superiority, and Realistic Gaps in Leadership Quality

Table 5.64 presents the dimensional adequacy, superiority, and realistic gaps in leadership quality within university libraries in Bangladesh. However, the adequacy gaps of the Knowledge Competency (0.64), Technical Competency (0.67), Negotiation Skill (0.60), Visionary (0.55), and Responsiveness (0.54) qualities of the library professionals were very close ranging from 0.54 to 0.67, indicating the library professionals were capable to meet the minimum acceptable leadership quality levels of all the leadership quality dimensions. In contrast, there were no positive superiority gaps across all dimensions, with values ranging from -0.87 to -0.94, i.e., KC (-.89), TC (-.87), NS (-.95), Visionary (-.94), and Responsiveness (-.90) of library professionals quality indicated that the library administrators did not meet the desired leadership expectations of any of the dimensions.

Furthermore, all dimensions showed negative realistic gaps, ranging from -0.09 to -0.19, i.e., KC (-0.12), TC (-0.09), NS (-0.17), Visionary (-0.19), and Responsiveness (-0.17) have the negative, realistic gaps indicating the library professionals did not meet the real leadership expectations of their users. However, the study results indicated that the university library professionals of Bangladesh were able to meet the minimum leadership expectation, but they were not able to meet the desired leadership expectation or real leadership expectation of their users.

Table 5.64: Dimensional Adequacy, Superiority, and Realistic Gaps

Dimensions	AG	SD	SG	SD	RG	SD
Knowledge Competency	0.64	1.24	-.89	1.20	-.12	1.05
Technical Competency	0.67	1.35	-.87	1.24	-.09	1.13
Negotiation Skill	0.60	1.29	-.95	1.28	-.17	1.11
Visionary	0.55	1.41	-.94	1.37	-.19	1.23
Responsiveness	0.54	1.39	-.90	1.35	-.17	1.21

AG = Adequacy Gap, SG = Superiority Gap, RG = Realistic Gap, SD = Standard Deviation

5.18.3 Overall Adequacy, Superiority, and Realistic Gaps in Leadership Quality

Table 5.65 provides an overview of the overall adequacy, superiority, and realistic gaps in leadership quality within university libraries in Bangladesh. The table indicates a positive overall adequacy gap of 0.57. This suggests that, on average, library professionals were capable of meeting the minimum acceptable leadership

level expected by their users. The overall superiority gap is negative, with a value of -0.91. This indicates that library professionals were generally unable to meet the desired leadership level expected by their users. Similarly, the overall realistic gap is negative, with a value of -0.15. This result suggests that library professionals were also unable to meet the real leadership expectations of their users.

Table 5.65: Overall Adequacy, Superiority, and Realistic Gaps

Gaps	N	Minimum	Maximum	Mean	SD
Adequacy Gap	513	-2.92	4.48	.57	1.09227
Superiority Gap	513	-5.00	5.72	-.91	1.13465
Realistic Gap	513	-3.66	3.40	-.15	.98250
Valid N (listwise)	513				

N = Number, SD = Standard Deviation

5.18.4 Adequacy, Superiority, and Realistic Gaps by User Category

Table 5.66 shows that there were only two items (KC5 and V19) have a negative adequacy gap for teachers and one item (KC5) have a negative AG for students. The results indicate that library professionals did not meet the teachers' minimum leadership expectations regarding “all resources are easily accessible” (-.13), and “vigorous to make top ranked university” (-0.02) and students' minimum leadership expectations regarding “all resources are easily accessible” (-.02). Except above mentioned 3 items; other items have a positive adequacy gap for the teachers, students and researchers, indicating the libraries were capable to meet the teachers', students' and researchers' minimum leadership expectations.

All the items have a negative superiority gap to the teachers, students, and researchers, indicating the libraries were not capable to meet the desired leadership expectations of their teachers, students, and researchers. Overall, the findings suggest that while library professionals were generally capable of meeting the minimum leadership expectations of users, they fell short of meeting both the desired and real leadership expectations across all user categories.

Table 5.66: Adequacy, Superiority, and Realistic Gaps by User Category

Item	Adequacy Gap			Superiority Gap			Realistic Gap		
	Teacher	Student	Researcher	Teacher	Student	Researcher	Teacher	Student	Researcher
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
KC1	.37	.56	.88	-1.37	-.94	-1.55	-.50	-.18	-.33
KC2	.28	.68	1.22	-1.31	-.79	-1.11	-.51	-.05	.05
KC3	.17	.68	.33	-1.29	-.79	-1.44	-.55	-.05	-.55
KC4	.43	.77	.88	-1.05	-.79	-1.33	-.31	-.00	-.22
KC5	-.13	-.02	.00	-1.10	-.84	-1.22	-.38	-.04	-.38
TC6	.37	.70	.00	-1.11	-.82	-2.00	-.37	-.06	-1.00
TC7	.61	.65	.11	-.89	-.77	-1.66	-.14	-.05	-.77
TC8	.58	.78	.33	-1.05	-.83	-1.66	-.23	-.02	-.66
TC9	.53	.67	.55	-.91	-.92	-1.33	-.18	-.12	-.38
TC10	.41	.74	.88	-1.01	-.87	-1.00	-.29	-.06	-.05
NS11	.26	.57	.66	-1.37	-.91	-1.66	-.55	-.17	-.50
NS12	.13	.72	.44	-1.53	-.88	-1.77	-.70	-.08	-.66
NS13	.26	.67	1.77	-1.35	-.94	-.88	-.54	-.13	.44
NS14	.19	.69	1.66	-1.28	-.71	-1.22	-.54	-.01	.22
NS15	.17	.58	1.33	-1.31	-.93	-1.22	-.56	-.17	.05
V16	.26	.64	2.11	-1.16	-.86	-.88	-.44	-.10	.61
V17	.10	.49	1.77	-1.31	-1.00	-.77	-.60	-.25	.50
V18	.13	.57	1.44	-1.26	-.78	-1.33	-.56	-.10	.05
V19	-.02	.60	1.33	-1.52	-.90	-1.22	-.77	-.14	.05
V20	.29	.65	1.44	-1.11	-.89	-1.33	-.41	-.12	.05
R21	.44	.53	2.22	-1.08	-.86	-.66	-.32	-.16	.77
R22	.44	.53	2.22	-1.08	-.91	-1.00	-.37	-.23	.33
R23	.31	.56	1.66	-1.13	-.79	-1.22	-.41	-.11	.22
R24	.32	.48	.88	-1.01	-.95	-1.44	-.34	-.23	-.27
R25	.31	.71	1.88	-.98	-.84	-.77	-.33	-.06	.55

KC = Knowledge Competency, TC = Technical Competency, NS = Negotiation Skill, V = Visionary and R= Responsiveness

5.18.4.1 Overall Leadership Quality Gaps by User Category

Table 5.67 shows the mean and standard deviation of the overall adequacy gap, superiority gap, and realistic gap in leadership quality by user category. The highest overall mean of adequacy gap was 1.124 for the researchers, followed by .611 for the students and .293 for the teachers. The highest overall mean of superiority gap was -1.271 for the researchers, followed by -1.188 for the teachers and -.865 for the

students. The highest overall mean of the realistic gap was -0.440 for the teachers, followed by -0.112 for the students and -0.075 for the researchers.

Table 5.67: Overall Leadership Quality Gaps by User Category

Leadership Quality Gaps		N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Mini mum	Maxi mum
						Lower Bound	Upper Bound”		
AG	Teacher	67	.293	1.40	.17	-.05	.63	-2.48	2.84
	Student	437	.611	1.02	.04	.51	.70	-2.92	4.48
	Researcher	9	1.124	1.34	.44	.09	2.15	-.88	2.92
	Total	513	.578	1.09	.048	.48	.67	-2.92	4.48
SG	Teacher	67	-1.188	1.33	.16	-1.51	-.86	-3.60	1.96
	Student	437	-.865	1.10	.05	-.96	-.76	-5.00	5.72
	Researcher	9	-1.271	0.82	.27	-1.90	-.63	-2.44	.28
	Total	513	-.914	1.13	.05	-1.01	-.81	-5.00	5.72
RG	Teacher	67	-.440	1.30	.15	-.75	-.12	-3.08	2.46
	Student	437	-.112	0.91	.04	-.19	-.02	-3.66	3.40
	Researcher	9	-.075	0.94	.31	-.80	.64	-1.34	1.26
	Total	513	-.154	0.98	.04	-.23	-.06	-3.66	3.40

AG = Adequacy Gap, SG = Superiority Gap, RG = Realistic Gap, SD = Standard Deviation, N = Number

5.18.4.2 ANOVA of Overall Leadership Quality Gaps by User Category

The user category computed the overall adequacy gap, superiority gap, and realistic gap in library professionals' quality by ANOVA. Table 5.68 shows that there was a significant difference in the overall adequacy gap ($p > 0.027$) among the teachers (0.293), students (0.611), and researchers (1.124). The result shows that there was a significant difference in the overall realistic gap ($p > 0.038$) among the teachers (-.440), students (-.112), and researchers (-.0751). It was also found that there was no significant difference in the superiority gap ($p > 0.060$) among the teachers (-1.118), students (-.865), and researchers (-.1.271).

Table 5.68: ANOVA of Overall Leadership Quality Gaps by User Category

Leadership Quality Gap		Sum of Squares	df	Mean Square	F	Sig.
AG	Between Groups	8.602	2	4.301	3.642	.027
	Within Groups	602.240	510	1.181		
	Total	610.842	512			
SG	Between Groups	7.249	2	3.625	2.836	.060
	Within Groups	651.915	510	1.278		
	Total	659.165	512			
RG	Between Groups	6.299	2	3.149	3.292	.038

	Within Groups	487.938		.957		
	Total	494.237	512			

AG = Adequacy Gap, SG = Superiority Gap, RG = Realistic Gap, Sig. = Significance, F = F-value

5.18.4.3 ANOVA of Dimensional Leadership Quality Gaps by User Category

The user category computed the dimensional adequacy gap, superiority gap, and realistic gap in library professionals' quality by ANOVA. Table 5.69 shows that there was a significant difference in three dimensions, i.e., negotiation skill ($p < 0.014$), visionary ($p < 0.004$), and responsiveness ($p < 0.019$) and there was no significant difference in two dimensions, i.e., knowledge competency ($p > 0.065$), technical competency ($p > 0.403$) in the adequacy gap among the teachers, students, and researchers. The result shows that there was a significant difference in the superiority gap of two dimensions, i.e., knowledge competency ($p < 0.022$) and negotiation skill ($p < 0.008$) among the teachers, students, and researchers. It is also found that there was a significant difference in three dimensions, i.e., knowledge competency ($p < 0.018$) and negotiation skill ($p < 0.006$) and visionary ($p < 0.021$) and there was no significant difference in the realistic gap of two dimensions, i.e., technical competency ($p > 0.214$), and responsiveness ($p > 0.220$) among the teachers, students, and researchers.

Table 5.69: ANOVA of Dimensional Leadership Quality Gaps by User Category

Leadership Quality Gap		Sum of Squares	df	Mean Square	F	Sig.
AG in Knowledge Competency	Between Groups	5.883	2	2.941	2.741	0.065
	Within Groups	547.300	510	1.073		
	Total	553.182	512			
AG in Technical Competency	Between Groups	3.340	2	1.670	.912	0.403
	Within Groups	934.261	510	1.832		
	Total	937.601	512			
AG in Negotiation Skill	Between Groups	14.197	2	7.098	4.295	.014
	Within Groups	842.815	510	1.653		
	Total	857.012	512			
AG in Visionary	Between Groups	21.615	2	10.807	5.525	.004
	Within Groups	997.609	510	1.956		
	Total	1019.223	512			
AG in Responsiveness	Between Groups	15.771	2	7.886	4.015	.019
	Within Groups	1001.553	510	1.964		
	Total	1017.325	512			
SG in	Between Groups	10.972	2	5.486	3.824	.022

Knowledge Competency	Within Groups	731.652	510	1.435		
	Total	742.623	512			
SG in Technical Competency	Between Groups	5.262	2	2.631	1.712	.182
	Within Groups	783.748	510	1.537		
	Total	789.010	512			
SG in Negotiation Skill	Between Groups	15.598	2	7.799	4.835	.008
	Within Groups	822.698	510	1.613		
	Total	838.296	512			
SG in Visionary	Between Groups	8.953	2	4.476	2.374	.094
	Within Groups	961.857	510	1.886		
	Total	970.810	512			
SG in Responsiveness	Between Groups	2.221	2	1.110	.600	.549
	Within Groups	943.309	510	1.850		
	Total	945.530	512			
RG in knowledge Competency	Between Groups	8.867	2	4.434	4.042	.018
	Within Groups	559.436	510	1.097		
	Total	568.303	512			
RG of Technical Competency	Between Groups	3.993	2	1.997	1.544	.214
	Within Groups	659.337	510	1.293		
	Total	663.331	512			
RG in Negotiation Skill	Between Groups	12.673	2	6.337	5.168	.006
	Within Groups	625.295	510	1.226		
	Total	637.969	512			
RG in Visionary	Between Groups	11.803	2	5.901	3.913	.021
	Within Groups	769.231	510	1.508		
	Total	781.034	512			
RG in Responsiveness	Between Groups	4.496	2	2.248	1.520	.220
	Within Groups	754.145	510	1.479		
	Total	758.641	512			

AG = Adequacy Gap, SG = Superiority Gap, RG = Realistic Gap, Sig. = Significance, F = F-value

5.18.4.4 ANOVA of Each Item in Leadership Quality Gaps by User Category

The user category computed the item-wise adequacy gap, superiority gap, and realistic gap in leadership quality by ANOVA. Table 5.70 shows a significant difference in the adequacy gap of the eleven items (KC3, NS12, NS13, NS14, V16, V17, V18, V19, R21, R22 and R25) among the teachers, students, and researchers. The result shows a significant difference in the superiority gap of seven items (KC1, KC2, KC3, TC6, NS11, NS12, V19 and T29) among the teachers, students, and researchers. It was also found that there was a significant difference in the realistic

gap of the five items (KC2, KC3, NS12, NS14 and V19) among the teachers, students, and researchers.

Table 5.70: ANOVA of Each Item in Leadership Quality Gaps by User Category

Item	Statements	Adequacy Gap		Superiority Gap		Realistic Gap	
		F	Sig.	F	Sig.	F	Sig.
KC1	Library professionals are knowledgeable	.605	.547	3.073	.047	1.517	.220
KC2	They provide services as promised	2.436	.089	3.556	.029	3.517	.030
KC3	They emphasis on information literacy	3.076	.047	3.806	.023	4.435	.012
KC4	The library resources are organized in standard format	1.178	.309	1.447	.236	1.423	.242
KC5	All resources are easily accessible	.213	.808	.962	.383	1.683	.187
TC6	Library officers are technically sound	1.659	.191	3.205	.041	2.852	.059
TC7	Able to handle the technical issues	.475	.622	1.425	.242	1.100	.334
TC8	They ensure technical support promptly to the users	.683	.506	1.644	.194	1.372	.255
TC9	Able to guide users in technical problem	.218	.804	.325	.723	.197	.822
TC10	Handles the library automation function properly	1.083	.339	.273	.761	.769	.464
NS11	Library officials are able to achieve sufficient budget	1.020	.361	3.102	.046	2.220	.110
NS12	Ensure infrastructural development”	3.709	.025	5.963	.003	6.114	.002
NS13	Makes sure library facilities”	3.478	.032	1.793	.167	2.952	.053
NS14	Looks confident	4.837	.008	4.868	.008	4.905	.008
NS15	Introduce new item and services in time	2.169	.115	1.391	.250	1.795	.167
V16	Library staffs are always positive to library development	5.394	.005	.982	.375	2.914	.055
V17	Give attention to adopt modern technology”	3.900	.021	1.020	.361	2.548	.079
V18	Deal with users in a considerate manner	3.193	.042	2.893	.056	2.788	.062
V19	Vigorous to make top ranked university	4.864	.008	4.222	.015	5.299	.005
V20	Hold positive mind for positive change	2.323	.099	.795	.452	1.171	.311
R21	Library professionals have willingness to assist users	4.843	.008	.728	.483	2.423	.090
R22	They give priority of the user’s interest	4.843	.008	.366	.694	.974	.378
R23	They serve the users promptly	2.708	.068	1.628	.197	1.549	.213

R24	Make sure the regular update of library service”	.507	.603	.430	.650	.149	.861
R25	They are available to get library service	3.712	.025	.222	.801	1.746	.176

AG = Adequacy Gap, SG = Superiority Gap, RG = Realistic Gap, Sig. = Significance, F = F-value

5.18.5 Adequacy, Superiority, and Realistic Gaps by University Category

Table 5.71 shows that all the items have a positive adequacy gap for the users of public, private and international university libraries except one item (KC5, -.19) in private and (KC5, -.15) international university indicating that public university library professionals meet their users' minimum leadership expectations regarding each of the leadership quality, and except one item, private and international university library professionals meet their users' minimum leadership expectations. The result shows that all the quality items have a negative superiority gap to the users of public, private, and international university libraries, indicating the public, private and international university library professionals were not capable to meet their users' desired leadership expectations regarding each of the qualities.

The result shows that all the quality items have a negative-realistic gap to the users from public university, except 1 item (KC4), all quality items have a negative-realistic gap to the users of private university and 6 items (KC1, KC3, KC5, NS11, R21, R24) has a negative-realistic gap to the users of international university libraries, indicating the public, private and international university library professionals sometimes did not meet their users' real leadership expectations, sometimes they meet the users real expectations regarding specific leadership qualities.

Table 5.71: Adequacy, Superiority, and Realistic Gaps by University Category

Item	Adequacy Gap			Superiority Gap			Realistic Gap		
	<i>Public</i>	<i>Private</i>	<i>Int.</i>	<i>Public</i>	<i>Private</i>	<i>Int.</i>	<i>Public</i>	<i>Private</i>	<i>Int.</i>
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
KC1	.58	.38	1.03	-1.00	-1.01	-1.06	-.20	-.31	-.01
KC2	.68	.48	1.21	-.90	-.82	-.78	-.10	-.17	.21
KC3	.54	.63	1.12	-.92	-.72	-1.27	-.18	-.04	-.07
KC4	.55	.80	1.93	-1.00	-.56	-.90	-.22	.11	.51
KC5	.07	-.19	-.15	-.85	-.88	-1.12	-.04	-.18	-.03
TC6	.58	.60	1.42	-.97	-.75	-.81	-.19	-.07	.30

TC7	.64	.51	1.42	-.79	-.84	-.72	-.07	-.16	.34
TC8	.72	.68	1.30	-.87	-.83	-1.12	-.07	-.07	.09
TC9	.61	.54	1.72	-.90	-1.00	-.81	-.14	-.22	.45
TC10	.67	.66	1.18	-.92	-.82	-1.06	-.12	-.07	.06
NS11	.52	.46	1.03	-.95	-.99	-1.24	-.21	-.26	-.10
NS12	.63	.52	1.36	-1.00	-.91	-1.21	-.18	-.19	.07
NS13	.62	.47	1.69	-1.00	-.97	-1.09	-.19	-.25	.30
NS14	.56	.64	1.33	-.83	-.72	-.87	-.13	-.03	.22
NS15	.63	.21	1.69	-.94	-1.03	-1.18	-.15	-.41	.25
V16	.61	.41	1.87	-.89	-.95	-.66	-.13	-.27	.60
V17	.51	.24	1.24	-.93	-1.19	-1.06	-.20	-.46	.09
V18	.65	.22	1.18	-.77	-.94	-1.12	-.05	-.36	.03
V19	.54	.33	1.63	-.91	-1.08	-1.12	-.18	-.37	.25
V20	.57	.52	1.57	-.94	-.88	-1.15	-.18	-.18	.21
R21	.61	.37	1.03	-.81	-.95	-1.15	-.10	-.29	-.06
R22	.61	.37	1.03	-.83	-1.06	-1.09	-.13	-.45	.09
R23	.63	.32	1.21	-.75	-.95	-1.06	-.06	-.31	.07
R24	.44	.36	1.30	-.99	-.92	-1.06	-.27	-.27	-.12
R25	.73	.43	1.63	-.80	-.98	-.69	-.03	-.27	.46

Int. = International, *KC* = Knowledge Competency, *TC* = Technical Competency, *NS* = Negotiation Skill, *V* = Visionary, *R* = Responsiveness

5.18.5.1 Overall Leadership Quality Gaps among University Categories

Table 5.72 displays the average and variability of the overall adequacy gap, superiority gap, and realistic gap in leadership quality throughout the university libraries of Bangladesh. The users of international universities had the largest overall mean of adequacy gap, which was 1.322. This was followed by the users of public universities, who had a mean adequacy gap of .583, and the users of private universities, who had a mean adequacy gap of .441.

The users of international universities had the largest overall mean of superiority gap, which was -1.019. This was followed by -0.914 for the users of public universities and -0.902 for the users of private universities. The users of private universities had the largest overall mean of the realistic gap, which was -.225. The users of international institutions had a mean of .180, while the users of public universities had a mean of -.146.

Table 5.72: Overall Leadership Quality Gaps among University Categories

		N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
AG	Public	290	.583	1.03	.06	.4641	.7028	-2.92	4.48
	Private	190	.441	1.17	.08	.2742	.6096	-2.92	4.08
	International	33	1.322	.819	.14	1.0318	1.6130	.04	3.52
	Total	513	.578	1.09	.04	.4838	.6733	-2.92	4.48
SG	Public	290	-.902	1.09	.06	-1.0289	-.7761	-5.00	1.96
	Private	190	-.914	1.24	.09	-1.0933	-.7355	-4.76	5.72
	International	33	-1.019	.74	.12	-1.2824	-.7564	-2.64	.28
	Total	513	-.914	1.13	.05	-1.0129	-.8160	-5.00	5.72
RG	Public	290	-.146	.94	.05	-.2553	-.0370	-3.66	2.46
	Private	190	-.225	1.07	.07	-.3801	-.0717	-3.08	3.40
	International	33	.180	.62	.10	-.0398	.4011	-1.26	1.70
	Total	513	-.154	.98	.04	-.2399	-.0695	-3.66	3.40

AG = Adequacy Gap, SG = Superiority Gap, RG = Realistic Gap, SD = Standard Deviation, N = Number

5.18.5.2 ANOVA of Overall Leadership Quality Gaps among University Categories

An analysis of variance (ANOVA) was used by the university category to calculate the general adequacy gap, superiority gap, and realistic gap in the quality of leadership exhibited by librarians. Table 5.73 indicates a significant variance in the overall adequacy gap ($p < 0.000$) among users of public (.583), private (.441), and international universities (1.322). The findings indicate that there was no statistically significant variation in the overall superiority gap ($p < 0.855$) among users of public (-.902), private (-0.914), and international universities (-1.019). Additionally, it was shown that there was no statistically significant variation in the realistic gap ($p < 0.088$) between users of public (-0.146), private (-0.225), and overseas universities (-0.180).

Table 5.73: ANOVA of Overall Leadership Quality Gaps by University Category

Leadership Quality Gaps		Sum of Squares	df	Mean Square	F	Sig.
AG	Between Groups	21.815	2	10.908	9.444	.000
	Within Groups	589.027	510	1.155		
	Total	610.842	512			
SG	Between Groups	.405	2	.202	.157	.855
	Within Groups	658.760	510	1.292		

	Total	659.165	512			
RG	Between Groups	4.696	2	2.348	2.446	.088
	Within Groups	489.541	510	.960		
	Total	494.237	512			

AG = Adequacy Gap, SG = Superiority Gap, RG = Realistic Gap, Sig. = Significant, F = F-value

5.18.5.3 ANOVA of Dimensional Leadership Quality Gaps by University Category

The university category computed the dimensional adequacy gap, superiority gap, and realistic gap in library service quality by ANOVA. Table 5.74 shows that there was a significant difference in the adequacy gap of all dimensions, i.e., knowledge competency ($p < 0.008$), technical competency ($p < 0.005$), negotiation skill ($p < 0.000$), visionary ($p < 0.000$), and responsiveness ($p < 0.003$) among the users of public, private, and international universities.

The result shows that there was no significant difference in the superiority gap of all dimensions, i.e., knowledge competency ($p < 0.389$), technical competency ($p < 0.924$), negotiation skill ($p < 0.728$), visionary ($p < 0.607$), and responsiveness ($p < 0.488$) among the users of public, private, and international universities.

It is also found that there was a significant difference in the realistic gap of one dimension visionary ($p < 0.035$). However, there were no significant disparities observed in the other four dimensions, namely knowledge competency ($p < 0.363$), technical competency ($p < 0.187$), negotiation skill ($p < 0.189$), and responsiveness ($p < 0.060$), among users of public, private, and international universities.

Table 5.74: ANOVA of Dimensional Leadership Quality Gaps by University Category

Leadership Quality Gap		Sum of Squares	df	Mean Square	F	Sig.
AG in Knowledge Competency	Between Groups	10.434	2	5.217	4.902	.008
	Within Groups	542.748	510	1.064		
	Total	553.182	512			
AG in Technical Competency	Between Groups	19.220	2	9.610	5.337	.005
	Within Groups	918.382	510	1.801		
	Total	937.601	512			
AG in Negotiation Skill	Between Groups	25.936	2	12.968	7.958	.000
	Within Groups	831.075	510	1.630		
	Total	857.012	512			
AG in	Between Groups	38.066	2	19.033	9.893	.000

Visionary	Within Groups	981.157	510	1.924		
	Total	1019.223	512			
AG in Responsiveness	Between Groups	22.564	2	11.282	5.784	.003
	Within Groups	994.760	510	1.951		
	Total	1017.325	512			
SG in Knowledge Competency	Between Groups	2.742	2	1.371	.945	.389
	Within Groups	739.881	510	1.451		
	Total	742.623	512			
SG in Technical Competency	Between Groups	.244	2	.122	.079	.924
	Within Groups	788.766	510	1.547		
	Total	789.010	512			
SG in Negotiation Skill	Between Groups	1.043	2	.522	.318	.728
	Within Groups	837.253	510	1.642		
	Total	838.296	512			
SG in Visionary	Between Groups	1.899	2	.950	.500	.607
	Within Groups	968.910	510	1.900		
	Total	970.810	512			
SG in Responsiveness	Between Groups	2.654	2	1.327	.718	.488
	Within Groups	942.876	510	1.849		
	Total	945.530	512			
RG in Knowledge Competency	Between Groups	2.255	2	1.128	1.016	.363
	Within Groups	566.048	510	1.110		
	Total	568.303	512			
RG in Technical Competency	Between Groups	4.347	2	2.174	1.682	.187
	Within Groups	658.983	510	1.292		
	Total	663.331	512			
RG in Negotiation Skill	Between Groups	4.149	2	2.075	1.669	.189
	Within Groups	633.819	510	1.243		
	Total	637.969	512			
RG in Visionary	Between Groups	10.228	2	5.114	3.384	.035
	Within Groups	770.806	510	1.511		
	Total	781.034	512			
RG in Responsiveness	Between Groups	8.338	2	4.169	2.834	.060
	Within Groups	750.303	510	1.471		
	Total	758.641	512			

AG = Adequacy Gap, SG = Superiority Gap, RG = Realistic Gap, Sig. = Significance, F = F-value, DF = Degrees of Freedom

5.18.5.4 ANOVA of Each Item in Leadership Quality Gaps by University Category

The university category calculated the item-wise adequacy gap, superiority gap, and realistic gap in librarians' leadership quality by ANOVA. Table 5.75 indicates that

there was a significant difference in the adequacy gap of 17 items (KC2, KC4, TC6, TC7, TC9, NS12, NS13, NS14, NS15, V16, V17, V18, V19, V20, R23, R24 and R25) among the users of public, private, and international universities. The result finds a significant difference in the superiority gap of one item (KC4) among the users of public, private, and international universities. It is also found that there was a significant difference in the realistic gap of four items (KC4, TC9, V16, R22, and R25) among the users of the selected universities.

Table 5.75: ANOVA of Each Item in Leadership Quality Gaps by University Category

Item	Statements	Adequacy Gap		Superiority Gap		Realistic Gap	
		F	Sig.	F	Sig.	F	Sig.
KC1	Library professionals are knowledgeable	2.47	.085	.025	.976	.775	.461
KC2	They provide services as promised	3.11	.045	.196	.822	1.128	.325
KC3	They emphasis on information literacy	1.93	.146	2.173	.115	.663	.516
KC4	The library resources are organized in standard format	10.09	.000	5.201	.006	6.395	.002
KC5	All resources are easily accessible	2.66	.071	.411	.663	.522	.593
TC6	Library officers are technically sound	3.57	.029	1.129	.324	1.784	.169
TC7	Able to handle the technical issues	4.15	.016	.089	.915	1.706	.183
TC8	They ensure technical support promptly to the users	1.93	.145	.428	.652	.194	.823
TC9	Able to guide users in technical problem	7.45	.001	.338	.714	3.324	.037
TC10	Handles the library automation function properly	1.31	.270	.453	.636	.247	.781
NS11	Library officials are able to achieve sufficient budget	1.67	.188	.460	.631	.195	.823
NS12	Ensure infrastructural development”	3.60	.028	.528	.590	.537	.585
NS13	Makes sure library facilities”	6.98	.001	.067	.935	1.956	.142
NS14	Looks confident	3.53	.030	.395	.674	1.220	.296
V15	Introduce new item and services in time	9.85	.000	.371	.691	2.989	.051
V16	Library staffs are always positive to library development	11.64	.000	.456	.634	5.340	.005
V17	Give attention to adopt modern technology”	4.74	.009	1.196	.303	2.399	.092
V18	Deal with users in a considerate manner	6.35	.002	1.097	.335	2.642	.072
V19	Vigorous to make top ranked university	8.04	.000	.700	.497	2.782	.063
V20	Hold positive mind for positive change	5.68	.004	.364	.695	1.087	.338
R21	Library professionals have willingness to assist users	2.70	.068	1.036	.356	1.165	.313
R22	They give priority of the user’s	2.70	.068	1.328	.266	3.736	.024

	interest						
R23	They serve the users promptly	4.75	.009	1.330	.265	2.303	.101
R24	Make sure the regular update of library service”	4.38	.013	.167	.846	1.106	.332
R25	They are available to get library service	7.01	.001	.888	.412	3.862	.022

KC = Knowledge Competency, TC = Technical Competency, NS = Negotiation Skill, V = Visionary, R = Responsiveness, F= F-value, Sig. = Significant

5.19 Conclusion

In conclusion, the impact of leadership quality dimensions on user satisfaction in university libraries cannot be assessed based on a single criterion. Multiple variables must be considered simultaneously to determine the significance of leadership quality. The demographic data of the sample showed a diverse representation, suitable for Structural Equation Modeling (SEM) analysis. The KMO values confirmed that the 513 samples were statistically adequate for path analysis, and Bartlett's test indicated the data's internal consistency was appropriate. The alpha values demonstrated good reliability of the questionnaire items. Additionally, the RHO_A coefficient and construct reliability values confirmed that all variables were internally consistent and reliable. The square root of the Average Variance Extracted (AVE) demonstrated the presence of discriminant validity in the model. Factor analysis identified six significant variables for path analysis. The Pearson correlation and Variance Inflation Factor (VIF) values indicated a strong correlation among the predictors, showing no multicollinearity issues in the SEM model. The Durbin-Watson value indicated positive autocorrelation in the residuals of the SEM.

The study successfully met its research objectives and hypotheses. It was found that two leadership quality dimensions—technical competency and responsiveness—significantly influenced user satisfaction, whereas knowledge competency, negotiation skill, and visionary did not significantly influence user satisfaction in university libraries in Bangladesh. The study revealed significant differences between users' overall desired and real leadership expectations, although no significant differences were found in their overall actual leadership performance of library professionals. Significant differences were found in users' expectations regarding Knowledge Competency, Technical Competency, Visionary, and Responsiveness, but not in Negotiation Skill. There were no significant differences in actual leadership performance across Knowledge Leadership, Technical Competency, Negotiation

Skill, Visionary, and Responsiveness in university libraries. These findings suggest a misalignment between the expectations and perceptions of library patrons and the actual leadership roles performed by library professionals. Overall, notable differences were observed in leadership quality perceptions and expectations among users from public, private, and international universities in Bangladesh. ANOVA results highlighted significant disparities in leadership quality perceptions among these different types of universities.

The study indicated that university library professionals in Bangladesh met the minimum leadership expectations but failed to meet the desired or real leadership expectations of their users. Significant differences were found in the overall adequacy and superiority gaps among users, but no significant differences were observed in the realistic gap. The study identified significant differences in negotiation skill, visionary, and responsiveness dimensions within the adequacy gap, and in knowledge competency and negotiation skill within the superiority gap. Additionally, significant differences were found in knowledge competency, negotiation skill, and visionary dimensions.

Item-wise analysis revealed significant differences in the adequacy gap for eleven out of twenty-five items among users, significant differences in the superiority gap for seven items, and significant differences in the realistic gap for five items. Most items showed a positive adequacy gap, indicating that library professionals met minimum leadership expectations. However, all items showed a negative superiority gap, indicating that library professionals did not meet the desired leadership expectations. The realistic gap varied, with library professionals sometimes meeting and sometimes not meeting users' real expectations regarding specific leadership qualities. The findings indicated no statistically significant variation in the overall superiority gap among users of university libraries. There was a significant difference in the adequacy gap across all dimensions, no significant difference in the superiority gap, and a significant difference in the realistic gap for one dimension among users of public, private, and international universities. Item-wise analysis showed significant differences in the adequacy gap for seventeen items, in the superiority gap for one item, and in the realistic gap for four items among users of the selected universities.

CHAPTER SIX

CHAPTER: SIX

Discussions

6.1 Introduction

This study aims to assess the influence of knowledge and leadership quality on user satisfaction and to identify the variations in leadership quality and gaps, such as adequacy gap, superiority gap, and realistic gap, among users and university categories in the university libraries of Bangladesh. The study also examined the overall, dimensional, and item-wise leadership quality and the gap in leadership quality, as well as evaluated user happiness. Structural Equation Modeling (SEM) is utilized to assess the influence of different characteristics of leadership quality on user satisfaction, using the LEADQUAL instruments. The model was modified to align with the specific arrangements of the university libraries, following consultation with several LIS researchers. The SEM encompassed the utilization of path analysis, along with the assessment of construct dependability and validity. The SmartPLS4 software was utilized to do confirmatory factor analysis, exploratory factor analysis, path analysis, and assess construct reliability and validity. These analyses were conducted to determine the substantial influence of leadership quality dimensions of library professionals on customer satisfaction. Descriptive statistics were used to apply the SPSS 23rd to measure the overall, dimensional, and item-wise quality of library leadership, user satisfaction, and gaps in library leadership quality. ANOVA was used to calculate the differences in leadership quality among library professionals and librarians based on user and university categories. In addition, a variety of statistical techniques were employed to assess the sufficiency of the sampling, the dependability, the accuracy, and the appropriateness of the model.

A study was conducted among users of public, private, and international university libraries, comprising teachers, students, and researchers, utilizing a standardized questionnaire. In addition, data were gathered from the Librarians/library administrators of the chosen university libraries regarding their current resources, systems, services, facilities, and staff using a standardized questionnaire to document their library activities. This chapter covers various topics including sampling adequacy, reliability, validity, and

model fitness. It also discusses the current status of university libraries, their performance, user satisfaction, and the impact of library professionals' quality dimensions on user satisfaction. Additionally, it explores individual differences in librarians' leadership quality, adequacy, superiority, and realistic gaps. The chapter presents a summary of hypotheses, inter-correlations among major areas of the study, a comparison with existing results, and the relationship of the study with contemporary issues.

6.2 Evaluation of Sampling Adequacy, Reliability, Validity, and Fitness of SEM

The study employed the KMO and Bartlett's Test of Sphericity to assess the appropriateness of the sample size (Table 4.3). The reliability of the data was assessed using the Cronbach's alpha coefficient, RHO_A coefficient, and composite reliability (Table 4.5). The model was validated using various statistical methods, including discriminant validity, factor analysis, scree plot, Durbin Watson statistic, convergent validity, item loading, commonalities and collinearity statistics (Table 4.6, 4.7, 4.8, 4.9 Figure 4.1,).

6.2.1 Adequacy of Sampling

The sample size of 513 participants consists of 67 teachers, 437 students, and 09 researchers. Among them, 290 are from public universities, 190 are from private universities, and 33 are from international universities. There are 269 male users and 244 female users. This sample size is appropriate for conducting multivariate analysis and meets the criteria set by Sekaran (2003) and Roscoe (1975). The KMO values for knowledge competency, technical competency, negotiation skill, visionary, responsiveness, satisfaction, and all items are 0.848, 0.866, 0.844, 0.872, 0.875, 0.929, and 0.848, respectively. These values exceed the threshold of 0.7 (Kaiser, 1974; Leech et al., 2005), indicating that the 513 samples are statistically sufficient for conducting the path analysis. The Bartlett's test values for overall leadership quality, knowledge competency, technical competency, negotiation skill, visionary, responsiveness, satisfaction, and all items are less than the threshold of ($p < 0.05$) (Schierholz & Laukkanen, 2007), indicating that the internal consistency of these data is appropriate. The p-values for all these variables are less than 0.001 (Table 4.3).

6.2.2 Test of Reliability

The alpha coefficient for all items ($\alpha=0.890$), knowledge competency ($\alpha=0.864$), technical competency ($\alpha=0.884$), negotiation skill ($\alpha=0.854$), visionary ($\alpha=0.904$), responsiveness ($\alpha=0.912$), and satisfaction ($\alpha=0.926$) were higher than the threshold of 0.7 (Nunnally, 1978), indicating good reliability of overall questionnaire items. The RHO_A values of knowledge competency (0.867), technical competency (0.885), negotiation skill (0.858), visionary (0.906), responsiveness (0.913), and satisfaction (0.931) constructs exceed the value of threshold 0.7 (Dijkstra & Henseler, 2015) indicated that all the variables are internally consistent and reliable. The composite reliability values of knowledge competency (0.864), technical competency (0.885), negotiation skill (0.853), visionary (0.904), responsiveness (0.912), and satisfaction (0.926) constructs exceed the value of threshold 0.7 (Dijkstra & Henseler, 2015) indicated that all the variables are internally consistent and reliable. The AVE values of knowledge competency (0.561), technical competency (0.606), negotiation skill (0.539), visionary (0.654), responsiveness (0.676), and satisfaction (0.558) were more significant than the limit of 0.50 as recommended by Bagozzi and Yi (1988) which supported the convergent validity among all the variables (Table 4.5).

6.2.3 Validity Test

To validate the model, many statistical methods were employed, including Discriminant validity, Factor analysis, Scree plot, Durbin Watson statistic, Commonalities, and Collinearity statistics.

The **Alpha coefficient** for each factor (ranging from 0.773 to 0.685) was comparable to the correlation between the factors, suggesting the presence of discriminant validity in the model (Table 4.6). The findings indicated that all constructs demonstrated adequate discriminant validity, as evidenced by the fact that the square root of the average variance extracted (AVE) for each construct was greater than the correlations between constructs. This suggests that both convergent and discriminant validities support the construct validity of the model (Fornell & Larcker, 1981).

The outcomes of a **Factor analysis** offer compelling proof of the dataset's appropriateness for path analysis. The initial eigenvalues suggest that the first four components are responsible for a substantial amount of the variance. Specifically,

Component 1 explains 49.253% of the variance, Component 2 explains 6.897%, Component 3 explains 4.300%, and Component 4 explains 2.983%. Post-rotation, these components collectively account for 63.433% of the total variation, indicating the existence of unique elements that can be efficiently utilized in path analysis. The rotation sums of squared loadings indicate that the variance is spread more uniformly among these components after rotation, which improves the interpretability of the data (Table 4.7). The observed distribution indicates that the elements are clearly defined and separate, which makes them appropriate for inclusion in a route model.

The **Scree plot** indicates that the needed loading factors had an eigenvalue larger than one, suggesting that the variables were significant for doing the route analysis (Figure 4.1).

The **Durbin-Watson** value of 1.419 indicates the presence of positive autocorrelation in the residuals of the regression analysis. In addition, the study provides summary statistics for the regression analysis that investigates the influence of leadership quality factors on customer happiness in university libraries. The predictors, namely knowledge competency, technical competency, negotiation skill, visionary, and responsiveness, exhibit a high positive link with customer satisfaction, as evidenced by the correlation coefficient (R) of 0.726. The model accounts for roughly 52.7% of the variation in satisfaction, as shown by an R Square value of 0.527. The modified R Square value of 0.522 further confirms the strong explanatory capability of the model. The estimate's standard error is 0.78350, suggesting that the model fits the data reasonably well (Table 4.8).

The **Commonalities** of the variables extracted between 0.601 and 0.774 for 35 statements out of 35, indicating the variance in most of the statements is within a suitable range (Table 4.9).

The **VIF (Variance Inflation Factor)** values for all items range from 2.967 to 3.958, indicating the absence of any symptoms of multicollinearity among the items. The collinearity data indicate that the VIF values for knowledge competency, technical competency, negotiation skill, visionary, and responsiveness are 2.967, 3.266, 3.275, 3.958, and 3.642 respectively. These numbers suggest that there are no symptoms of

multicollinearity. The VIF values ranging from 2.627 to 3.958 suggest a moderate correlation between the predictors, and there is no evidence of multicollinearity in the SEM model (Table 4.9).

6.2.4 Fitness of the Model

The R Square value (0.527) signifies that approximately 52.2% of the variation in user satisfaction can be explained by the leadership quality dimensions included in the model. The Adjusted R Square value (0.522) takes into account the number of predictors in the model, providing a more conservative estimate of the proportion of variance explained. The standard error of the estimate (0.78350) indicates the average difference between the observed values and the values predicted by the model (Table 4.8). Lower values indicate better model fit. Additionally, the R Square Change and F Change, which provide information about the improvement in model fit when adding predictors. The overall model is deemed significant, as indicated by the F-statistic ($F(5,507)=112.961$, $p<0.001$), suggesting that the model as a whole has explanatory power in predicting user satisfaction and recommended that the entire model is recognized as significant. Based on the above discussion, it may be inferred that the SEM was acknowledged as a measure of the adequacy of model fit. In addition, multiple statistical approaches confirmed the sufficiency of the sampling, as well as the reliability and validity of the model.

6.3 The Current State of the Chosen University Libraries in Bangladesh

To assess the influence of knowledge and leadership quality on user satisfaction in chosen university libraries, this study examines the current state of printed and electronic resources, the academic qualifications of library staff, the range of general and innovative services offered, and the physical facilities available in these libraries.

6.3.1 Library Staff and their Knowledge Competency

The study provides valuable insights into the organizational structure and human resource allocation within university libraries, facilitating a deeper understanding of staffing dynamics and resource management practices in the academic library sector. Among the twenty university libraries, the Dhaka University Library had the highest number of library staff (185), whereas the Asian University for Women had the lowest number of library staff (5). The twenty-two selected university libraries had a total of

663 library staff. Among them, 19 were Librarian/Equivalent, 63 were Deputy Librarians/Equivalent, 84 were Assistant Librarians/ Equivalent, 91 were Executive/ Library Officers/ Equivalent, and 57 were Assistant Executive /Assistant Library Officers/Equivalent, 127 were Library Assistant/Attendant/Book Sorters/Equivalent, and 212 were Peon/MLSS/Gate keeper/Equivalent in the twenty university libraries of Bangladesh (Table 5.2). The study revealed that a total of 61 library staff members have completed Certificate courses in LIS, with 57 from public universities and 4 from private universities. There are 71 library staff members who hold Diplomas in LIS, with 56 from public universities and 15 from private universities. A total of 70 library staff members have Bachelor's degrees in LIS, with 44 from public universities and 26 from private universities. The highest number of library staff members, totaling 146, holds Master's degrees in LIS, with 81 from public universities, 61 from private universities, and 4 from international universities. Seven library staff members have MPhil degrees in LIS, with 3 from public universities, 3 from private universities, and 1 from an international university. Six library staff members have attained PhD degrees in LIS, with 4 from public universities and 2 from private universities. Overall, out of the total 653 library professionals, 361 (55.28%) members hold degrees in Library and Information Science. Public universities contribute the highest number of staff with LIS degrees, followed by private universities. International university libraries have a smaller proportion of staff with LIS degrees compared to their counterparts (Table 5.7).

The study found that a total of 40 library staff members have completed certificate courses in ICT, with 28 from public universities, 7 from private universities, and 5 from international universities. There are 42 library staff members holding diplomas in computer science/ICT, with 33 from public universities and 9 from private universities. Five library staff members possess bachelor's degrees in ICT, with 2 from public universities and 3 from private universities. Two library staff members have master's degrees in ICT, with 1 each from public and private universities. There are no library staff members reported to have attained MPhil or PhD degrees in ICT among the surveyed institutions. Overall, out of the total 653 library staff, 89 (13.62%) staff hold degrees in Information and Communication Technology. Public universities contribute the highest number (64, 9.80%) of staff with ICT degrees, followed by private universities (20, 3.06%), while international university libraries have a smaller

proportion (5, 0.76%) of staff with ICT degrees compared to their counterparts (Table 5.8).

6.3.2 Participation in Professional Training Course and Seminar

The study revealed the engagement of library professionals in professional courses, workshops, and training programs across public, private, and international university libraries in Bangladesh. The study found that workshops on library automation software and Digital library software had the highest overall participation rate, with 23.2% of staff members from all universities attending. a significant participation rate of 14.6% involved with the course of plagiarism checker, Around 13.4% of library staff participated in the database management course, Approximately 11% of staff members attended in Archives Management course, Training on Statistical Analysis had a participation rate of 11.2%, and the workshop on Reference Management Software had the lowest participation rate, with only 2.4% of staff members attending (Table 5.9)..

Private universities showed the highest overall participation rate, with 47.6% of staff members attending various courses. Public universities closely followed, with a participation rate of 46.3%. Although fewer in number, international universities had a participation rate of 6.1%. Overall, there is active engagement among library staff from all types of universities in various professional courses, workshops, and training programs, indicating a commitment to enhancing their skills and competencies in library management and information services (Table 5.9).

The study revealed that seminars organized by Professional bodies had the highest participation rate among library staff, with 16.2% attending seminars organized by professional bodies like LAB, BALID, and MEDLAB. Following closely, seminars organized at the national level saw a participation rate of 16.2%. Similar to seminars, conferences organized by professional bodies also had a high participation rate of 16.2%. Around 15.3% of library staff participated in conferences organized by universities. Seminars organized by other skilled development programs had a participation rate of 14.4%. Approximately 13.6% of library staff attended international conferences held abroad. Conferences organized by associations like ASIS&T, IFLA, etc. had the lowest participation rate, with only 8.1% of library staff attending.

Library staff from public universities had the highest overall participation rate, with 51.4% attending various seminar and conference programs. Following closely, library staff from private universities had a participation rate of 46.8%. Although fewer in number, library staff from international universities had a participation rate of 1.8% (Table 5.10).

6.3.3 Engagement with Professional Body

The study identified that the Library Association of Bangladesh (LAB) had the highest number of library staff engagement, with 125 participants, accounting for 62.81% of the total. Following closely, BALID saw participation from 67 library staff members, constituting 33.66% of the total. The Medical Library Association of Bangladesh (MEDLAB) had minimal participation, with only 1 member. IFLA (International Federation of Library Association) had 4 participants, representing 2.01% of the total. The Association of Information Science and Technology (ASIS&T) had 1 participant. The American Library Association (ALA), The British Library Association (BLA), and The Asian Library Association (ASIALA) these associations had no participation, Special Library Association (SLA): SLA had 1 participant.

Library staff from public universities had the highest participation rate in professional bodies, with 64.82% of the total participants. Library staff from private universities followed, with 33.66% of the total participants. Engagement from international universities was minimal, with only 1.50% of the total participants (Table 5.11).

The study found that there were a total of 3 (7.7%) presidents across the participating universities, with 2 from private universities and 1 from a public university, making up 7.7% of the total positions. 6 (15.7%) vice presidents were identified, with an equal distribution of 3 each from public and private universities. No vice presidents were reported from international universities. 2 (5.1%) general secretaries were identified, with one each from public and private universities. The majority of positions, constituting 12 (30.8%) of the total, were held by members, with an almost equal distribution between public and private universities and one member from an international university. 4 (10.3%) treasurers were identified, with 3 from public universities and 1 from a private university. 7 (17.9%) councilors were identified, with 5 from public universities and 2 from private universities. Country

Cocoordinator/Representative/Chapter Chair held 4 (10.3%) positions, with 1 from a public university and 3 from private universities. Officer/Social Media Officer/Webmaster/Equivalent held by 1 (2.6%) individual from a private university. Across all positions, there was an equal distribution between public and private universities, with each category accounting for 48.7% of the total positions. Only one position (2.7%) was held by a member from an international university (Table 5.12).

6.3.4 Training and Promotional Activities

The study highlighted the proactive approach initiated by university libraries in enhancing the skills of their library staff through diverse training programs. The study revealed that overall, 76.88 percent of the training programs were done in the university libraries of Bangladesh. The height proportion of the training programs arranged in private university libraries (93.75%) followed by public university libraries (65.89%) and international university libraries (62.5%) in Bangladesh. Among the eight training programs, the highest number of university libraries (19, 95.0%) organized in-house training programs on library automation and digital library management systems for their library staff, whereas the lowest number of university libraries (12, 60.0%) in Bangladesh arranged managerial training program for their staff (Table 5.13).

According to the study, the overall, 63.57 percent of the promotional activities were done in the university libraries of Bangladesh. The height proportion of the promotional activities were done in the private university libraries (82.14%) followed by international university libraries (57.14%) and public university libraries (51.94%) in Bangladesh. Among the seven promotional activities, the highest number of university libraries (18, 90.0%) arranged library orientation program for the library users, whereas the lowest number of university libraries (7, 35.0%) in Bangladesh published newsletter (Table 5.14).

6.3.5 Library Space, Seating Capacity, Library Hours and Library Digitization

The study revealed that 55% of the university libraries have separate buildings dedicated solely to library functions, while the remaining libraries operate within a section of the main building. Seating capacity varies across institutions, with values ranging from 78 to 1500 seats, reflecting differences in library size and user demand. Opening hours also

vary, with libraries operating for durations ranging from 10.5 to 14 hours per day, and opening days spanning approximately six days per week on average (Table 5.3).

The study presents information on library automation and digitization efforts across the selected university libraries. The study identified that all the university libraries used Koha Integrated Library System to build automation, whereas only Bangabandhu Sheikh Mujib Medical University (BSMMU) used SLiMS software. Among them, 45.45 percent of the university libraries integrated the RFID system with Koha software. Furthermore, the majority of libraries have established digital institutional repositories using DSpace, facilitating access to scholarly resources and promoting open access initiatives. Some libraries have also registered their repositories in OpenDOAR and ROAR directories. Additionally, most universities have official websites to enhance accessibility to library services and resources. Except Bangladesh University of Professionals (BUP), University of Science and Technology Chittagong (USTC) and University of Chittagong (CU), all the university libraries developed their Digital Institutional Repository using DSpace software. Each of the repositories had overall 6176 resources. It is found that 45 percent of the institutional repositories were registered with OpenDOAR or ROAR (Table 5.4).

6.3.6 Use of Social Media and Membership in Library Consortium

As the digital landscape continues to evolve, the strategic use of social media is likely to remain integral to the outreach efforts of university libraries. The study tried to reveal the use of these platforms as they offer opportunities for their users sharing resources and events and promoting the services effectively in the digital premise. The study presented an analysis of social media usage among selected university libraries in Bangladesh, encompassing platforms such as Facebook, YouTube, Twitter, LinkedIn, Instagram, and Telegram. Among these platforms, Facebook emerges as the most widely utilized, with 75% of total libraries incorporating it into their online presence. Following closely, YouTube stands as the second most popular platform, utilized by 30% of libraries. Twitter and LinkedIn find more traction among private and international university libraries, with 15% and 20% usage respectively. Meanwhile, Instagram and Telegram see a moderate adoption rate of 10% each across all library categories. Overall, the table delineates the diverse landscape of social media adoption by university libraries in

Bangladesh, with Facebook reigning supreme in terms of widespread utilization. The table highlights that the highest proportion of the private university libraries (42.86%) have engaged with social media, followed by international university libraries (14.28%) and public university libraries (10.39%) (Table 5.5).

However, public university libraries lag behind in their adoption of Twitter, LinkedIn, Instagram, and Telegram. International university libraries, though fewer in number, exhibit a comparable level of engagement with social media platforms to private university libraries.

The study provides an overview of the membership status of university libraries in Bangladesh with three prominent digital library consortia: Library Consortium of Bangladesh (LiCoB), UGC Digital Library (UDL), and Bangladesh Research and Education Network (BdREN). Among the three consortiums, the highest proportion of the public university libraries (78.78%) have membership in the consortiums, followed by international university libraries (66.66%) and private university libraries (62.5%). It is found that overall, 71.66 percent of university libraries have membership in the consortiums (Table 5.6).

6.3.7 Infrastructural development and Library Automation

According to the study, the overall, 71.5 percent of infrastructural developments were ensured in the selected university libraries of Bangladesh. The height proportion of the infrastructural development were ensured in the international university libraries (80.0%) followed by private university libraries (76.25%) and public university libraries (67.26%) in Bangladesh. Among the 10 infrastructural developments, the highest number of university libraries (18, 90.0%) provided air condition facility and teachers corner for the library users, whereas the lowest number of university libraries (1, 5.0%) in Bangladesh ensured sleeping room for the users (Table 5.15).

The study presents data on the shelving systems employed by selected libraries, categorized by university types. Among public universities, 53.6% utilize an open-shelf system, 14.3% use a close-shelf system, and 10.7% employ a semi-open-shelf system. In private universities, 42.9% opt for an open-shelf system, 10.7% for a close-shelf system,

and 7.1% for a semi-open-shelf system. Interestingly, international universities predominantly favor the open-shelf system at 3.6%. Overall, the majority of libraries (57.1%) implement an open-shelf system, followed by 25.0% with a close-shelf system and 17.9% with a semi-open-shelf system (Table 5.16).

The study illustrated the automation status of selected university libraries, categorized by university types. Among public universities, 36.4% are fully automated, while 63.6% are semi-automated. In private universities, 87.5% are fully automated, and 12.5% are semi-automated. Interestingly, all international universities are fully automated. Overall, 60.0% of the selected libraries are fully automated, and 40.0% are semi-automated (Table 5.17).

The study outlines the automation software utilized by the selected libraries, segmented by university categories. Among public universities, 90.9% utilize Koha, while 9.1% use SLiMS. In private universities, all libraries (100%) use Koha. Similarly, in international universities, there is a sole utilization of Koha. Overall, Koha is the predominant automation software across all categories, with 95% of libraries employing it, while SLiMS is used by only 5% of the libraries (Table 5.18). The study illustrates the digital library software utilized by the selected libraries, categorized by university types. Among public universities, 81.8% utilize DSpace, while none use Web link. In private universities, 87.5% of libraries use DSpace, and 12.5% use Web link. Conversely, in international universities, there is a sole utilization of DSpace (Table 5.19). Overall, DSpace is the predominant digital library software across all categories, employed by 85% of the libraries, while Web link is used by only 5% of the libraries. The study outlines the distribution of library automation and digitization work based on the team involved, categorized by university types. Among public universities, 25% of the work is done by the own library team, while 15% is done with the assistance of someone from other institutions. In private universities, 35% of the work is accomplished by the own library team, and there's no involvement of external experts. Conversely, international universities have 5% of work done by the own library team and 5% with the help of an expert from another institution. Overall, the majority of the work, 60%, is carried out by the own library team, followed by 20% with the assistance of an external expert, and 15% involves a combination of both (Table 5.20).

6.3.8 Library Services and Facilities

The study illustrates the general and innovative services to understand the existing services in the chosen university libraries of Bangladesh. An overview of the general services provided by a few university libraries is given in the study. Among the fifteen general services, circulation services were offered by all of the Bangladeshi university libraries that were chosen. Conversely, just 40.0% of university libraries offered their patrons Inter-Library Loans services. Of the fifteen general services offered, 81.7 percent came from private university libraries, 68.46 percent from public university libraries, and 46.66 percent from international university libraries. In Bangladesh, university libraries offered 69.06 percent of all library services (Table 5.21).

Among the seven innovative services, the highest proportion (15, 75%) of the selected university libraries of Bangladesh provided anti-plagiarism software service. On the other hand, the lowest proportion (4, 20.0%) of the selected university libraries provided paraphrasing software to their users. The private university libraries provided 60.71 percent of the innovative services, whereas international university libraries provided 42.85 percent and public university libraries provided 38.97 percent. The study revealed that overall, 47.86 percent of the innovative services were provided in the university libraries (Table 5.22).

All of the selected university libraries in Bangladesh had Wi-Fi internet access among their fourteen ICT facilities. Conversely, only 40.0% of the chosen university libraries offered web 2.0 interactive sharing and virtual reference service options to their users, which was the lowest proportion. Overall, private universities tend to offer a slightly higher average percentage of ICT facilities (76.78%) compared to public universities (61.66%), with international institutions falling in between at 57.14%. According to the report, the university libraries in Bangladesh had a total of 67.85 percent ICT facilities available. The study outlines the availability of library resource selection facilities across public, private, and international universities (Table 5.23).

The study found that 75 percent of the university libraries have a recommendation/complain box. 95 university libraries allow their teachers to submit book purchase suggestions, whereas 70 percent of the university libraries allow their

students, and 60 percent of the university libraries allow their MPhil/PhD researchers to submit book purchase suggestions. Overall, private universities tend to offer a slightly higher average percentage of library resource selection facilities (78.13%) compared to public universities (74.98%), with international institutions at 50.0% (Table 5.24).

6.3.9 Library Collections and Access

The study presents the availability of various library resources across public, private, and international universities. Among the thirteen types of library resources, it is found that all the university libraries maintained the books and journals. On the other hand, only 65 percent of university libraries maintained manuscripts and archival materials. Overall, 89.23 percent of the library resources were maintained in the university libraries of Bangladesh. Overall, private and international universities tend to have a higher average percentage of library resources available compared to public universities, with private universities at 93.27% and international universities at 92.30%, while public universities stand at 84.48% (Table 5.25).

Out of the eleven online journal databases, it was discovered that the Springer online journal databases had the highest subscription rate among university libraries in Bangladesh, with 17 libraries (85%) subscribing to it. On the other hand, the Elsevier online journal database had the lowest subscription rate, with only 11 libraries (55%) subscribing to it. Overall, the university libraries in Bangladesh subscribed to 66.36% of the online journal databases available. Public university libraries had the highest proportion of subscriptions, with 75.55%, followed by private university libraries with 54.54%, and international university libraries with 45.45% (Table 5.26).

Out of the eleven e-book databases, the Oxford University Press and Springer e-book database had the highest subscription rate among university libraries in Bangladesh, with 12 libraries (65%) subscribing to it. On the other hand, the Elsevier e-book databases had the lowest subscription rate, with just 9 libraries (45%) subscribing to them. In general, public university libraries had the largest share of subscriptions to e-book databases, accounting for 67.74% of the total. Private university libraries followed with a subscription rate of 43.18%, while international university libraries had the lowest rate at 18.18%. The study revealed that the university libraries in Bangladesh had subscribed to

a total of 55.45 percent of the available e-book databases out of the 11 databases (Table 5.27).

The survey found that of the six e-resource databases, the theses and dissertations e-resource database had the greatest subscription rate among university libraries in Bangladesh, with 14 libraries (70%) subscribing to it. Conversely, the Clinical reports and Synopsis e-resource databases had the lowest membership rate, with only 2 libraries (10%) subscribing to them. Private university libraries, on average, held the majority of subscriptions to e-resource databases, representing 67.74% of the overall amount. Public university libraries exhibited a subscription rate of 31.83%, whereas international university libraries demonstrated the lowest rate at 16.66%. According to the survey, the university libraries in Bangladesh had subscribed to 35 percent of the accessible e-book databases out of the 6 e-resource databases (Table 5.28).

6.4 Usages of Library and Library Services

The study examines the frequency at which respondents utilize the library, classifying it into six categories: daily, twice weekly, weekly, fortnightly, monthly, and occasionally. The survey reveals that the majority of respondents, specifically 166 individuals (32.4%), utilized their libraries twice a week. This was followed by 123 respondents (24%) who used the library on a daily basis, 105 respondents (20.5%) who used it weekly, 56 respondents (10.9%) who used it occasionally, 33 respondents (6.4%) who used it monthly, and 30 respondents (5.8%) who used it fortnightly (as shown in table 5.29) (Table 5.29).

According to study, 9 teachers, which represents 13.4% of the total number of teachers surveyed, acknowledged using the product on a daily basis. Among students, the library is used on a daily basis by a substantial number of individuals, specifically 108 students, which accounts for 24.7% of the student population. Researchers make everyday use of the library, comprising 6 individuals (66.4%). 23 professors (34.3%), 142 students (32.5%), and 1 researcher (11.1%) report using the library twice a week. Weekly usage is recorded for a total of 105 individuals, consisting of 17 professors (25.4%), 87 pupils (19.9%), and 1 researcher (11.1%). Fortnightly usage is less prevalent, as indicated by 4 professors (6.0%), 25 students (5.7%), and 1 researcher (11.1%). The monthly utilization of the library is documented by 5 educators, accounting for 7.5% of the total, as well as

28 pupils, representing 6.4% of the total. There are no researchers included in the data. Out of the total number of teachers, 13.4% reported using the library occasionally. Similarly, 10.8% of students reported occasional library usage. However, no researchers reported using the library. The cumulative number of participants in each group amounts to 513, comprising of 67 educators, 437 learners, and 9 scholars. The majority of library users, accounting for 85.2%, are students. Teachers make up 13.1% of library users, while researchers constitute only 1.8% (Table 5.30).

The study presents the frequency of library use categorized by university types: public, private, and international. Among public universities, daily library usage is reported by 58 individuals, accounting for 20.0% of respondents in this category. In private universities, 53 individuals (27.9%) use the library daily, while in international universities, 12 individuals (36.4%) report daily usage. Twice a week library usage is most common among public universities, with 108 individuals (37.2%) using the library at this frequency. In private universities, 54 individuals (28.4%) report using the library twice a week, and in international universities, 4 individuals (12.1%) report the same. Weekly library usage is reported by 57 individuals (19.7%) from public universities, 39 individuals (20.5%) from private universities, and 9 individuals (37.3%) from international universities. Fortnightly usage is less common, reported by 17 individuals (5.9%) from public universities, 11 individuals (5.8%) from private universities, and 2 individuals (6.1%) from international universities. Monthly library usage is reported by 20 individuals (6.9%) from public universities, 12 individuals (6.3%) from private universities, and 1 individual (0.2%) from an international university. Occasional library usage is reported by 30 individuals (10.3%) from public universities, 21 individuals (11.1%) from private universities, and 5 individuals (15.2%) from international universities. The total number of respondents in each university category sums up to 513, with 290 from public universities, 190 from private universities and 33 from international universities. Overall, the highest percentage of respondents is from public universities at 56.5%, followed by private universities at 37.0%, and international universities at 6.4% (Table 5.31).

6.5 Impact of Knowledge and Leadership Quality Dimensions on User Satisfaction

The study assessed the impact of knowledge and leadership quality dimensions on user satisfaction in the university libraries of Bangladesh developing an SEM method that was adapted as per local arrangements of the university libraries and consulting with some LIS researchers and validating it by applying several statistical methods.

A low p-value ($p < 0.05$) in SEM indicates that “a predictor is likely to be a meaningful addition to any model because changes in the predictor's value are related to changes in the response variable”. Conversely, “a larger p-value ($p > 0.05$) suggests that changes in the predictor are not associated with the changes in the response” (Minitab.com, 2013). The t statistics can help to determine the relative importance of each variable in the SEM. The critical t-values for the two-tail test are: “90% significance t-value = 1.64; 95% significance t-value = 1.96; and 99% significance t-value = 2.58”. A variable is said to have good validity towards the construct or its latent variable “if the t value in the factor loading is greater than the critical value (1.96 or practically 2) and the standardized loading factor is 0.50 or more” (Wala *et al.*, 2020).

The results of beta-value, p-value and t-value suggested that technical competency (beta coefficient = 0.331, t-value = 2.21 and p-value < 0.027) and responsiveness (beta coefficient = 0.445, t-value = 3.954, p-value = < 0.000) indicate the significant positive impacts on user satisfaction in the university libraries of Bangladesh. On the other hand, the result of beta-value, p-value and t-value suggested that knowledge competency (beta coefficient = 0.068, t-value = 0.605, p-value = 0.545), Negotiation skill (beta coefficient = -0.03, t-value = 0.199, p-value < 0.842), and visionary (b = 0.139, t-value = 0.97, p-value = 0.332), qualities of the library professionals have the insignificant impacts on user satisfaction in the university libraries of Bangladesh (Table 5.51).

In a study conducted by Andaleeb and Simmonds (1998), a multiple regression analysis was performed. The study examined the relationship between various independent variables, including resources, competence, responsiveness, manner, and tangibles, and the dependent variable of user satisfaction. The researchers found that the regression model had a statistically significant effect ($p < 0.001$). Additionally, they discovered that customers of three academic libraries in Erie and Pennsylvania put substantial

significance on library resources ($p < .001$) as well as the manner ($p < 0.001$ and) approach of library personnel. Simmonds and Andaleeb (2001) discovered that the regression model had statistical significance ($p < 0.001$). Furthermore, they observed that library resources ($p < 0.050$), tangibles ($p < 0.050$), and the familiarity of library staff ($p < 0.010$) had noteworthy impacts on user satisfaction in three academic libraries located in the United States. In their study, Wang and Shieh (2006) found that their regression model was statistically significant ($p < 0.001$). All dimensions, namely assurance ($p < 0.001$), reliability ($p < 0.001$), empathy ($p < 0.001$), and tangibles ($p < 0.001$), except for responsiveness ($p > 0.186$), had significant positive impacts on user satisfaction in the Chang Jung Christian University Library, Taiwan.

In their study, Suki and Suki (2013) discovered that the model they used was statistically significant ($p < 0.001$) and that reliability ($p < 0.048$), responsiveness ($p < 0.001$), assurance ($p < 0.001$), and empathy ($p < 0.021$) had a substantial impact on user satisfaction in a public university library in Malaysia. Farooq et al. (2019) discovered that their model had a substantial impact ($p < 0.001$) on user happiness in private university libraries in Malaysia. However, empathy did not have a significant influence ($p > 0.49$). On the other hand, three variables, namely tangibles ($p < 0.001$), responsiveness ($p < 0.001$), and reliability ($p < 0.001$), had a significant positive effect on user satisfaction. According to Alam (2020), the regression model used in the study was statistically significant ($p < 0.001$). The study indicated that tangible facilities, staff responsiveness, and the resources of the library had a substantial impact on user satisfaction at the Eastern University Library of Bangladesh. The influence of tangible facilities and staff responsiveness was highly significant ($p < 0.001$), while the influence of resources was significant but to a lesser extent ($p < 0.004$).

The high level of competence exhibited by the library staff had a statistically significant and positive effect on user satisfaction ($p < 0.001$). This finding diverges from the conclusions drawn in previous research conducted by Andaleeb and Simmonds (1998), Simmonds and Andaleeb (2001), and Alam (2020). The level of responsiveness ($p > 0.010$) exhibited by the library staff had a notable and beneficial effect on user satisfaction. This finding aligns with the study conducted by Alam (2020), but differs

with the findings of the studies conducted by Andaleeb and Simmonds (1998) and Wang and Shieh (2006).

6.6 The SEM Model and Justification of Hypotheses

Among the seven hypotheses, the SEM method is involved with the first five hypotheses, which are discussed below.

H1: The higher the perceived *Knowledge Competency* of librarians of Bangladesh, the higher the level of user satisfaction.

The standardized beta value recommended that the knowledge competency of the library professionals had the fourth positioning impact ($b=0.068$, $p = 0.545$) on user satisfaction. The coefficient beta value of the resources is 0.068, indicating that if the resources of the libraries are increased by 1 unit, the level of user satisfaction is expected to increase by 0.68 units. The knowledge competency is important because users frequently use their library to acquire answers to their academic problems. In the current dynamic ICT environment, knowledge competency does not only mean the general knowledge of a library; rather, they include a diversity of knowledge capacity of the personnel. Therefore, library authorities should play a constructive role in enhancing the diversified knowledge by considering their users' expectations because the users ranked the knowledge competency of the library professionals as a vital factor where their level of satisfaction with the factor was the 4th among the five factors (Table 5.51).

H2: The greater the perceived *Technical Competence* of the library professionals, the greater the level of user satisfaction.

The beta values recommended that the technical competency of the library professionals had the 2nd height significant positive impact ($b=0.331$, $p<0.027$) on user satisfaction in the university libraries of Bangladesh. The beta coefficient for the technical competency variable is 0.331, suggesting that a 1 percent improvement in the technical competency of the library personnel is associated with a 3.31 percent rise in user satisfaction. While it may be difficult to establish technical competency among library professionals, it is crucial for library staff to prioritize their technical skills to provide satisfactory library

services. This is because users have identified the technical competency of library staff as a significant factor in their satisfaction (Table 5.51).

H3: The greater the *Negotiation Skills* of the library professionals, the greater the level of user satisfaction.

The findings indicate that the library patrons showed a fifth significant impact ($b=0.03$, $p = 0.842$) to the negotiation skill of the library staff on user satisfaction. The beta coefficient for the negotiating skill variable is 0.03. This means that if the responsiveness quality of the library personnel increases by 1 percent, the level of user satisfaction is predicted to improve by 0.03 percent. While it may be difficult to incorporate negotiation skills into the repertoire of library professionals, library staff must prioritize the development of these skills to enhance the quality of library services and meet the expectations of their users, as the users themselves have identified negotiation skills as an important factor (Table 5.51).

H4: The more Visionary the library staff is, the more satisfied the patrons are.

The standardized beta values indicate that the visionary approach of the library personnel had 3rd positing significant impact ($b=0.139$, $p = 0.332$) on user happiness in the university libraries of Bangladesh, ranking it third in terms of influence. The coefficient beta value for the demeanor variable is 0.139. This indicates that a 1 percent rise in the manner approach of the library staff is projected to result in a 1.39 percent increase in user satisfaction. While it may be difficult to incorporate visionary qualities among library professionals, library staff must prioritize their visionary approach in order to create a library environment that meets the needs of their users. This is because library users consider the visionary approach of the library staff to be the third most influential factor (Table 5.51).

H5: The better the perceived *Responsiveness* from library staff, the greater the level of user satisfaction.

The beta values indicate that the responsiveness of the library staff has the largest significant positive impact ($b=0.445$, $p<0.000$) on user satisfaction. This suggests that the

responsive behavior of the library staff plays a crucial part in explaining customer contentment. The coefficient beta value for the dependent variable is 0.445, suggesting that a 1 percent rise in the response of library professionals is projected to result in a 4.45 percent increase in user satisfaction. In order to meet the expectations of users, library personnel should prioritize maintaining responsiveness, since consumers have identified it as the most important criterion in evaluating the quality of library services (Table 5.51).

6.7 Individual Variance in Library Leadership Expectations

ANOVA was used to assess the individual differences in the minimal, desired, and real leadership expectations in the overall, dimensional, and item-wise contexts based on the user categories (teachers, students, and researchers) and university types (public, private, and international institutions).

6.7.1 Individual Variance in Minimum Leadership Expectations

The user category utilized ANOVA to calculate the user responses for the overall, dimensional, and item-wise minimal leadership expectations. An analysis revealed a notable disparity ($p < 0.041$) in the overall minimum leadership expectations among teachers (4.72), students (4.42), and researchers (4.00), suggesting that their expectations of leadership from their respective libraries were not similar (Table 5.53 and 5.54).

The findings indicated a statistically significant difference ($p < 0.037$) in the minimum leadership expectations regarding the visionary quality of the library staff among teachers (4.80), students (4.46), and researchers (3.91). Specifically, the minimum leadership expectation of teachers regarding visionary quality was significantly higher compared to that of students and researchers. The findings indicate a significant difference ($p < 0.035$) in the minimum leadership expectations on the Responsiveness quality of the library staff among teachers (4.84), students (4.55), and researchers (4.58). Specifically, the minimum leadership expectation of teachers regarding responsiveness was significantly higher than that of researchers and students (Table 5.55 and 5.56).

Nevertheless, there were no notable distinctions observed among the faculty, students, and researchers regarding their expectations for the library professionals' knowledge competency ($p > 0.097$), technical competency ($p > 0.104$), and negotiating skill ($p > 0.168$). A notable disparity ($p < 0.007$ – $p < 0.027$) was seen in the minimum leadership

expectations of teachers, students, and researchers in the university libraries of Bangladesh, namely in the four items (TC6, V16, V17, and R25). The findings revealed that the general minimal leadership expectations across 21 items were comparable, except for four items that showed substantial dissimilarity among the teachers, students, and researchers in the university libraries of Bangladesh (Table 5.56 and 5.57).

The university category analyzed the user responses for the overall, dimensional, and item-wise minimal leadership expectation using ANOVA. The study's findings indicate a significant difference ($p < 0.000$) in the minimum leadership expectations among users of public (4.31), private (4.79), and international (3.81) university libraries. Specifically, the minimum leadership expectation in public university libraries was significantly lower than in international and private university libraries (Table 5.59 and 5.60).

Furthermore, it has been observed that there was a notable disparity among users of public, private, and international university libraries regarding their minimum expectations for leadership qualities such as knowledge competency ($p < 0.000$), technical competency ($p < 0.000$), negotiation skill ($p < 0.000$), visionary abilities ($p < 0.000$), and responsiveness ($p < 0.000$). Additionally, it was discovered that there was a noteworthy disparity ($p < 0.000 - p < 0.006$) in all aspects of minimum leadership expectations among users of public, private, and foreign university libraries in Bangladesh. The findings revealed that the users' minimum leadership expectations in public university libraries were much lower compared to those in private and international university libraries, both in terms of overall expectations and specific dimensions and items of leadership expectations (Table 5.61).

6.7.2 Individual Variance in Desired Leadership Expectations

The user category analyzed the user responses for the overall, dimensional, and item-wise desirable leadership expectations using ANOVA. The findings of this study indicate that there were significant differences ($p < 0.011$) in the desired leadership expectations among the teachers (6.21), students (5.93), and researchers (6.39) in the university libraries of Bangladesh. Specifically, the researchers had significantly higher desired leadership expectations compared to the teachers and students (Table 5.53 and 5.54).

This study found significant differences in the desired leadership expectations among teachers, students, and researchers in terms of knowledge competency ($p < 0.016$), negotiating skill ($p < 0.024$), visionary ($p < 0.009$), and responsiveness ($p < 0.022$). However, there was no significant difference in desired leadership expectations in terms of technical competency ($p > 0.089$). The study found a notable disparity ($p < 0.001$ – $p < 0.015$) in the nine specific items (KC1, KC2, TC6, NS14, V16, V17, V18, R21 and R21) about the desired leadership expectations among professors, students, and researchers in the university libraries of Bangladesh. The findings revealed that there were considerable differences in the desired leadership expectations among the instructors, students, and researchers in the university libraries of Bangladesh. These differences were observed in most of the items, including overall, dimensional, and item-wise expectations (Table 5.56 and 5.57).

The university category analyzed the user responses for the overall, dimensional, and item-wise desirable leadership expectation using ANOVA. The study found that there were significant differences in the overall desired leadership expectation among users of public (5.82), private (6.16), and international (6.21) university libraries in Bangladesh, with an F-value of 11.260 and a p-value of less than 0.000. These results indicate substantial variations in the overall desired leadership expectation (Table 5.59 and 5.60). In addition, there were notable variations among users of public, private, and international university libraries in their expectations for leadership qualities related to library knowledge competency ($p < 0.001$), technical competency ($p < .000$), negotiation skill ($p < .000$), visionary abilities ($p < .001$), and responsiveness ($p < .000$) (Table 5.61).

The study found a significant difference ($p < 0.000$ – $p < 0.045$) in 21 specific items (KC1, KC2, KC3, KC5, TC6, TC7, TC8, TC9, TC10, NS11, NS12, NS14, V16, V17, V19, V20, R21, R22, R23, R24, and R25) regarding desired leadership expectations among users of public, private, and international university libraries in Bangladesh (Table 5.62). The findings revealed that the general leadership expectations were comparable; however, the four specific items did not exhibit substantial similarity across users of public, private, and foreign university libraries in Bangladesh.

6.7.3 Individual Variance in Real Leadership Expectations

The user category utilized ANOVA to analyze the user responses for overall, dimensional, and item-wise real leadership expectations. The findings revealed a statistically significant distinction ($p < 0.014$) in the overall real leadership expectations among teachers (5.46), students (5.18), and researchers (5.20). This suggests that their separate expectations of actual leadership from library professionals were not the same (Table 5.53 and 5.54).

The findings indicated a notable disparity in the expectations regarding knowledge competency ($p < 0.011$), quality of the library staff, technical competency ($p < 0.037$) of the library professionals, visionary abilities ($p < 0.026$), and responsiveness ($p < 0.044$) among teachers, students, and researchers. Nevertheless, there was no notable disparity observed between the expectations of leadership on negotiation skill among the instructors, students, and researchers in relation to the approach of the library personnel ($p > 0.089$) (Table 5.56).

The findings indicated a statistically significant difference ($p < 0.004$ – $p < 0.022$) in the seven specific items (KC2, TC6, NS14, V16, C17, R21, and R25) measuring expectations of effective leadership among instructors, students, and researchers in the university libraries of Bangladesh. The findings revealed that the general expectations of effective leadership were comparable among the instructors, students, and researchers in the university libraries of Bangladesh. However, there were seven specific items that did not show a significant similarity (Table 5.57).

The university category analyzed the user responses for overall, dimensional, and item-wise real leadership expectations using ANOVA. The study's findings indicated a statistically significant difference ($p < 0.000$) in the total real leadership expectation among users of public (5.07), private (5.47), and foreign (5.01) university libraries (Table 5.59 and 5.60). Furthermore, there was a notable disparity observed among users of public, private, and international university libraries regarding their expectations of leadership in terms of knowledge competency ($p < 0.000$), technical competency ($p < 0.000$), negotiation skill ($p < 0.000$), visionary abilities ($p < 0.000$), and responsiveness ($p < 0.000$) facilities (Table 5.61). Furthermore, it was discovered that there was a noteworthy disparity ($p < 0.000$ – $p < 0.017$) in all aspects of real leadership expectations

among the patrons of public, private, and foreign university libraries in Bangladesh (Table 5.62). The findings revealed that there were no significant similarities in the overall, dimensional, and item-wise expectations of real leadership across users of public, private, and international university libraries in Bangladesh.

6.8 Individual Variance in User Satisfaction

The average satisfaction score was 5.28 out of 7, suggesting that library patrons were very satisfied with the expertise and leadership quality of the library professionals. Out of the ten satisfaction statements, the statement "I would like to use the library in future" had the highest mean score of 5.75. On the other hand, the leadership statement "the library professionals' knowledge competency is satisfactory" had the lowest average mean score of 4.89 (Table 5.37).

All respondents expressed their degree of satisfaction with the leadership performance of their library professionals on a scale of 1 to 7. The results indicate that there was variation in the level of satisfaction across users, with some being less satisfied than others. The ANOVA analysis indicated that there was no significant difference ($p > 0.679$) in the overall user satisfaction among the teachers (5.34), students (5.17), and researchers (5.56) in the university libraries of Bangladesh (Table 5.39 and 5.40). This suggests that the library personnel's leadership quality was equally satisfactory to teachers, students, and researchers. Nevertheless, the study revealed that there was no statistically significant disparity in satisfaction levels among teachers, students, and researchers in terms of their contentment with the leadership quality of the professionals.

In addition, there was a significant difference ($p < 0.001$) in the overall user satisfaction levels among users from public (5.12), private (5.50), and international (5.41) university libraries in Bangladesh (Table 5.43 and 5.46). This indicates that users of public university libraries were significantly less satisfied compared to users of private and international university libraries. Furthermore, it was discovered that there was a notable disparity in satisfaction levels among users from private, international, and public university libraries in Bangladesh. Specifically, the users of public university libraries exhibited significantly lower levels of satisfaction compared to users of international and

private university libraries for all satisfaction statements, except for statement 32 and statement 35 (Table 5.42).

6.9 Individual Variance in Library Leadership Quality

The user categorized individuals into several groups, such as teachers, students, and researchers, and also categorized universities into groups such as public, private, and international. The user then used ANOVA to compute differences in library leadership quality at the overall, dimensional, and item level within these categories. Hypothesis six of this study pertains to the variation in library leadership quality among individuals, and will be examined in detail below.

H6: The *library leadership quality* among users and university categories differs significantly

The user category utilized ANOVA to calculate the user responses for the overall, dimensional, and item-wise library leadership quality. The analysis revealed that there was no statistically significant difference ($p > 0.932$) in the overall library leadership quality among the teachers (5.02), students (5.07), and researchers (5.12) (Table 5.53 and 5.54). This suggests that teachers, students, and researchers in the university libraries of Bangladesh perceive similar levels of leadership performance from their respective libraries. Furthermore, it was found that there were no statistically significant differences in the leadership qualities of knowledge competency ($p > 0.807$), technical competency ($p > 0.333$), negotiation skill ($p > 0.308$), visionary ($p > 0.451$), and responsiveness ($p > 0.589$) among the teachers, students, and researchers in the university libraries (Table 5.56). The study found a statistically significant difference ($p < 0.019$) in one aspect (NS12) of leadership quality among the professors, students, and researchers in the university libraries. The ANOVA results revealed that, with the exception of one item, the leadership quality among professors, students, and researchers in the university libraries of Bangladesh was comparable in terms of overall, dimensional, and item-wise measures.

The university category analyzed the user responses for the overall, dimensional, and item-wise library service quality using ANOVA. The results indicated a significant

difference ($p < 0.005$) in the overall leadership quality among users of public (4.92), private (5.25), and international (5.18) university libraries in Bangladesh. Specifically, users of public university libraries received significantly lower quality leadership performance compared to users of private and international university libraries. Additionally, it was discovered that there was a notable disparity in the leadership abilities related to knowledge competency ($p < 0.000$), technical competency ($p < 0.001$), and negotiation skill ($p < 0.001$) among users of public, private, and international university libraries. However, there was no significant difference in visionary ($p < 0.258$) and responsiveness ($p < 0.121$) qualities. This suggests that users of public university libraries receive significantly lower quality service compared to users of international and private university libraries in three out of the five leadership quality dimensions. The study found a notable disparity ($p < 0.000$ – $p < 0.036$) in 10 specific aspects (KC1, KC2, KC3, KC4, TC6, TC7, TC8, TC10, NS11, NS12, NS14, V16, R21, and R24) of leadership quality among users of public, private, and international university libraries. This indicates that users of public university libraries receive significantly less competent service compared to users of private and international university libraries in 14 out of the total 25 leadership items. The ANOVA results demonstrate that users of public university libraries experience considerably lower levels of qualified leadership performance compared to users of private and foreign university libraries across all aspects of service quality, including overall, dimensional, and item-wise measures. The hypothesis is that a decrease in library leadership performance, awareness of library leadership quality, and perception of library leadership quality may contribute to a significant decrease in user happiness in public university libraries. Hence, it is imperative for the authorities of public university libraries to prioritize enhancing the quality of their current services in order to meet the needs and expectations of its users.

6.10 Individual Variance in Library Leadership Quality Gaps

The study measured variations in library leadership quality gaps among different user categories (teachers, students, and researchers) and university categories (public, private, and international) using ANOVA. These gaps were assessed in terms of overall, dimensional, and item-wise library leadership quality, specifically the adequacy gap,

superiority gap, and realistic gap. Hypothesis six in this study focuses on the variations in library leadership quality gaps among individuals, and is extensively examined.

H7: The gaps in library leadership quality among users and university categories differ significantly.

6.10.1 Individual Variance in Adequacy Gap of Library Leadership Quality

The insufficiency in the quality of library leadership was assessed using descriptive statistics, which included measurements of overall, dimensional, and item-wise aspects. The study found that the leadership quality of university library professionals in Bangladesh was generally sufficient, with a mean score of 0.57 (Table 5.65). This suggests that the library personnel were able to meet the basic leadership expectations of their users.

The study found that there was no deficiency in any of the dimensions of leadership quality in the university libraries of Bangladesh. Specifically, the dimensions of knowledge competency (0.64), technical competency (0.67), negotiation skill (0.60), visionary (0.55), and responsiveness (0.54) all met the minimum acceptable levels of leadership quality (Table 5.64). It has been determined that there were no significant deficiencies in any of the items, except for item KC5, which pertains to the leadership quality of library professionals. The scores for this item ranged from 0.46 to 0.74, which is very close to the minimum expected level of leadership (Table 5.63). This suggests that the library personnel were able to meet the minimum leadership standards required by their users for each of the leadership items.

6.10.1.1 Adequacy Gap in Leadership Quality by User Category

Descriptive statistics were used to calculate the variations in the adequacy gap of leadership quality among instructors, students, and researchers. The study revealed a notable disparity ($p < 0.027$) in the adequacy gap of leadership quality among teachers (.293), students (.611), and researchers (1.124) in the university libraries of Bangladesh (Table 5.67 and 5.68). This suggests that library professionals provide leadership quality to teachers, students, and researchers in different ways. The survey revealed that the researchers had the biggest mean adequacy gap of 1.124, followed by the teachers with 0.611, and the students with 0.293 (Table 5.67). This indicates that the library personnel

were able to meet the minimum leadership requirements of the teachers, students, and researchers. The study found a significant difference in three dimensions: negotiation skill ($p < 0.014$), visionary ($p < 0.004$), and responsiveness ($p < 0.019$). However, there was no significant difference in two dimensions: knowledge competency ($p > 0.065$) and technical competency ($p > 0.403$) in the adequacy gap among the teachers, students, and researchers (Table 5.69). Moreover, there is a positive discrepancy in the adequacy of all leadership quality dimensions among teachers, students, and researchers. This suggests that the libraries were able to fulfill the minimum leadership expectations of their instructors, students, and researchers for each dimension of leadership quality. It has been discovered that there is a notable disparity in the adequacy gap of the eleven items (KC3, NS12, NS13, NS14, V16, V17, V18, V19, R21, R22, and R25) among teachers, students, and researchers (Table 5.70). Furthermore, all of these items exhibit a positive adequacy gap for students and researchers, suggesting that the libraries were able to fulfill the minimum leadership expectations of these individuals.

6.10.1.2 Adequacy Gap in Library Leadership Quality by University Category

The individual differences in the adequacy gap of library leadership quality among the users of public, private, and international university libraries were calculated by descriptive statistics. The study revealed that there is a significant variance in the overall adequacy gap ($p < 0.000$) among users of public (.583), private (.441), and international universities (1.322), indicating the users of the private university libraries get significantly less qualified leadership experience than the users of the international, and public university libraries (Table 5.73). The study found the positive mean score for the users of public university libraries, indicating the public, private and international university library professionals were capable of meeting their users' minimum expected leadership quality.

The study found that there was a significant difference in the adequacy gap of all dimensions, i.e., knowledge competency ($p < 0.008$), technical competency ($p < 0.005$), negotiation skill ($p < 0.000$), visionary ($p < 0.000$), and responsiveness ($p < 0.003$) among the users of public, private, and international universities (Table 5.74). Furthermore, all the leadership quality dimensions have a positive adequacy gap for the users of the public, private, and international university libraries, indicating the public, private, and

international university libraries were able to meet the minimum leadership expectations of their users for each of the dimensions.

The study found that there was a significant difference in the adequacy gap of 17 items (KC2, KC4, TC6, TC7, TC9, NS12, NS13, NS14, NS15, V16, V17, V18, V19, V20, R23, R24 and R25) among the users of public, private, and international universities (Table 5.75). Furthermore, it is found that all the items have a positive adequacy gap for the users of public, private and international university libraries except one item (KC5_All resources are easily accessible, -.19) in private and (KC5_ All resources are easily accessible,, -.15) in international university, indicating that public university library professionals meet their users' minimum leadership expectations regarding each of the leadership quality, and except one item, private and international university library professionals meet their users' minimum leadership expectations (Table 5.71). So, the authorities of the private and international university libraries should emphasize building user- expected library leadership quality to satisfy their users.

6.10.2 Individual Variance in Superiority Gap of Library Leadership Quality

The disparity in library service quality was assessed using descriptive statistics, which included measurements of superiority gaps in overall, dimensional, and item-wise aspects. The total superiority gap (-.91) was negative, suggesting that the library professionals were unable to match the necessary leadership level expected by their consumers (Table 5.65). The analysis revealed that there were no significant advantages in any of the dimensions, namely knowledge competency (-.89), technical competency (-.87), negotiation skill (-.95), visionary (-.94), and responsiveness (-.90), indicating that the library professionals did not meet the desired leadership levels for any of the leadership quality dimensions (Table 5.64). The study found that there were no significant advantages in library leadership quality across all items (-0.79 to -1.03), suggesting that the library staff were unable to match the expected leadership standards of their patrons in terms of knowledge and leadership (Table 5.63).

6.10.2.1 Superiority Gap in Library Leadership Quality by User Category

The user category computed the overall, dimensional, and item-wise superiority gap in library leadership quality by ANOVA. The result indicated that there was no significant difference in the overall superiority gap ($p > 0.060$) among the teachers (- 1.188), students

(-.865), and researchers (-1.271) (Table 5.67 and 5.68). It is found that there was a significant difference in the superiority gap of two dimensions, i.e., knowledge competency ($p < 0.022$) and negotiation skill ($p < 0.008$) among the teachers, students, and researchers, indicating the students were getting less qualified leadership performance than the teachers and researchers against their expectations of knowledge competency of library staff and negotiation skill of the library professionals (Table 5.69). The result showed a significant difference in the superiority gap of 7 items ((KC1, KC2, KC3, TC6, NS11, NS12, and V19) among the teachers, students, and researchers, indicating the students were getting less qualified service than the teachers and researchers against their expectations on the seven leadership items (Table 5.70). The results indicated that the overall superiority gap was similar, but knowledge competency and negotiation skill dimensions and seven items were not significantly similar among the teachers, students, and researchers in the university libraries of Bangladesh.

The individual differences in the superiority gap of library leadership quality among teachers, students, and researchers were calculated by descriptive statistics. The study found the highest overall mean of superiority gap was -1.171 for the researchers, followed by -1.188 for the teachers and -0.865 for the students, indicating the libraries were not able to meet the desired leadership expectations of their teachers, students, and researchers (Table 5.67). In addition, all the service items and dimensions have a negative superiority gap for the teachers, students, and researchers, indicating the library professionals were not able to meet the desired leadership expectations of the teachers, students, and researchers for any of the leadership items or dimensions.

6.10.2.2 Superiority Gap in Library Leadership Quality by University Category

The university category assessed the superiority gap in library service quality by conducting an ANOVA analysis, including overall, dimensional, and item-wise aspects. The findings indicate that there was no statistically significant disparity in the overall superiority gap ($p > .855$) among users of public (-.902), private (-.914), and international (-1.1.019) university libraries (Table 5.73). However, it suggests that users of public university libraries may experience lower quality leadership performance compared to users of international and private university libraries. There was no significant difference in the superiority gap of all dimensions, including knowledge competency ($p > 0.389$), technical competency ($p > .924$), negotiation skill ($p > .728$), visionary ($p < .607$), and

responsiveness ($p>.488$), among users of public, private, and international university libraries (Table 5.74). This suggests that users of public university libraries receive less qualified leadership performance compared to users of international and private university libraries in terms of each leadership quality dimension, contrary to their expectations.

Furthermore, there was no notable disparity in the superiority gap of all items ($p>0.115 - p>0.976$) except for one (KC4, $p<.006$) among the users of public, private, and international university libraries (Table 5.75). This suggests that the users of public university libraries receive a lower quality of service compared to the users of international and private university libraries in terms of leadership performance relative to their expectations.

The study revealed that there were no significant similarities in the gaps of overall, dimensional, and item-wise superiority among users of public, private, and international university libraries in Bangladesh. This suggests that users of public university libraries receive significantly less qualified services compared to users of international and private university libraries in terms of overall, dimensional, and item-wise services, which does not meet their expectations. Therefore, it is imperative for the administrators of public university libraries to proactively address the disparity in service quality in order to meet the needs and expectations of their users.

6.10.2.3 Realistic Gap of Library Leadership Quality

Descriptive statistics were used to calculate the actual differences in the quality of library leadership in terms of overall performance, dimensions, and individual aspects. The study revealed a negative overall realistic gap (-0.15), suggesting that the library professionals were unable to fulfill their consumers' genuine leadership expectations (Table 5.65). The study found that all the dimensions of leadership quality, namely knowledge competency (-0.12), technical competency (-0.09), negotiation skill (-0.17), visionary (-0.19), and responsiveness (-0.17), had negative gaps, indicating that the library personnel were unable to fulfill the actual leadership expectations of their users in each of these dimensions (Table 5.64). Furthermore, it was discovered that there were no significant discrepancies between the library leadership qualities and the actual leadership expectations. The values ranged from -0.05 to -0.28, indicating that the library

professionals were unable to fulfill the leadership expectations of their users in terms of knowledge and leadership.

6.10.2.3.1 Realistic Gap in Library Leadership Quality by User Category

The user category computed the overall, dimensional, and item-wise realistic gap in library service quality by ANOVA. The result shows that there was a significant difference in the overall realistic gap ($p < 0.038$) among the teachers (-0.440), students (-0.112), and researchers (-0.075) in the university libraries of Bangladesh (Table 5.68). It is found that there was a significant difference in the realistic gap of three dimensions, i.e., knowledge competency ($p < .018$), negotiation skill ($p < 0.006$), visionary ($p < 0.021$), and there was no significant differences in two dimensions, i.e. technical competency ($p > 0.214$), and responsiveness ($p > 0.220$) among the teachers, students, and researchers (Table 5.69). It was also found that there was a significant difference in the realistic gap of the five items (KC2, KC3, NS12, NS14 and V19) among the teachers, students, and researchers, indicating the researchers were getting less qualified leadership performance than the teachers and students against their expectations on they provide services as promised tools ($p < 0.030$), they emphasis on information literacy ($p < 0.012$), they ensure infrastructural development ($p < 0.002$), they look confident ($p < 0.008$) and they are vigorous to make top ranked university ($p < 0.005$) (Table 5.70). The results indicated that except 5 items, the overall, dimensional, and item-wise realistic gaps were similar among the teachers, students, and researchers in the university libraries of Bangladesh.

The individual differences in the realistic gap in library leadership quality among teachers, students, and researchers were measured by descriptive statistics. The study revealed that the highest mean of the realistic gap was -0.440 for the teachers, followed by -0.112 for the students and -0.075 for the researchers, indicating libraries were not capable of meeting the real leadership expectations of the teachers, students, and researchers (Table 5.67). It is also found that all the leadership items and dimensions have a negative-realistic gap to the teachers, students, and researchers, indicating the library personnel were not able to meet the teachers, students, and researchers' real leadership expectations for each of the leadership items or dimensions.

6.10.2.3.2 Realistic Gap in Library Leadership Quality by University Category

The university category computed the overall, dimensional, and item-wise realistic gap in library service quality by ANOVA. The result shows that there was no significant difference in the realistic gap ($p < 0.088$) among the users of public (- 0.146), private (- 0.225), and international (-0.180) university libraries, indicating the users of the public university libraries get less qualified leadership performance than the users of the international and private university libraries (Table 5.72 and 5.73). It is also found that there was a significant difference in the realistic gap of one dimension i.e. visionary ($p < 0.035$), and there was no significant variance in other four dimensions, i.e., knowledge competency ($p < 0.363$), technical competency ($p < 0.187$), negotiation skill ($p < 0.189$), and responsiveness ($p < 0.060$) among the users of public, private, and international university libraries, indicating the users of the public university libraries get significantly and not significantly less qualified leadership performance than the users of the international and private university libraries on each of the leadership quality dimensions against their expectations (Table 5.74). Moreover, It is also found that there was a significant difference in the realistic gap of four items i.e. KC4-the library resources are organized in standard format ($p < 0.002$), TC9-they are able guide users in technical problem ($p < 0.037$), V16-library staffs are always positive to library development ($p < 0.005$), R22-they give priority of the users' interest ($p < 0.024$), and R25-they are available to get library services ($p < 0.022$) among the users of the selected universities, indicating the users of the public university libraries get significantly and not significantly less qualified leadership performance than the users of the international and private university libraries on the leadership quality items against their expectations (Table 5.75). The results recommended that the overall, dimensional, and item-wise realistic gaps were not similar significantly among the users of public, private, and international university libraries, indicating the users of the public university libraries get significantly less qualified leadership performance against their expectations than the users of the international and private university libraries. Thus, the authorities of the public university libraries should take the initiative to meet the realistic gap in leadership quality to satisfy their users.

Table 6.1: Hypotheses at a Glance

SL	Hypotheses	P-Value <i>Sig.<0.05</i>	Result
H1	The higher the perceived <i>Knowledge Competency</i> of librarians in Bangladesh, the higher the level of user satisfaction.	(p<0.545) Not significant	The knowledge competency of the librarians did not have a significant impact on user satisfaction in the university libraries of Bangladesh.
H2	The greater the perceived <i>Technical Competence</i> of the library professionals, the greater the level of user satisfaction.	(p<0.027) Significant	The library users had given significant positive importance to the technical competency of library personnel.
H3	The greater the <i>Negotiation Skills</i> of the library professionals, the greater the level of user satisfaction.	(p<0.842) Not significant	The negotiation skill of the librarian does not significantly influence user satisfaction.
H4	The more <i>Visionary</i> the library staff is, the more satisfied the patrons are.	(p<0.332) Not significant	The library users had not given significant positive importance to the visionary approach of the library staff.
H5	The better the perceived <i>Responsiveness</i> from library staff, the greater the level of user satisfaction.	(p<0.000) Significant	The responsiveness_leadership quality of the library personnel had a significant positive impact on user satisfaction.
H6	The <i>library leadership quality</i> among users and university categories differs significantly	Variance among users (p>0.932) Not Significant	There was no significant difference in library leadership quality among the teachers, students, and researchers of the university libraries in Bangladesh.
		Variance among university categories (p<0.005) Significant	There was a significant difference in library leadership quality among users of the university libraries in Bangladesh.
H7	The gaps in library leadership quality among users and university categories differ significantly	Adequacy gap among users (p<0.027) significant	There was significant difference in leadership quality among the teachers, students, and researchers of the university libraries in Bangladesh.
		Adequacy gap among universities (p<0.000) significant	There was a significant difference in the adequacy gap of leadership quality among users of university libraries in Bangladesh.

		Superiority gap among users ($p>0.060$) Not significant	There was no significant difference in the superiority gap of leadership quality among the teachers, students, and researchers of the university libraries in Bangladesh.
		Superiority gap among universities ($p>0.855$) Not significant	There was no significant difference in the superiority gap of leadership quality among the users of the university libraries in Bangladesh.
		Realistic gap among users ($p>0.038$) Significant	There was a significant difference in the realistic gap of leadership quality among the teachers, students, and researchers of the university libraries in Bangladesh.
		Realistic gap among universities ($p>0.088$) Not significant	There was no significant difference in the superiority gap of leadership quality among the users of the university libraries in Bangladesh.

H = Hypothesis, p = p -value

6.11 Inter-Correlation among Research Gaps, Objectives, Hypotheses, Findings, and Recommendations

From the available literature, five research gaps were found: impact of knowledge and leadership quality dimensions on user satisfaction; individual differences in library leadership quality among teachers, students, and researchers or users from public, private and international university libraries; as well as individual differences in library leadership quality gaps, i.e., adequacy gap, superiority gap and the realistic gap among teachers, students, and researchers or users from public, private and international university libraries of Bangladesh. Based on the research gaps, a conceptual framework was developed incorporating three areas. As per the research gaps and areas of the conceptual framework, four objectives were developed. The first five hypotheses were formulated based on the first objective. The sixth hypotheses were made based on the second objectives. The seventh hypotheses were made based on the third objectives. The study presented an inter-correlation among research gaps, objectives, hypotheses, findings, and recommendations (Table 6.1).

Table 6.2: Inter-Correlation among Research Gaps, Objectives, Hypotheses, Findings, and Recommendations

Sl No	Research Gaps	Objectives	Hypothesis	Findings	Recommendations
1	Impact of leadership quality dimensions on user satisfaction in university libraries of Bangladesh using structural equation modeling	To measure the impact of leadership quality dimensions on user satisfaction in the university libraries of Bangladesh.	The higher the perceived <i>Knowledge Competency</i> of librarians of Bangladesh, the higher the level of user satisfaction.	The validity of the SEM approach was verified by many validity and reliability statistics, and its significance was demonstrated at a level of $p < 0.001$. The model exhibited a robust correlation ($R = 0.726$) across variables, with the model ($R^2 = .527$) accounting for 52.7% of the variation in user satisfaction. Each factor of leadership quality had a substantial effect on user satisfaction. The standardized coefficients beta values indicate that the responsiveness quality of the librarians had the greatest influence on user satisfaction, followed by the technical competency approach, the visionary	University Library administrators should actively contribute to effective leadership performance by taking into account the expectations of its patrons. Library staff should prioritize their expertise and technical abilities, negotiation ability, forward-thinking mindset, and responsive demeanor to meet the needs of patrons. Library personnel should prioritize the continuous acquisition of knowledge and the diligent upkeep of the library.
2			The greater the perceived <i>Technical Competency</i> of the library professionals, the greater the level of user satisfaction.		
3			The greater the <i>Negotiation Skills</i> of the library professionals, the greater the level of user satisfaction.		
4			The more <i>Visionary</i> the library staff is, the more satisfied the patrons are.		

5			The better the perceived <i>Responsiveness</i> from library staff, the greater the level of user satisfaction.	approach, knowledge competency, and the negotiating skill of library staff.	
6	Significant difference in library leadership quality by user category or university category	To evaluate the individual variance in knowledge and leadership quality by the user and university categories.	The library leadership quality among the teachers, students, and researchers differs significantly. The library leadership quality among the university libraries differs significantly.	There was no significant difference in library leadership quality among the teachers, students, and researchers of the university libraries in Bangladesh. However, there was a significant difference in leadership quality among university libraries in Bangladesh.	The public library should prioritize enhancing the quality of its current leadership performance in order to meet the needs and expectations of its patrons.
7	The significant differences in the gaps in library leadership quality by user category and university category.	The gaps in library leadership quality among users and university categories differ significantly	The adequacy gap in library leadership quality among teachers, students, and researchers differs significantly The adequacy gap in library	There was a significant difference in leadership quality among the teachers, students, and researchers of the university libraries in Bangladesh. There was a significant difference in the	Library professionals possess the ability to fulfill the basic leadership requirements of teachers, students, and researchers. Therefore, it is essential for library staff to maintain this standard. Additionally, the administrators of

			leadership quality among university libraries differs significantly.	adequacy gap of leadership quality among users of university libraries in Bangladesh.	public, private, and international university libraries should prioritize the development of leadership qualities that meet the expectations of library users in order to ensure their satisfaction.
			The superiority gap in library leadership quality among teachers, students, and researchers differs significantly.	There was no significant difference in the superiority gap in leadership quality among the teachers, students, and researchers of the university libraries in Bangladesh. There was no significant difference in the superiority gap in leadership quality among the users of public, private, and international university libraries in Bangladesh.	The authorities of university libraries should take the initiative to meet the superiority gap in leadership quality to satisfy their users. In particular, the authorities of the public university libraries should emphasize to meet the superiority gap in leadership quality.
			The realistic gap in library leadership quality among teachers, students, and researchers differs significantly.	There was a significant difference in the realistic gap of leadership quality among the teachers, students, and researchers of the university	The authorities of the university libraries should take the initiative to meet the realistic gap in leadership quality to

				libraries in Bangladesh.	satisfy their users.
			The realistic gap in library leadership quality among the university libraries differs significantly.	However, there was no significant difference in the realistic gap in leadership quality among university libraries in Bangladesh.	In particular, the authorities of the public university libraries should emphasize meeting the realistic gap in leadership quality.

6.12 Relationship of the Study with Contemporary Issues and SDGs

The study on knowledge and leadership quality is highly relevant to several contemporary global and societal issues, including the impact of globalization, the evolving nature of leadership in the digital age, innovation in education, organizational resilience, and sustainable development. It also aligns with the Sustainable Development Goals (SDGs), particularly those related to education, inequality, and institutions. Below are the key connections between the study and these critical issues:

6.12.1 Globalization and Knowledge Management

In the era of globalization, knowledge has become a key resource for organizations and leaders. As the world becomes more interconnected, leaders are required to possess a broad understanding of global trends and issues, as well as the capacity to navigate complex international networks. The study on knowledge and leadership quality addresses the need for leaders to have access to and efficiently manage information to make informed decisions. Globalization demands that leaders possess not only knowledge within their specific domains but also the cultural intelligence and adaptability to lead diverse teams and manage cross-border operations. Enhancing leadership knowledge through SDG-4 quality education and capacity-building initiatives directly support the goal of inclusive and equitable quality education, helping to prepare future leaders for the challenges of a globalized world.

6.12.2 Digital Transformation and Leadership

In today's digital age, leadership is undergoing significant transformations due to the rapid advancements in technology. Leaders now need to understand how to leverage

digital tools to foster innovation, manage teams, and implement data-driven strategies. The study explores how knowledge in digital literacy and technological competence is becoming a crucial component of leadership quality in modern organizations. Digital transformation requires leaders to have a solid grasp of technology and the ability to lead organizations through the complexities of digital change, from automating processes to data analytics. The focus on equipping leaders with knowledge in digital transformation aligns with SDG 9, promoting innovation and sustainable infrastructure, and empowering leaders to drive technological progress in their organizations.

6.12.3 Innovation and Educational Leadership

Knowledge is the driving force behind innovation, and leaders who possess the right educational background and leadership skills are better equipped to foster innovation in their institutions. The study investigates the correlation between leadership quality and the ability to inspire creativity and innovation within teams. Innovation in both the public and private sectors is crucial for addressing complex societal challenges, and effective leadership is key to fostering an environment that encourages new ideas and solutions. Addressing SDG 4 (Quality Education) and SDG 8 (Decent Work and Economic Growth) the study highlights how enhancing leadership quality through knowledge acquisition contributes to the development of innovative solutions in education, workforce development, and economic growth.

6.12.4 Organizational Resilience and Leadership in Crisis

In times of crisis, such as during the COVID-19 pandemic, leadership plays a crucial role in ensuring organizational resilience. Leaders must have the knowledge and skills to manage crises, make quick decisions, and lead teams through uncertainty. The study addresses how knowledge-based leadership, particularly in crisis management, enhances an organization's ability to adapt and survive during turbulent times. Leadership in crisis management has become increasingly important, especially as organizations face disruptions from pandemics, economic downturns, and climate change. Addressing SDG 16 (Peace, Justice, and Strong Institutions), the study emphasizes the role of leadership in strengthening institutions, particularly during crises, which promotes the development of strong institutions capable of withstanding shocks and maintaining stability.

6.12.5 Leadership and Reducing Inequalities

Knowledgeable leaders play a key role in promoting equity and reducing inequalities within organizations and society at large. Leaders with a solid foundation in ethics, diversity, and inclusion are better positioned to create fair policies, promote diversity, and ensure equal opportunities for all. The study examines how leadership knowledge in these areas can contribute to more inclusive environments. Addressing social inequalities and promoting diversity have become critical components of effective leadership in modern organizations, as more attention is paid to corporate social responsibility and inclusive practices. The study aligns with SDG 10 (reduced inequalities) by exploring how leaders with a deep understanding of inclusion and equity can reduce inequalities within their organizations, fostering a culture that embraces diversity and equal opportunities for everyone.

The study on knowledge and leadership quality ties into several broader goals within the Sustainable Development Goals (SDGs) framework. By enhancing leadership knowledge, the study contributes to SDG 4 (Quality Education) by promoting lifelong learning and skill development, which is essential for cultivating capable leaders in various sectors. Moreover, its connection to SDG 10 (Reducing Inequalities) shows how knowledgeable leadership can address disparities within organizations and society. Additionally, its focus on digital literacy and innovation aligns with SDG 9 (Industry, Innovation, and Infrastructure), promoting leaders who can steer their organizations toward sustainable growth and resilience in a rapidly changing world.

6.13 Reasons for Less User Satisfaction

Overall, Users from private university libraries reported the highest overall satisfaction mean of 5.50 (SD = 1.17), indicating a high level of satisfaction with the leadership performance. This was followed by users from international university libraries, with an overall satisfaction mean of 5.41 (SD = 1.12). Users from public university libraries reported a lower overall satisfaction mean of 5.12 (SD = 1.08) compared to the other categories, indicating that the respondents of the public and international university libraries were comparatively less satisfied than private university libraries. The ANOVA results indicate that users of the public university libraries get significantly less qualified leadership performance ($p < 0.001$) than private and international university libraries for

overall, dimensional, and item-wise leadership quality. The ANOVA results also recommended that there are significant differences in the overall, dimensional, and item-wise adequacy gaps ($p < 0.000$), superiority gaps ($p < 0.855$), and realistic gaps ($p < 0.088$) among the users of public, private, and international university libraries, indicating the users of the public university libraries get significantly less qualified leadership performance against their expectations than the users of the private and international university libraries. Even among the thirty items, nine have a negative adequacy gap for the users in public university libraries, whereas there are no negative adequacy gaps in private and international university libraries. The result indicated that all the items have a positive adequacy gap for the users of public, private, and international university libraries except one item in private and international university indicating that public university library professionals meet their users' minimum leadership expectations regarding each of the leadership quality, and except one item, private and international university library professionals meet their users' minimum leadership expectations. The result indicated that all the quality items have a negative superiority gap to the users of public, private, and international university libraries, indicating that the public, private, and international university library professionals were not capable of meeting their users' desired leadership expectations regarding each of the qualities. The results indicated that all the quality items have a negative-realistic gap to the users from public universities, except 1 item, all quality items have a negative-realistic gap to the users of private universities and 6 items have a negative-realistic gap to the users of international university libraries, indicating the public, private and international university library professionals sometimes did not meet their users' real leadership expectations, sometimes they meet the users real expectations regarding specific leadership qualities.

Based on the findings from the data collected, several reasons are assumed to contribute to lower user satisfaction regarding knowledge and leadership quality in university libraries. These challenges affect how effectively libraries are managed and how well they meet user expectations, particularly in terms of leadership and knowledge dissemination. The key reasons are outlined below:

6.13.1 Lack of Strategic Vision and Innovation

One of the significant factors contributing to lower satisfaction is the absence of strategic vision and innovation among library leadership. Many university libraries, particularly in public institutions, are still following traditional models of management and service delivery. Library leaders may not have the required knowledge or willingness to adopt new technologies or innovative practices that can enhance user experiences.

6.13.2 Inadequate Technological Infrastructure

A common issue in both public and private university libraries is the lack of investment in technological infrastructure. Library leaders may lack the knowledge or initiative to push for digital transformation, leading to inadequate online resources, slow digital cataloging, and poor access to e-journals and databases.

6.13.3 Limited Professional Development for Library Staff

In many cases, library staff lack ongoing professional development opportunities, which limits their ability to effectively assist users. Leadership may not prioritize or provide sufficient training in modern library practices, information literacy, or user-centered services.

6.13.4 Bureaucratic Decision-Making Processes

In public university libraries, especially, bureaucratic hurdles often slow down decision-making processes. Leaders may not have the autonomy or the capacity to implement user-centered changes quickly. This can create frustration among users, as their feedback or requests for new services may take a long time to be acted upon, or may not be implemented at all.

6.13.5 Lack of User-Centered Services

Library leadership may not prioritize the development of user-centered services such as personalized support, research assistance, or responsive help desks. In many cases, libraries in public universities are overburdened by a high number of users and limited resources, which limits their ability to provide tailored services.

6.13.6 Ineffective Communication and Feedback Mechanisms

Another key reason for less user satisfaction is poor communication between library leadership and users. Many libraries lack effective channels for gathering and acting

upon user feedback. Leadership may not actively engage with the student and faculty communities to understand their evolving needs and expectations.

6.13.7 Insufficient Collaboration between Academic and Library Leaders

In some cases, there is a disconnect between academic leadership and library leadership. This lack of collaboration hinders the integration of library services into the broader academic mission of the university. Without close collaboration, library services may not align with curriculum needs or support the research goals of faculty and students.

6.13.8 Understaffing and Resource Limitations

Both public and private university libraries often face issues related to understaffing and resource constraints. Library leadership may struggle to advocate for sufficient funding or staffing, which directly impacts the quality of services provided. This is more prevalent in public university libraries, where funding limitations are more common.

6.13.9 Limited Access to Global Knowledge Networks

Library leadership in public, private and international universities may not have established strong partnerships with global knowledge networks, resulting in limited access to international research databases, journals, and academic resources. This affects the quality of information available to users, especially researchers and postgraduate students.

6.13.10 Resistance to Change and Organizational Inertia

Some library leaders may be resistant to change, particularly in public university settings where there is often organizational inertia. Leadership may be slow to adopt new trends in library science, digital transformation, and user-centered design due to a lack of awareness or reluctance to disrupt established practices.

Further studies are needed to explore the reasons behind the lack of awareness of library leadership quality, low perception of leadership quality, and reduced user satisfaction, as well as the factors contributing to higher adequacy, superiority, and realistic gaps in library leadership quality across public, private, and international university libraries. It is suggested that public university libraries may face specific challenges, such as a comparatively larger user base, more programs, fewer updated and relevant resources,

limited monitoring from management, insufficient promotional activities, intense competition for admissions, and a lack of concern from library staff about user retention. These factors could contribute to lower satisfaction with leadership quality, less awareness and perception of leadership, and more significant gaps in adequacy and superiority in public university libraries compared to private and international institutions. Therefore, university library authorities should focus on developing globally standardized leadership quality that aligns with user expectations to enhance user satisfaction.

6.14 Implication of the Result of the Study

The findings of the study on the impact of knowledge and leadership quality in university libraries have several important implications. First, the study highlights the crucial role that effective leadership plays in shaping the performance and user satisfaction of libraries. Leadership quality, when aligned with users' expectations, can directly enhance the library's service delivery, resource management, and overall user experience. This suggests that improving leadership quality could lead to higher user satisfaction, better resource utilization, and more efficient operations in university libraries.

Second, the study reveals the importance of increasing awareness and understanding of leadership roles among library staff. If staff members, especially in public university libraries, are more aware of the significance of leadership in their day-to-day operations, they are likely to perform their duties with greater commitment and efficiency, resulting in a better user experience.

Moreover, the findings indicate that there are often significant gaps between users' expectations and the actual leadership practices in many university libraries, particularly in public institutions. These gaps, whether in terms of leadership adequacy or resource allocation, could hinder the growth and modernization of library services, underscoring the need for tailored training and development programs focused on building effective leadership in university libraries.

Finally, the study also emphasizes the need for strategic interventions to address the disparities between different types of universities. Public, private, and international

universities each face unique challenges, and leadership models must be flexible enough to adapt to these varying contexts to ensure the sustainability of library services.

6.15 Conclusion

The study assessed the impact of knowledge and leadership quality dimensions on user satisfaction in university libraries in Bangladesh, gathering opinions from teachers, students, and researchers. Various statistical methods confirmed the adequacy, reliability, validity, and model fit, yielding meaningful results. Findings revealed that users were generally satisfied with current leadership performance, and their satisfaction levels were reasonably high. The SEM approach was found to be significant, showing that knowledge competency, technical skills, negotiation abilities, vision, and responsiveness of library professionals had a substantial influence on user satisfaction in Bangladeshi university libraries.

Although the libraries were able to meet the minimum expectations for leadership, they fell short of achieving the desired or real expectations of their users in terms of overall leadership performance and specific leadership dimensions. Additionally, significant differences were observed in the gaps between leadership expectations and performance among users of public, private, and international university libraries. Public university libraries, in particular, delivered significantly lower leadership performance compared to the expectations of their users, especially when compared to private and international institutions. Therefore, it is recommended that public university libraries implement comprehensive awareness programs and improve leadership performance to address the gaps in leadership quality. This study marks the first attempt to evaluate the relationship between knowledge and leadership quality and user satisfaction in Bangladeshi university libraries using SEM, filling a research gap on library leadership quality and user satisfaction. However, further studies are necessary to refine the model for more relevant and accurate results.

CHAPTER SEVEN

CHAPTER SEVEN

Major Findings and Recommendations

7.1 Introduction

The most practical and straightforward method for assessing the performance of academic library professionals is to measure leadership quality. Globally, library service quality is measured using SERVQUAL. Though Bangladeshi university libraries are regularly accused for falling short of their users' expectations in terms of quality leadership, no research has been done on the subject. In addition to identifying individual differences in leadership quality and leadership quality gaps—that is, the adequacy gap, superiority gap, and realistic gap—by user and university categories in Bangladeshi university libraries, this study assessed the influence of leadership quality dimensions on user satisfaction. Along with measuring user satisfaction, the study also measured leadership quality gaps and overall, dimensional, and item-wise leadership quality. In order to achieve this goal, SEM approach based on LEADQUAL instruments was created to assess the relationship between the five dimensions of leadership quality and user satisfaction. The five aspects of leadership quality served as independent variables, and user satisfaction served as the dependent variable. After talking with LIS researchers and conducting a pilot survey, the model was modified to align with the specific policies of university libraries in the area.

Using a standardized questionnaire, the final poll was conducted with professors, students, and researchers from public, private, and foreign university libraries. To present the current state of library professionals and libraries, additional structured questionnaires were used to gather information from the librarians of the chosen university libraries about their current systems, services, facilities, academic credentials, professional body engagement, leadership activities, and training arrangements.

Construct validity and reliability, as well as confirmatory and exploratory component analyses and path analyses, were all included in the SEM. To assess the substantial influence of leadership quality dimensions on user satisfaction, the confirmatory factor analysis, exploratory factor analysis, path analysis, construct reliability, and construct validity were carried out using the SmartPLS4. Using descriptive statistics, the SPSS 23rd was used to measure the leadership quality gaps, user happiness, and overall, dimensional, item-wise leadership quality. Through the use of ANOVA, it was also used to determine the individual

variations in leadership quality as well as leadership quality gaps, such as the realistic, adequacy, and superiority gaps by user and university categories.

7.2 Key Findings

This section included a summary of the main conclusions regarding the current situation, usages, leadership quality, and the impact of these dimensions on user satisfaction. It also covered the variations in librarians' expectations for their leadership, user satisfaction, library leadership quality, and the adequacy, superiority, and realistic gaps by user and university categories.

7.2.1 Present Status of the Selected University Libraries in Bangladesh

The study examined the current status of selected university libraries in Bangladesh, focusing on knowledge and leadership quality and their impact on user satisfaction. Key factors such as staffing, library infrastructure, automation, social media usage, and membership in digital library consortiums were explored.

- i. **Library Staff:** Among the twenty university libraries, the Dhaka University Library had the most staff (185), while the Asian University for Women had the fewest (5), totaling 663 staff across all libraries. Staff positions were categorized, providing insights into the organizational structure and resource allocation in these libraries (Table 5.2).
- ii. **Library Space, Seating Capacity, and Hours:** About 55% of the libraries operate in separate buildings, with seating capacities ranging from 78 to 1,500. Libraries generally open for 10.5 to 14 hours per day, averaging six days per week, reflecting differences in user demand (Table 5.3).
- iii. **Library Automation and Digitization:** All libraries used the Koha Integrated Library System for automation, with 45.45% integrating RFID technology. Most libraries established digital repositories using DSpace, and 45% of these were registered with OpenDOAR or ROAR, enhancing access to scholarly resources (Table 5.4).
- iv. **Social Media Usage:** Facebook was the most widely used platform, with 75% of libraries using it. Private and international universities led in social media

engagement, while public universities lagged behind, especially on platforms like Twitter and LinkedIn (Table 5.5).

- v. **Membership in Digital Library Consortia:** Public universities had the highest membership in digital library consortia (78.78%), followed by international and private universities. Overall, 71.66% of university libraries were members of one or more consortia, reflecting efforts to improve resource-sharing and access to e-resources (Table 5.6).

This analysis provides a comprehensive understanding of the current operational status, highlighting both strengths and areas for improvement in university library services across Bangladesh.

7.2.2 Knowledge Competency of Library Professionals

The study explored the knowledge competency of library professionals in Bangladesh, focusing on their academic qualifications and participation in professional development activities across public, private, and international university libraries.

- i. **Library Staff with LIS Degrees:** The data showed that out of 653 total library staff members, 55.28% held degrees in Library and Information Science (LIS). The highest number of staff held Master's degrees in LIS, with public universities contributing the most, followed by private and international universities. The distribution of higher qualifications like MPhil and PhDs was limited, indicating that more could be done to advance professional education in LIS, particularly at the doctoral level (Table 5.7).
- ii. **Library Staff with ICT Degrees:** Only 13.62% of the total library staff had qualifications in Information and Communication Technology (ICT). Public universities contributed the most staff with ICT degrees, followed by private and international universities. Most of these qualifications were at the certificate or diploma level, with very few Bachelor's or Master's degree holders, highlighting a gap in advanced ICT education among library professionals (Table 5.8).
- iii. **Professional Courses, Workshops, and Training:** A significant proportion of library staff participated in various professional development activities, including

courses on library automation software, digital library software, plagiarism checkers, database management, and archives management. Workshops on library automation software had the highest participation rate at 23.2%. Private university staff had the highest overall participation, followed closely by public university staff (Table 5.9).

- iv. **Seminars and Conferences:** Seminars and conferences organized by professional bodies and universities saw high participation rates, particularly from public university staff. National and international conferences were well attended, but participation in global conferences organized by associations like IFLA or ASIS&T was lower, at only 8.1% (Table 5.10).

Overall, the study highlighted active engagement in professional development, though there remains a need for more advanced degrees and higher participation in global professional events, particularly among public university staff.

7.2.3 Engagement with Professional Bodies

The study examines the engagement of library staff in professional bodies across public, private, and international universities in Bangladesh. Understanding the involvement of library professionals in national and international associations offers insights into their leadership roles, participation levels, and contribution to the wider professional community. It also sheds light on the distribution of key positions within these organizations, which reflects the active role of university libraries in advancing the library and information science profession.

- i. **Library Staff Engagement in Professional Bodies:** The study highlighted that the Library Association of Bangladesh (LAB) had the highest engagement from library staff, with 125 participants (62.81%). BALID had 67 participants (33.66%), while MEDLAB had only 1 participant. International associations like IFLA and ASIS&T had minimal representation, with 4 and 1 participants, respectively. Public university library staff had the highest participation rate in professional bodies (64.82%), followed by private university staff (33.66%), with minimal engagement from international universities (1.50%) (Table 5.11).

- ii. **Positional Status in Professional Bodies:** There were 3 presidents across the participating universities, 2 from private universities and 1 from a public university. Vice presidents were equally distributed between public and private universities, with 3 each, but none from international universities. General secretary positions were split between public and private universities. Most positions (30.8%) were held by regular members, distributed almost equally between public and private universities, with 1 from an international university. Public universities had a higher share of treasurer and councilor roles, while private universities had more country coordinators. Social media-related roles were held by private university staff. Overall, public and private universities equally shared 48.7% of the total positions, with only 2.7% of positions held by international university members (Table 5.12).

7.2.4 Promotional Activities

The study examined the role of training and promotional activities in enhancing library services and user engagement within university libraries in Bangladesh. It focused on how these initiatives were organized across public, private, and international university libraries, providing insight into their effectiveness and reach.

- i. **Training Programs for Library Staff Organized by the Library:**
The study revealed that 76.88% of the training programs were conducted in university libraries. Private universities led with 93.75% of libraries offering training, followed by public universities (65.89%) and international universities (62.5%). The most common training, conducted by 95% of the libraries, focused on library automation and digital library management systems, while managerial training programs were the least organized, held by 60% of the libraries (Table 5.13).
- ii. **Promotional Activities Organized by the Library:**
The study found that 63.57% of promotional activities took place in university libraries, with private universities having the highest engagement (82.14%), followed by international (57.14%) and public (51.94%) universities. Library orientation programs were the most commonly organized promotional activities

(90% of libraries), while newsletters had the lowest occurrence, published by only 35% of the libraries (Table 5.14).

The findings indicate that while training and promotional activities are widely practiced in Bangladeshi university libraries, there are significant differences in the levels of participation across public, private, and international institutions. Private universities lead in both categories, highlighting a proactive approach to staff development and user engagement, whereas public and international universities show room for improvement, particularly in managerial training and promotional outreach.

7.2.5 Infrastructural Development and Library Automation

The study found that 71.5% of university libraries in Bangladesh had undergone infrastructural development. International universities led with 80% development, followed by private (76.25%) and public universities (67.26%). The most common improvements included air conditioning and teacher's corners (90%), while sleeping rooms were rare (5%) (Table 5.15).

- i. **Shelving Systems:** Open-shelf systems were the most popular, with 57.1% of libraries adopting them. Public, private, and international universities showed varying preferences for open, closed, and semi-open shelf systems (Table 5.16).
- ii. **Automation Status:** 60% of libraries were fully automated, with international and private universities leading in this area. Koha was the most widely used automation software (95%), and DSpace was the preferred digital library software (85%) (Table 5.17 and 5.18).
- iii. **Library Automation Teams:** 60% of the automation work was handled by the libraries' own teams, while 20% involved external experts, and 15% used a combination of both (Table 5.19).

7.2.6 Library Services

The study examines general and innovative services in selected university libraries in Bangladesh. All libraries offered circulation services, while only 40% provided inter-library loans. Private universities led with 81.7% of services, followed by public

(68.46%) and international (46.66%) universities. Overall, 69.06% of general services were offered across all libraries. Anti-plagiarism software was the most common innovative service (75%), while paraphrasing software was the least provided (20%). Private universities led in innovative services (60.71%), with an overall provision rate of 47.86% (Table 5.21 and 5.22).

7.2.7 Facilities in the University Libraries

All selected university libraries in Bangladesh offer Wi-Fi, but only 40% provide web 2.0 interactive sharing and virtual reference services. Private universities lead in ICT facilities (76.78%), followed by public (61.66%) and international universities (57.14%), with an overall provision of 67.85% of ICT facilities. 75% of libraries have a recommendation/complaint box, with most allowing teachers (95%) and students (70%) to suggest book purchases. Private universities lead with 78.13% of resource selection facilities, followed by public universities (74.98%), and international institutions (50%) (Table 5.23 and 5.24).

7.2.8 Library Collections and Access

The study highlights the availability and subscription rates of various resources, including physical materials, online journals, e-books, and other e-resources in Bangladeshi university libraries. All university libraries in Bangladesh maintain books and journals, while only 65% hold manuscripts and archival materials. Overall, 89.23% of library resources are available, with private and international universities having higher resource availability (93.27% and 92.30%) than public universities (84.48%). Springer journals are the most subscribed (85%), while Elsevier journals have the lowest subscription rate (55%). Public universities lead in online journal access with 75.55%, followed by private (54.54%) and international universities (45.45%). Oxford and Springer e-books have the highest subscription rate (65%), while Elsevier e-books have the lowest (45%). Public universities have the highest e-book database subscriptions (67.74%), while private universities follow with 43.18%, and international universities with 18.18%. Theses and dissertations databases are the most subscribed (70%), while clinical reports and synopsis databases are the least (10%). Private universities lead in e-resource database access with 67.74%, followed by public universities (31.83%) and international universities (16.66%) (Table 5.25, 5.26, 5.27 and 5.28).

7.2.9 Usage of Library and Library Services

The study examines library usage among respondents across various university categories and user types, revealing notable patterns in frequency and demographics. The majority of respondents (32.4%) utilized their libraries twice a week, followed by 24% who used it daily and 20.5% weekly. Less frequent usage was observed, with 10.9% occasionally, 6.4% monthly, and 5.8% fortnightly. Among user categories, 24.7% of students reported daily library use, with 13.4% of teachers and 66.4% of researchers. Library use was highest among students, who comprised 85.2% of total users, while teachers and researchers made up 13.1% and 1.8%, respectively. In terms of university types, international university respondents showed the highest daily usage at 36.4%. Public universities had the most frequent library usage overall, with 37.2% visiting twice a week. The distribution of respondents was 56.5% from public universities, 37.0% from private universities, and 6.4% from international universities. Overall, the findings illustrate varying library usage patterns influenced by user category and university type, highlighting students as the predominant library users across the board ([Table 2.29](#), [5.30](#), and [5.31](#)).

7.2.10 Knowledge and Leadership Quality of Library Professionals

The study assessed the impact of leadership quality on university library professionals in Bangladesh by analyzing overall, dimensional, and item-wise leadership performance and comparing user expectations to actual performance.

- i. Overall Leadership Quality:** Leadership quality was measured using four metrics: Minimum Leadership Expectation (MLE), Desired Leadership Expectation (DLE), Real Leadership Expectation (RLE), and Actual Leadership Performance (ALP). The findings show that users' real and actual leadership expectations were moderately met, with both RLE and ALP scores exceeding 5, indicating general satisfaction with the professionals' leadership ([Table 5.32](#)).
- ii. Dimensional Leadership Quality:** Five dimensions of leadership were analyzed: Knowledge Competency, Technical Competency, Negotiation Skill, Visionary, and Responsiveness. Responsiveness scored the highest with 5.12, while Negotiation Skill had the lowest perceived score at 5.00. Although all dimensions

fell within the tolerance zone, indicating user satisfaction, ALP was slightly lower than RLE, suggesting that leadership performance didn't fully meet expectations (Table 5.33).

- iii. **Item-wise Leadership Quality:** Across twenty-five specific leadership items, the statement "They are available to get library service" received the highest score (5.28). Despite overall user satisfaction with each leadership item, actual leadership performance fell short of real expectations for all items, revealing unmet user expectations in leadership quality (Table 5.34).

7.2.11 Leadership Quality Evaluation Model

The Leadership Quality Evaluation Model categorizes leadership performance into various zones based on how Actual Leadership Performance (ALP) compares to users' Minimum (MLE), Desired (DLE), and Real Leadership Expectations (RLE). The model identifies Evaluation Zones (EZ), Action Zones (AZ), and Implementation Zones (IZ) for assessing leadership quality. According to the findings, all items fall within the Improvement Zone (EZ), indicating that leadership quality has potential for enhancement. No items were placed in the Problematic Zone, Maintenance Zone, or Superiority Zone, implying no major issues or exceptional leadership performances. This highlights the need for targeted actions to improve leadership quality across university libraries and user categories (Table 5.35 and 5.36).

7.2.12 User Satisfaction in the University Libraries of Bangladesh

The study analyzes user satisfaction with library services and leadership quality in Bangladeshi university libraries. The overall satisfaction score was 5.28 out of 7, with the statement "I would like to use the library in the future" receiving the highest average rating of 5.75. Satisfaction levels varied among users (Table 5.37).

- i. **By User Category:** Researchers showed the highest satisfaction (5.56), followed by teachers (5.34), and students with the lowest (5.17). ANOVA results showed no significant differences in overall satisfaction by user category ($p > 0.679$) and item-wise category ($p > 0.118 - 0.994$) (Table 5.38, 5.39, 5.40 and 5.41).

- ii. **By University Category:** Private universities reported the highest satisfaction (5.50), followed by international (5.41) and public universities (5.12). Item-wise analysis showed lower satisfaction for public university users compared to private and international universities. ANOVA revealed statistically significant differences in overall user satisfaction by university type ($p < .001$), indicating that satisfaction levels differ notably across university categories (Table 5.42, 5.43, 5.44, 5.45, 5.46 and 5.47).

7.2.13 Impact of Knowledge and Leadership Quality

The study investigates the impact of leadership quality on user satisfaction in university libraries using Structural Equation Modeling (SEM). Five dimensions of leadership quality—knowledge competency, technical competency, negotiation skill, visionary, and responsiveness—were used as independent variables, while user satisfaction was the dependent variable. The analysis employed exploratory and confirmatory factor analysis, path analysis, and various reliability and validity tests (Cronbach's alpha, RHO_A, AVE, and CR).

- i. **Correlation Matrix:** There was a strong, positive correlation between user satisfaction and all five leadership dimensions ($p < 0.01$). No multi-collinearity issues were detected, as all correlations remained below 0.90 (Table 5.48).
- ii. **SEM Results:** The SEM model showed a strong relationship ($R = 0.726$) between leadership dimensions and user satisfaction, supported by a significant F-statistic ($F(5,507) = 112.961$, $p < 0.001$). This suggests that leadership quality significantly influences user satisfaction (Table 5.49).
- iii. **Reliability and Validity:** Adequate sampling and high reliability were confirmed through the tests applied, validating the consistency of the data and the model's fitness (Table 5.50).

In conclusion, the study demonstrates that higher leadership quality in university libraries has a significant positive impact on user satisfaction.

7.2.14 Library Leadership Quality Gaps

The study examines individual variations in leadership quality gaps in university libraries in Bangladesh, focusing on adequacy, superiority, and realistic gaps across different user categories (teachers, students, researchers) and university types (public, private, international). These gaps are calculated by comparing Actual Leadership Performance (ALP) with Minimum Leadership Expectation (MLE) (adequacy gap), Desired Leadership Expectation (DLE) (superiority gap), and Real Leadership Expectation (RLE) (realistic gap).

i. Overall Leadership Gaps

- Library professionals met minimum leadership expectations (positive adequacy gap of 0.57) but failed to meet desired and realistic expectations (negative superiority gap of -0.91 and realistic gap of -0.15) (Table 6.65).

ii. User Category Variations

- Researchers had the highest adequacy gap (1.124), while teachers had the smallest (0.293). The superiority gap was highest for researchers (-1.271) and lowest for students (-0.865) and The realistic gap was highest for teachers (-.440), and lowest for researchers (-0.075) (Table 5.67).
- ANOVA results show a significant difference in adequacy ($p > 0.027$) and realistic gaps ($p > 0.038$) across user categories but no significant difference in the superiority gap ($p > 0.060$) (Table 5.68).

iii. University Category Variations

- International university users had the largest adequacy gap (1.322), while private university users showed the highest realistic gap (-0.225). Superiority gaps were similar across all university types (Table 5.72).
- ANOVA revealed significant differences in adequacy gaps across all dimensions (e.g., knowledge competency, technical competency), while no significant differences were found in the superiority gap or most realistic gaps, except for the visionary dimension (Table 5.74).

iv. Dimensional Leadership Quality Gaps

- Significant differences were observed in adequacy gaps across all leadership dimensions, including knowledge competency, technical competency, negotiation skill, visionary, and responsiveness (Table 5.74).
- However, no significant differences were found in the superiority gaps or realistic gaps across most dimensions, except for the visionary quality (Table 5.74).

In conclusion, while library professionals generally meet minimum leadership standards, they fall short in achieving desired and realistic expectations, with significant variations by user and university categories.

7.3 Recommendations

The study made eight important recommendations based on its findings with the goal of enhancing the expertise and leadership abilities of university library staff members. It is anticipated that these actions will contribute to closing the gaps between ideal and actual user satisfaction.

7.3.1. Enhance Leadership Development Programs

- **Continuous Training:** University libraries should implement regular training programs to enhance leadership skills in areas such as visionary thinking, responsiveness, and negotiation skills. This will help bridge the superiority and realistic gaps, as identified in the study.
- **Mentorship Programs:** Pairing less experienced professionals with senior leaders can help improve leadership qualities, especially in technical competency and knowledge management.

7.3.2. Focus on User-Centered Services

- **Customized Services for Different User Categories:** Given the variation in satisfaction levels among teachers, students, and researchers, libraries should develop customized services that cater to the unique needs of each group. This

may involve targeted resource availability, more efficient research support, and interactive tools for students.

- **Regular User Feedback:** Regularly collecting feedback from users, particularly through surveys or focus groups, will ensure that libraries are aware of evolving user expectations and can adjust services accordingly.

7.3.3. Improve Technical and Knowledge Competency

- **Invest in Knowledge Management Systems:** University libraries should invest in advanced knowledge management systems to enhance the efficiency of information retrieval and resource sharing, addressing gaps in knowledge competency and improving overall satisfaction.
- **Technology Integration:** Strengthen technical competency by integrating modern library technologies (e.g., digital repositories, AI-driven search tools) to meet the expectations of users, especially researchers, who are highly dependent on technical efficiency.

7.3.4. Address Gaps in Leadership Performance

- **Close the Adequacy Gap:** Although library professionals generally meet minimum expectations, there should be an effort to move beyond the minimum level of performance and aim to meet desired and realistic leadership expectations. Leadership performance reviews and development programs should focus on exceeding expectations in key areas such as visionary leadership and responsive services.
- **Benchmarking Best Practices:** Libraries should benchmark their leadership quality against leading libraries globally, particularly those in international universities, to reduce the gap between actual performance and desired leadership levels.

7.3.5. Strengthen Communication and Responsiveness

- **Proactive Communication:** Improve library professionals' communication skills to enhance responsiveness, one of the dimensions identified as critical for user satisfaction. Regular communication with users regarding new services, changes, or updates can foster a more engaged and satisfied user base.
- **Personalized Support:** Offer personalized consultation services for users, particularly for researchers and teachers, to support their specific needs in research and resource access, thereby improving leadership responsiveness.

7.3.6. Regular Evaluation of Leadership and Service Quality

- **Annual Leadership Assessments:** Conduct annual assessments of leadership performance within the library to track progress in areas like knowledge competency, negotiation skills, and technical proficiency. Such evaluations should include input from all user categories.
- **Performance Metrics:** Develop clear performance metrics that are tied to user satisfaction outcomes, ensuring that library professionals are held accountable for improving both technical and leadership competencies.

7.3.7. Collaboration with Other Institutions

- **Inter-University Collaboration:** Foster collaboration between public, private, and international universities to exchange best practices and enhance the leadership quality of library professionals. Cross-institutional training and workshops can help reduce the performance gaps identified in the study.

7.3.8. Resource Accessibility Improvements

- **Digital Access:** Focus on improving digital resource accessibility, particularly in areas where users reported inadequacies, such as “all resources are easily accessible” for students and teachers. This can be done by expanding digital library collections and ensuring resources are easy to access remotely.

By implementing these recommendations, university libraries in Bangladesh can improve leadership quality and better align with user expectations, ultimately increasing user satisfaction across different user categories.

7.3.9 Recommendations for Different Categories of Universities

Based on the findings, personalized recommendations are provided for different categories of universities to improve the knowledge and leadership quality of library professionals and progress user satisfaction.

7.3.9.1 Public Universities

1. **Leadership Development Programs:** Inaugurate structured leadership training programs for library professionals to enhance strategic planning, decision-making, and user-centric services.
2. **Increased Investment in Knowledge Resources:** Apportion more funding for advanced digital resources, research databases, and continuous professional development.
3. **User Engagement Initiatives:** Implement feedback mechanisms to incorporate user suggestions in library service enhancements.

7.3.9.2 Private Universities

1. **Technology-Driven Knowledge Management:** Strengthen digital library infrastructure and integrate AI-based systems to improve access and service efficiency.
2. **Leadership Benchmarking:** Encourage collaboration with international university libraries to adopt global best practices in leadership and service quality.
3. **Customized Training for Staff:** Organize specialized training focused on emerging trends in digital librarianship, customer service, and leadership roles.

7.3.9.3 Specialized Universities (Agricultural, Engineering, Medical, and Others)

1. **Domain-Specific Resource Expansion:** Enrich subject-specific collections, including open-access resources and tailored digital repositories.

2. **Research Support Services:** Strengthen research assistance services, including bibliometric analysis and systematic review support, to cater to the needs of specialized disciplines.
3. **Inter-University Collaboration:** Foster knowledge-sharing networks among libraries of specialized universities to interchange best practices and leadership approaches.

By tailoring recommendations to different university categories, this approach ensures more effective application and exploits the impact of knowledge and leadership quality on user satisfaction.

7.4 Future Study

For future research, there are several potential directions that could deepen our understanding of the relationship between leadership quality and user satisfaction in university libraries nationally and globally. The findings of this study have highlighted significant gaps in meeting desired and realistic leadership expectations, which present opportunities for further exploration.

First, **longitudinal studies** could provide valuable insights into how changes in leadership practices impact user satisfaction over time. By tracking library professionals' leadership development and the subsequent effect on user satisfaction, researchers could observe trends and long-term outcomes that are not visible in a cross-sectional study.

Another area for exploration is a **comparative analysis** across different countries or regions. University libraries around the world face diverse cultural, institutional, and technological challenges. A comparative study could reveal how these factors influence leadership quality and user satisfaction, offering insights that could help develop more context-specific strategies.

Technology integration is becoming increasingly relevant, and its impact on leadership within library settings is worth investigating. Emerging technologies, such as artificial intelligence (AI) and machine learning, offer opportunities to enhance leadership performance, streamline library services, and ultimately improve user satisfaction. A study focused on how these technologies affect both leadership quality and user engagement could open new pathways for innovation in the library field.

Additionally, future research could focus on **user-centric leadership approaches**. Different user groups, such as teachers, students, and researchers, have unique expectations and satisfaction levels. Investigating personalized leadership strategies that cater specifically to the needs of each group may provide deeper insights into closing the gaps in user satisfaction.

A further area of interest is the **impact of continuous professional development** for library professionals. Long-term studies could assess the effectiveness of leadership training programs in raising leadership standards and sustaining higher levels of user satisfaction over time.

Expanding the scope of research to include **non-university libraries**, such as public or special libraries, could also offer valuable comparisons in leadership quality and user satisfaction. This would help identify whether the gaps observed in this study are specific to university libraries or more widespread across the library profession.

Lastly, incorporating **interdisciplinary perspectives** from fields like business management or psychology could introduce new frameworks and approaches for understanding and improving leadership within libraries. These disciplines offer insights into leadership development, team dynamics, and user engagement that could be adapted to the library context.

By pursuing these areas of study, future research can build on the findings of this study and contribute to more effective leadership strategies that enhance user satisfaction and library performance.

7.5 Conclusion

This study explored the impact of leadership quality on user satisfaction in university libraries in Bangladesh, addressing a significant gap in existing literature. Through a comprehensive analysis utilizing Structural Equation Modeling (SEM), the research confirmed that leadership quality dimensions—specifically knowledge competency, technical competency, negotiation skills, visionary attributes, and responsiveness—play a crucial role in influencing user satisfaction. The SEM results demonstrated a strong relationship, with a Multiple R value of 0.726, indicating that higher perceived leadership quality is associated with increased user satisfaction.

Furthermore, the study identified substantial individual variances in leadership quality perceptions across different user categories, including teachers, students, and researchers, as well as among various types of universities (public, private, and international). This highlights the necessity for libraries to tailor their leadership development initiatives to meet the distinct needs of diverse user groups.

Additionally, significant gaps between the expected and actual leadership qualities were observed, indicating that while library professionals meet minimal acceptable standards, they fall short of the desired and realistic expectations of their users. This gap calls for immediate attention to improve leadership practices and ensure that library services align with user needs and expectations.

The research also facilitated the development of a robust measuring tool based on the LEADQUAL framework, which can be utilized for future evaluations of leadership quality in academic libraries. This tool will aid in systematically assessing and addressing leadership challenges, ultimately leading to enhanced user satisfaction.

In conclusion, the study provides valuable insights and recommendations for university libraries in Bangladesh to improve leadership quality and service delivery. By prioritizing effective leadership development and addressing the identified gaps, libraries can better meet user expectations, retain existing users, and attract new patrons, thereby fostering a more conducive environment for academic success and engagement.

REFERENCES

References

- Abshirow Mohamed, H., Datche, E., & Kisingu, T. (2018). Effect of Leadership Styles on Employee Performance in the Somali National Civil Service Commission. *International Journal of Novel Research in Humanity and Social Sciences*, 5(3), 56–69. www.noveltyjournals.com
- Afridi, S. A., Khattak, A., & Khan, A. (2016). Measurement of Service Quality Gap in the Selected Private Universities/institutes of Peshawar using SERVQUAL Model. *City University Research Journal*, 6(1), 61–69.
- Afthanorhan, A., Awang, Z., Rashid, N., Foziah, H., & Ghazali, P. L. (2019). Assessing the Effects of Service Quality on Customer Satisfaction. *Management Science Letters*, 9(1), 13–24. <https://doi.org/10.5267/j.msl.2018.11.004>
- Ahmed, D. D. T. (2022). The Impact of Knowledge Management Operations in Promoting the Dimensions of Sustainable Development of the Organization: Analytical Study at the College of Education Al Mustaniriyah University. *International Journal of Research in Social Sciences & Humanities*, 12(02), 332-347. <https://doi.org/10.37648/ijrssh.v12i02.021>.
- Ahmed, S.M.Z. and Shoeb, Z.H. (2009), Measuring Service Quality of a Public University Library in Bangladesh using SERVQUAL. *Performance Measurement and Metrics*, 10(1), pp. 17–32.
- Akparobore, D., & Omosekejimi, A. F. (2020). Leadership Qualities and Style : a Panacea for Job Productivity and Effective Service Delivery among Library Staff in Academic Libraries. *Library M*. <https://doi.org/10.1108/LM-02-2020-0025>
- Al Ansari, H., & Al Khadher, O. (2011). Developing a Leadership Competency Model for Library and Information Professionals in Kuwait. *Libri*, 61(3), 239–246. <https://doi.org/10.1515/libr.2011.020>
- Alam, M. J. (2020). Effects of service quality on satisfaction in Eastern University Library, Bangladesh. *IFLA Journal*, 47, 209–222. <https://doi.org/https://doi.org/10.1177/0340035220959099>.
- Alam, M. J. (2022). *Service Quality and its Impact on User Satisfaction in University Libraries of Bangladesh* [Bangladesh University of Professionals]. <https://ieeexplore.ieee.org/document/7435792>.

References

- Alam, Md. J. (2017a). *Challenges and Remedies for Adoption of Open Source Integrated Library System in the University Libraries of Bangladesh*. 5(2), 26.
- Alam, Md. J. (2017b). *Service Quality Assessment of a Private University Library in Bangladesh using SERVQUAL* [Research Paper]. Eastern University.
- Alam, M. J. & Mezbah-ul-Islam, M. (2022). Impact of service quality on user satisfaction in public university libraries of Bangladesh using structural equation modeling. *Performance Measurement and Metrics*. <https://doi.org/https://doi.org/10.1108/pmm-06-2021-0033>.
- Alam, M. J. & Mezbah-ul-Islam, M. (2019). Factors for adoption of OSILS in University Libraries of Bangladesh. *IFLA Journal*, 45.(2), 127–139.
- Alavi, M., & Leidner, D. E. (2001). Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly: Management Information Systems*, 25(1), 107–136. <https://doi.org/10.2307/3250961>
- Alzahrani, A., Mahmud, I., Ramayah, T., Alfarraj, O., & Alalwan, N. (2019). Modelling digital library success using the DeLone and McLean information system success model. *Journal of Librarianship and Information Science*, 51, 291–306. <https://doi.org/https://doi.org/10.1177/0961000617726123>.
- Ameen, K. (2006). Challenges of Preparing LIS Professionals for Leadership Roles in Pakistan. *Journal of Education for Library and Information Science*, 47(3), 200. <https://doi.org/10.2307/40323830>
- Amiri, N. Al, Rahim, R. E. A., & Ahmed, G. (2020). Leadership Styles and Organizational Knowledge Management Activities: A systematic review. *Gadjah Mada International Journal of Business*, 22(3), 250–275. <https://doi.org/10.22146/gamaijb.49903>
- Ammons-Stephens, S., Cole, H., Jenkins-Gibbs, K., Riehle, C. F., & Weare, J. (2009). Developing Core Leadership Competencies for the Library. *Library Leadership and Management*, 23(2), 63–74. <http://llama.metapress.com/content/m374189w0q200307%5Cnhttp://llama.metapress.com/content/m374189w0q200307/fulltext.pdf>.
- Andaleeb, S. S., & Simmonds, P. L. (1998). Explaining User Satisfaction with Academic Libraries: Strategic Implications. *College & Research Libraries*, 59(2), 156–167. <https://doi.org/10.5860/crl.59.2.156>

References

- Arab-Rahmatipour, M., & Mohammad-Alipour, N. (2015). Transformational Leadership Style and Knowledge Management Relationship among Tehran Hospital Libraries Managers. *IOSR Journal Of Humanities And Social Science (IOSR-JHSS)*, 20(6), 9.
- Arifin, M., Winarti, W., Nasution, M., Fadhillah, L., Irada, C., Amin, A., & Khairani, S. (2023). Perpustakaan Sebagai Pilar Merdeka Belajar-Kampus Merdeka: Telaah Kepuasan Pengguna Perpustakaan Perguruan Tinggi Dengan Structural Equation Modelling. *LIBRARIA: Jurnal Perpustakaan*.
<https://doi.org/10.21043/libraria.v10i2.16702>.
- Armstrong, M. (2004). *Human Resource Management: Theory and Practice*. Bath Press Ltd.
- Arshad, A., & Ameen, K. (2010). Service Quality of the University of the Punjab's libraries: An exploration of users' perceptions. *Performance Measurement and Metrics*, 11(3), 313–325. <https://doi.org/10.1108/14678041011098578>
- Aslam, M. (2018). Current Trends and Issues Affecting Academic Libraries and Leadership Skills. *Library Management*, 39(1–2), 78–92. <https://doi.org/10.1108/LM-10-2016-0076>
- Aslam, M. (2019). Leadership Challenges and Issues Facing Academic Libraries. *Library Philosophy and Practice*, 2019.
- Aslam, M. (2020). Leadership in Challenging Times of Academic Libraries. *Global Knowledge, Memory and Communication*, 69(3), 135–149. <https://doi.org/10.1108/GKMC-03-2019-0038>
- Asogwa, B. E., Asadu, B. U., Ezema, J. U., & Ugwuanyi, F. C. (2014). (2014). Use of ServQUAL in the Evaluation of Service Quality of Academic Libraries in Developing Countries. *Library Philosophy and Practice*, 0_1. *Library Philosophy and Practice*.
- Atanda, L. A., & Udoeduok, E. (2019). Librarians' Competencies and Students Satisfaction with Information Services in University of Uyo Library. *Global Journal of Library and Information Science*, 2(12), 1–21. <https://escipub.com/gjlis-2019-03-2006/>
- Awan, M. R., & Mahmood, K. (2010). Relationship among Leadership Style, Organizational Culture and Employee Commitment in University Libraries. *Library Management*, 31(4), 253–266. <https://doi.org/10.1108/01435121011046326>.

References

- Bahrainizadeh, M. (2013). Identification of Service Quality Dimensions and Measuring Service Quality of University Library from Users' Point of View in Persian Gulf University. *Advances in Environmental Biology*, 7(8), 1654–1662.
- Berry, L. L., & Parasuraman, A. (1991). *Marketing Services: Competing Through Quality*. The Free Press.
- Bolatan, G. I. S., Golgeci, I., Arslan, A., Tatoglu, E., Zaim, S., & Gozlu, S. (2022). Unlocking the Relationships between Strategic Planning, Leadership and Technology Transfer Competence: the mediating role of strategic quality management. *Journal of Knowledge Management*, 26(11), 89–113. <https://doi.org/10.1108/JKM-12-2020-0897>
- BOZDOĞAN, T. (2013). A Research on Knowledge Leadership Characteristics in Accounting Department Managers in Turkey. *International Journal of Business and Social Science*, 4(14), 125–136.
- Capozzi, R. (2018). *Growth Mindset: Leadership makes a difference in wealth management*. John Wiley & Sons, Inc. <https://www.amazon.com/Growth-Mindset-Leadership-Difference-Management/dp/1119421977>
- Castiglione, J. (2006). Organizational Learning and Transformational Leadership in the Library Environment. *Library Management*, 27(4–5), 289–299. <https://doi.org/10.1108/01435120610668223>
- Che, R. M. S., Tasmin, R., & Norazlin, H. (2013). An Empirical Study of Library Customer Satisfaction (LcS) Model at Malaysian University Libraries. *World Applied Sciences Journal*, 23, 47–52.
- Chen, Y.-H. (2007). *Knowledge Conversion Process and Leadership: An exploratory study of Taiwanese managers* [Doctoral thesis]. Loughborough University.
- Cheung, G. W., Cooper-Thomas, H. D., Lau, R. S., & Linda C. Wang. (2024). Reporting Reliability, Convergent and Discriminant Validity with Structural Equation Modeling: A review and best-practice recommendation. *Asia Pacific Journal of Management*, 41, 745–783.
- Chiu, C.-M., Hsu, M.-H., & Wang, E. T. G. (2006). Understanding Knowledge Sharing in Virtual Communities: An integration of social capital and social cognitive theories. *Decision Support Systems*, 42(3), 1872–1888. <https://doi.org/10.1016/j.dss.2006.04.001>

References

- Conger, Jay, A., & Kanungo, Rabindra, N. (1994). Charismatic Leadership in Organizations: Percieved behavioral attributes and their measurement. *Journal of Organizational Behavior*, 15(5), 439–452.
- Darling, J., & Leffel, A. (2010). Developing the Leadership Team in an Entrepreneurial Venture: A Case Focusing on the Importance of Styles. *Journal of Small Business and Entrepreneurship*, 23(3), 355–371. <https://doi.org/10.1080/08276331.2010.10593490>
- Dharejo, S., Hussain, N., Farooq, S. M., Kalwar, M. S., & Mallah, W. R. (2021). Examining the Effect of Authoritative and Laissez-Faire Leadership on Employee Involvement and Performance. *International Journal Advanced Research in Engineering a Technology (IJARET)*, 12(2), 557–567. <https://doi.org/10.34218/IJARET.12.2.2021.053>
- DeLong, K. (2009). The Engagement of New Library Professionals in Leadership. *Journal of Academic Librarianship*, 35(5), 445–456. <https://doi.org/10.1016/j.acalib.2009.06.006>
- Desa, K. N. M., & Kassim, N. A. (2010). Transformational Leadership Enhances Customer satisfaction. *Journal PPM*, 4, 107–112.
- Dijkstra, T. K., & Henseler, J. (2015). Consistent Partial Least Squares Path Modeling. *MIS Quarterly*, 39(2), 297–316.
- Donate, M. J., & Sánchez de Pablo, J. D. (2015). The Role of Knowledge-oriented Leadership in Knowledge Management Practices and Innovation. *Journal of Business Research*, 68(2), 360–370. <https://doi.org/10.1016/j.jbusres.2014.06.022>.
- Enayati, T., Modanloo, Y., Behnamfar, R., & Rezaei, A. (2013). Measuring Service Quality of Islamic Azad University of Mazandaran using SERVQUAL Model. *Iranian Journal of Management Studies (IJMS)*, 6(1), 99–116.
- Fagan, J. C. (2012). The effectiveness of Academic Library Deans and Directors: A literature review. *Library Leadership and Management*, 26(1). <https://doi.org/10.5860/llm.v26i1.5914>
- Faiz Rasool, H., Ullah Arfeen, I., Mothi, W., & Aslam, U. (2015). Leadership Styles and Its Impact on Employee'S Performance in Health Sector of Pakistan. *C 2015 CURJ CUSIT City University Research Journal*, 05(01), 97–109.

References

- Famolu, F. B., & Adelekan, F. I. (2018). *An Evaluation of Leadership Styles and Influence on Employees' Performance in Work Organisations: a study of banking industry. January 2018*, 0–21. <https://www.researchgate.net/publication/352325374>.
- Farkas, F. (2003). The Role of Leadership in Knowledge Management and Knowledge Transfer. *JATEPress*, 14.
- Farooq, M., Khalil-ur-, F., Tijjani, D., Younas, W., Sajjad, S., & Zreen, A. (2018). Service Quality Analysis of Private Universities Libraries in Malaysia in the Era of Transformative. *International Journal for Quality Research*, 13(2), 269–284.
- Feldmann, L. M., Level, A. V., & Liu, S. (2013). Leadership Training and Development: An academic library's findings. *Library Management*, 34(1), 96–104. <https://doi.org/10.1108/01435121311298306>
- Fiedler, F. E., & House, R. J. (1988). *Leadership Theory and Research: A Report of Progress*. 19, 73–91.
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39–50.
- Fought, R. L. (2016). *A Phenomenological Study of Effective Leadership in Academic Health Sciences Libraries in the United States* (Issue May). University of Memphis.
- Gao, Y. and Wei, W. (2004). Measuring Service Quality and Satisfaction of Student in Chinese Business Education. *The Sixth Wuhan International Conference on EBusiness*.
- Green, R. A. (2007). Current Trends and Issues Affecting Academic Libraries and Leadership skills. *Library Management*. <https://doi.org/https://doi.org/10.1108/LM-10-2016-0076>.
- Hair, J. F., Black, B., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis: A Global Perspective*. (7th ed. (ed.)).
- Haneefa, M., Sajna, K. P., & Sajna, C. (2014). Measuring Service Quality of a University Library in Kerala. *Knowledge Management in Electronic Environment*. <https://www.researchgate.net/publication/305296055>.
- Hassnain, A. M. ul. (2023). Impact of Autocratic and Democratic Leadership Styles on Employees' Performance and Motivation. *Journal of Administrative and Business*

References

- Studies*, 8(3), 19–26. <https://doi.org/10.20474/jabs-8.3.2>
- Hassanzadeh Mohassel, A., Hesarzadeh, R., & Bagherpour Velashani, M. A. (2024). Leadership style, knowledge sharing and audit quality. *European Journal of Management and Business Economics*, 33(3), 306–323. <https://doi.org/10.1108/EJMBE-08-2022-0250>
- Hery Wihardika Griadhi, M. (2018). An Evaluation on Library Services Using *Servqual* Method. *SHS Web of Conferences*, 42, 00071. <https://doi.org/10.1051/shsconf/20184200071>
- Hersey, P. and Blanchard, K. H. (1969). Life Cycle Theory of Leadership”, T. *Raining & Development Journal*, 23(5), 26–34.
- Hersey, P., Blanchard, K. H., & Johnson, D. E. (2012). *Management of Organizational Behavior.10th Edition* (p. 360). <http://www.amazon.com/Management-Organizational-Behavior-10th-Edition/dp/0132556405>
- Hicks, D., & Given, L. M. (2013). Principled, Transformational Leadership Analyzing the Discourse of Leadership in the Development of Librarianship’s Core Competences. *The Library Quarterly*, 83(1), 7–25. <http://www.jstor.org/stable/10.1086/668678>
- Hirtz, P. D., Murray, S. L., & Riordan, C. A. (2007). The Effects of Leadership on Quality. *EMJ - Engineering Management Journal*, 19(1), 22–27. <https://doi.org/10.1080/10429247.2007.11431718>
- Hollenbeck, G. P., McCall, M. W., & Silzer, R. F. (2006). Leadership Competency Models. *Leadership Quarterly*, 17(4), 398–413. <https://doi.org/10.1016/j.leaqua.2006.04.003>.
- Hossain, M. J. (2016). Determining the Key Dimensions for Evaluating Service Quality and Satisfaction in Academic Libraries. *International Information & Library Review*, 48(3), 176–189. <https://doi.org/10.1080/10572317.2016.1205350>
- Hossain, M. J., & Ahmed, S. M. Z. (2013). An Investigation of Service Expectations: Developing and Validating an Alternative Scale for Service Quality Assessment in Academic Libraries. *International Information & Library Review*, 46(1–2), 21–30. <https://doi.org/10.1080/10572317.2014.924777>.
- Hossain Shoeb, Z. (2011). Identifying Service Superiority, Zone of Tolerance and Underlying Dimensions: Service Quality Attributes in a Private University Library in

References

- Bangladesh. *Library Review*, 60(4), 293–311.
<https://doi.org/10.1108/00242531111127857>.
- Hossain, M.J. and Islam, A. (2012). Understanding Perceived Service Quality and Satisfaction: A study of Dhaka University Library, Bangladesh. *Performance Measurement and Metrics*, 13(3), pp. 169–182.
- Hossain Shoeb, Z., & Zabeed Ahmed, S. M. (2009). Individual Differences in Service Quality Assessment: A study of a Private University Library System in Bangladesh. *Performance Measurement and Metrics*, 10(3), 193–211.
<https://doi.org/10.1108/14678040911014194>
- Hugar, S. (2022). A Study on Effects of Leadership Styles on Employee Performance at IT Industry in Bengaluru. *Journal of Emerging Technologies and Innovative Research*, 9(1), 307–320.
- Iqbal, A. (2021). Innovation Speed and Quality in Higher Education Institutions: the Role of Knowledge Management Enablers and Knowledge Sharing Process. *Journal of Knowledge Management*, 25(9), 2334–2360. <https://doi.org/10.1108/JKM-07-2020-0546>.
- Jaber Hossain, M., & Islam, A. (2012). Understanding Perceived Service Quality and Satisfaction: A study of Dhaka University Library, Bangladesh. *Performance Measurement and Metrics*, 13(3), 169–182.
<https://doi.org/10.1108/14678041211284713>
- Jahmani, K., Fadiya, S. O., Abubakar, A. M., & Elrehail, H. (2018). Knowledge Content Quality, Perceived Usefulness, KMS Use for Sharing and Retrieval: A Flock Leadership Application. *VINE Journal of Information and Knowledge Management Systems*, 48(4), 470–490. <https://doi.org/10.1108/VJIKMS-08-2017-0054>
- Jamaluddin, J., & Ruswanti, E. (2017). Impact of Service Quality and Customer Satisfaction on Customer Loyalty: A Case Study in a Private Hospital in Indonesia. *IOSR Journal of Business and Management*, 19(05), 23–33.
<https://doi.org/10.9790/487x-1905012333>
- Jange, S. (2012). Preparing LIS professionals for leadership. *Library Philosophy and Practice*, 2012(JAN).
- Jena, S., & Sahoo, C. K. (2014). Improving managerial performance: A study on

References

- entrepreneurial and leadership competencies. *Industrial and Commercial Training*, 46(3), 143–149. <https://doi.org/10.1108/ICT-10-2013-0066>
- Jordan, M. W. (2012). Developing leadership competencies in librarians. *IFLA Journal*, 38(1), 37–46. <https://doi.org/10.1177/0340035211435074>
- Kaiser, H. F. (1974). An Index of Factorial Simplicity. *Psychometrika*, 39(1), 31–36.
- Kandie, H. K., Guyo, W., & Senaji, T. A. (2018). Effect of leadership management on students' satisfaction in ISO 9001: 2008 certified Universities in Kenya. *International Journal of Managerial Studies and Research*, 6(2), 29–43. <https://doi.org/10.20431/2349-0349.0602004>
- Kenton, W. (2019). Understanding the Durbin Watson Statistic. *Investopedia*. <https://www.investopedia.com/terms/d/durbin-watson-statistic.asp>
- Khuwaja, U., Ahmed, K., Abid, G., & Adeel, A. (2020). Leadership and employee attitudes: The mediating role of perception of organizational politics. *Cogent Business and Management*, 7(1). <https://doi.org/10.1080/23311975.2020.1720066>.
- Koloniari, M., & Fassoulis, K. (2017). Knowledge Management Perceptions in Academic Libraries. *The Journal of Academic Librarianship*, 43(2), 135–142. <https://doi.org/10.1016/j.acalib.2016.11.006>
- Konya, U., & Gurel, N. (2014). Leadership approaches of university library managers in turkey. *Library Management*, 35(6–7), 486–494. <https://doi.org/10.1108/LM-02-2014-0021>
- Koohang, A., Paliszkievicz, J., & Goluchowski, J. (2017). The impact of leadership on trust, knowledge management, and organizational performance: A research model. *Industrial Management and Data Systems*, 117(3), 521–537. <https://doi.org/10.1108/IMDS-02-2016-0072>
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities". *Educational and Psychological Measurement*, 30, 607-610.
- Kulkarni, U. R., Ravindran, S., & Freeze, R. (2006). A knowledge management success model: Theoretical development and empirical validation. *Journal of Management Information Systems*, 23(3), 309–347. <https://doi.org/10.2753/MIS0742-1222230311>
- Kumar, P. S. (2012). User satisfaction and service quality of the university libraries in

References

- Kerala. *International Journal of Information Dissemination and Technology*, 2(1), 24.
- Kumar, S., Adhish, V. S., & Deoki, N. (2014). Making sense of theories of leadership for capacity building. *Indian Journal of Community Medicine*, 39(2), 82–86. <https://doi.org/10.4103/0970-0218.132721>.
- Laitinen, K. (1996). Estimating understandability of software documents. *ACM SIGSOFT Software Engineering Notes*, 21(4), 81–92. <https://doi.org/10.1145/232069.232092>
- Lakshman, C. (2007). Organizational knowledge leadership: A grounded theory approach. *Leadership and Organization Development Journal*, 28(1), 51–75. <https://doi.org/10.1108/01437730710718245>
- Landaeta, R. E. (2008). Evaluating benefits and challenges of knowledge transfer across projects. *EMJ - Engineering Management Journal*, 20(1), 29–38. <https://doi.org/10.1080/10429247.2008.11431753>
- Lawrence, A. (2019). Librarians' leadership styles and attitude to work in Delta State. *ATBU, Journal of Science, Technology & Education (JOSTE)*, 7(1), 106–115.
- Le, B. P. (2015). Academic library leadership in the digital age. *Library Management*, 36(4–5), 300–314. <https://doi.org/10.1108/LM-07-2014-0083>
- Leech, N. L., Barrett, K. C., & Morgan, G. A. (2005). *SPSS for Intermediate Statistics: Use and Interpretation*, (2nd ed. Associates. (ed.).
- Longshore, J. M., & Bass, B. M. (1987). Leadership and Performance beyond Expectations. *The Academy of Management Review*, 12(4), 756. <https://doi.org/10.2307/258081>.
- Luqman, R., Fatima, S., Ahmed, S., Khalid, I., & Bhatti, A. (2019). The Impact of Autocratic Leadership Style on Counterproductive Work Behavior: The Mediating role of Employee Commitment and Moderating role of Emotional Exhaustion. © *Pollster Journal of Academic Research*, 06(06), 2411–2259. <http://www.pollsterpub.com/vol6issue1.php>
- Malakooti Asl, N., Kaffashan Kakhki, M. and Parirokh, M. (2021). The evaluation of the relationship between customers' knowledge management and their loyalty to academic libraries. *Global Knowledge, Memory and Communication.*, 70(3), 205–224. <https://doi.org/https://doi.org/10.1108/GKMC-12-2018-0104>.
- Malik, S. A., & Malik, S. A. (2015). SERVQUAL to measure perceptions and expectations

References

- of library users: A case study of a public university library of Pakistan. *International Journal of Management in Education*, 9(3), 303. <https://doi.org/10.1504/IJMIE.2015.070124>
- Mansoor, T., & Hussain, S. (2024). Impact of knowledge oriented leadership on sustainable service quality of higher education institutes. *VINE Journal of Information and Knowledge Management Systems*, 54(4), 705–724. <https://doi.org/10.1108/VJIKMS-09-2021-0176>
- Manu, T., Shashikumar, A., Chaudhary, P., Asjola, V., & Muduli, P. K. (2018). Core competencies for 21st century library and information science professionals. *International Conference On Marching Beyond the Libraries: Managerial Skills and Technological Competencies*, 1–16.
- Marwick, A. D. (2001). Knowledge Management Technology. *IBM Systems Journal*, 40(4), 814–830. <https://doi.org/10.1147/sj.404.0814>
- Memon, M., Ting, H., Cheah, J.-H., Thurasamy, R., Chuah, F., & Huei Cham, T. (2020). Sample Size for Survey Research: Review and Recommendations. *Journal of Applied Structural Equation Modeling*, 4(2), 2590–4221.
- Memon, R. K. (2014). Effects of Leadership Styles on Employee Performance: Integrating the Mediating Role of Culture, Gender and Moderating Role of Communication Author Detail: Khalid Rasheed Memon 1-1 Lahore Leads University Lahore, Pakistan. *International Journal of Management Sciences and Business Research*, 3(7), 63–80.
- Mezbah-Ul-Islam, M. (2003). *Measuring effectiveness of university libraries: A case study of Bangladesh* [North-Eastern Hill University, Shillong-14, India]. [https://scholar.google.com/scholar?q=MEASURING EFFECTIVENESS OF UNIVERSITY LIBRARIES: A CASE STUDY OF BANGLADESH](https://scholar.google.com/scholar?q=MEASURING+EFFECTIVENESS+OF+UNIVERSITY+LIBRARIES:A+CASE+STUDY+OF+BANGLADESH).
- Michael, A. (2010). Leadership Style and Organizational Impact. Retrieved from <http://www.ala-apa.org>
- Mills, A. M., & Smith, T. A. (2011). Knowledge Management and Organizational Performance: A Decomposed View. *Journal of Knowledge Management*, 15(1), 156–171. <https://doi.org/10.1108/13673271111108756>
- Mintzberg, H. (2010). Developing Leaders? Developing Countries? *Oxford Leadership Journal*, 1(2).

References

- Moropa, R. (2010). Academic Libraries in Transition: Some Leadership Issues – a viewpoint. *Library Management*, 31(6), 381–390. <https://doi.org/10.1108/01435121011066144>
- Mugenda, O. M., & Mugenda, A. G. (2003). Research Methods: Quantitative & qualitative Approaches. *Nairobi: Acts Press.*, 02(02).
- Mullins, J., & Linehan, M. (2006). Desired Qualities of Public Library Leaders. *Leadership and Organization Development Journal*, 27(2), 133–143. <https://doi.org/10.1108/01437730610646633>.
- Nadiri, M. (1970). Diagnosing University Students Zone of Tolerance from University Library Services. *Malaysian Journal of Library and Information Science*, 15(1), 1–21.
- Nelson, R. R., Todd, P. A., & Wixom, B. H. (2005). Antecedents of Information and System Quality: An Empirical Examination within the Context of Data Warehousing. *Journal of Management Information Systems*, 21(4), 199–235.
- Nkansah, B. (2018). On the Kaiser-Meier-Olkin's Measure of Sampling Adequacy. *Mathematical Theory and Modeling*, 8, 52–76.
- O'Connor, S. (2014). Leadership for future libraries. *Library Management*, 35(1), 78–87. <https://doi.org/10.1108/LM-06-2013-0047>
- Ogunbodede, K. F., & Sawyerr-George, O. E. (2023). Digital Resources and the Reading Habits of University Students in Nigeria. *International Journal of Professional Development, Learners and Learning*, 5(1), ep2304. <https://doi.org/10.30935/ijpdll/12748>.
- Osa, J. O. (2014). Managing the 21st Century Reference Department: Competencies. *Managing the Twenty-First Century Reference Department: Challenges and Prospects, January 2015*, 35–50. <https://doi.org/10.1300/J120v39n81>.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing*, 49(4), 41. <https://doi.org/10.2307/1251430>
- Parasuraman, A., Zeithaml, V. A., V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12–40.

References

- Pasha, M. G. G., & Jange, S. (2016). Research on Library Leadership and Traits of Leadership among Library Directors in Dubai. *International Journal of Librarianship and Administration*, 7(1), 7–12. <http://www.ripublication.com>
- Phillips, A. L. (2014). What Do We Mean by Library Leadership? Leadership in LIS Education. *Journal of Education for Library & Information Science*, 55(4), 336–344. <http://search.ebscohost.com/login.aspx?direct=true&db=lih&AN=99055675&site=ehost-live&scope=site>
- Politis, J. D. (2001). The Relationship of Various Leadership Styles to Knowledge Management. *Leadership & Organization Development Journal*, 22(8), 354–364. <https://doi.org/10.1108/01437730110410071>.
- Quyet, T. V., Vinh, N. Q., & Chang, T. (2015). Service Quality Effects on Customer Satisfaction in Banking Industry. *International Journal of U- and e-Service, Science and Technology*, 8(8), 199–206. <https://doi.org/10.14257/ijunesst.2015.8.8.20>
- Rech, J., Decker, B., Ras, E., Jedlitschka, A., & Feldmann, R. L. (2007). The quality of knowledge: Knowledge patterns and knowledge refactorings. *International Journal of Knowledge Management (IJKM)*, 3(3), 74–103. <https://doi.org/10.4018/jkm.2007070105>.
- Riggs, D. E. (2001). The crisis and opportunities in library leadership. *Journal of Library Administration*, 32(3–4), 5–17. https://doi.org/10.1300/J111v32n03_02
- Rizky, T. D., Huda, N., Muslikh, M., & Rini, N. (2020). Analysis (LibQual) on loyalty and library satisfaction; A case study in YARSI University Library Service Center. *Jurnal Organisasi Dan Manajemen*, 16(2), 182–195. <https://doi.org/10.33830/jom.v16i2.963.2020>
- Robinson, V. M. J., Lloyd, C. A., & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational Administration Quarterly*, 44(5), 635–674. <https://doi.org/10.1177/0013161X08321509>.
- Roscoe, J. T. (1975). *Fundamental research statistics for the behavioral sciences* (2nd ed.). Holt Rinehart and Winston.
- Roy, M. C., & Bouchard, L. (1999). Developing and Evaluating Methods for User Satisfaction Measurement in Practice. *Journal of Information Technology*

References

- Management*, 10(3–4), 49–58.
- Sadeghi, A., & Rad, F. M. (2018). The role of Knowledge-oriented Leadership in Knowledge Management and Innovation. *Management Science Letters*, 8(3), 151–160. <https://doi.org/10.5267/j.msl.2018.1.003>
- Saleem, H. (2015a). The impact of leadership styles on job satisfaction and mediating role of perceived organizational politics. *Procedia - Social and Behavioral Sciences*, 172, 563–569. <https://doi.org/10.1016/j.sbspro.2015.01.403>
- Saleem, H. (2015b). The impact of leadership styles on job satisfaction and mediating role of perceived organizational politics. *Procedia - Social and Behavioral Sciences*, 172, 563–569. <https://doi.org/10.1016/j.sbspro.2015.01.403>
- Sasnett, B., & Ross, T. (2007). Leadership frames and perceptions of effectiveness among health information management program directors. *Perspectives in Health Information Management / AHIMA, American Health Information Management Association*, 4, 8.
- Sekaran, U. (2003). *Research Methods for Business: A Skill-Building Approach*, 4th ed., John Wiley and Sons, New York, NY.
- Sekaran, U., & Bougie, R. (2010). *Research Methods for Business: A Skill-Building Approach*. (5th Editio). John Wiley & Sons Ltd.
- Schierholz, R., & Laukkanen, T. (2007). Internet VS Mobile Banking: Comparing Customer Value Perceptions. *Business Process Management Journal*, 13(6), 788–797.
- Schreiber, B., & Shannon, J. (2001). Developing library leaders for the 21st century. *Journal of Library Administration*, 32(3–4), 37–60. https://doi.org/10.1300/J111v32n03_04
- Segun-Adeniran, C. D. (2015). Leadership styles and job productivity of University Library Staff: Interrogating the Nexus. *Library Philosophy and Practice*, 2015(1).
- Seidel, A., Saurin, T. A., Tortorella, G. L., & Marodin, G. A. (2019). How can general leadership theories help to expand the knowledge of lean leadership? *Production Planning and Control*, 30(16), 1322–1336. <https://doi.org/10.1080/09537287.2019.1612112>.
- Shamim, S., Cang, S., & Yu, H. (2019). Impact of knowledge oriented leadership on knowledge management behaviour through employee work attitudes. *International*

References

- Journal of Human Resource Management*, 30(16), 2387–2417.
<https://doi.org/10.1080/09585192.2017.1323772>
- Sharma, M. K., & Jain, S. (2013). Leadership management: principles, models and theories. *Global Journal of Management and Business Studies*, 3(3), 2248–9878.
<http://www.ripublication.com/gjmbs.htm>
- Shkeer, A., & Awang, Z. (2019). Exploring the Times for Measuring the Marketing Information System Construct: An Exploratory Factor Analysis. *International Review of Management and Marketing*. <https://doi.org/https://doi.org/10.32479/irmm.8622>.
- Shoeb, Z.H. (2011). Identifying Service Superiority, Zone of Tolerance and Underlying Dimensions: Service Quality Attributes in a Private University Library in Bangladesh. *Library Review*, 60(4), pp. 293–311.
- Shoeb, Z.H. and Ahmed, S.M.Z. (2009). Individual Differences in Service Quality Assessment: A Study of a Private University Library System in Bangladesh. *Performance Measurement and Metrics*, 10(3), pp. 193–211.
- Sijtsma, K. (2008). On the Use, the Misuse, and the Very Limited Usefulness of Cronbach's Alpha. *Psychometrika*, 74, 107–120. <https://doi.org/https://doi.org/10.1007/s11336-008-9101-0>.
- Silva, D. S., Moraes, G. H. S. M. d, Makiya, I. K., & Cesar, F. I. G. (2017). Measurement of perceived service quality in higher education institutions: A review of HEDPERF scale use. *Quality Assurance in Education*, 25(4), 415–439. <https://doi.org/10.1108/QAE-10-2016-0058>
- Singh, S. K. (2008). Role of leadership in knowledge management: A study. *Journal of Knowledge Management*, 12(4), 3–15. <https://doi.org/10.1108/13673270810884219>
- Sophia, S., Catherine, S., & Deshler, L. M. (2013). *Promoting library leadership: How to develop leaders through multidisciplinary post-graduate coursework at St. Catherine University*. https://sophia.stkate.edu/maol_theses
- Stemberkova, R., Maresova, P., David, O. O., & Adeoye, F. (2020). Knowledge management model for effective technology transfer at universities. *Industry and Higher Education*, 35(6), 638–649. <https://doi.org/10.1177/0950422220978046>
- Stone, A. G., Russell, R. F., & Patterson, K. (2004). Transformational versus servant

References

- leadership: A difference in leader focus. *Leadership & Organization Development Journal*, 25(4), 349–361. <https://doi.org/10.1108/01437730410538671>
- Sundi, K. (2013). Effect of Transformational Leadership and Transactional Leadership on Employee Performance of Konawe Education Department at Southeast Sulawesi Province. *International Journal of Business and Management Invention ISSN (Online)*, 2(12), 2319–8028.
- 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. <https://doi.org/10.1108/IDD-05-2019-0040>
- Suresh, M., & Mohan, D. (2015). Service quality and its impact on user satisfaction in Indian University Library. *2015 IEEE International Conference on Computational Intelligence and Computing Research (ICCIC)*, 1–3. <https://doi.org/10.1109/ICCIC.2015.7435792>
- Tandale, P. G., Sawant, P. G., & Tandale, G. P. (2011). Knowledge management and the role of libraries. *Proceedings of the 5th National Conference; INDIACom-2011*. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=efc5705da048351a5826d9109bab6a7fbdf93ff0>
- 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.
- Thompson, G., & Glasø, L. (2018). Situational leadership theory: a test from a leader-follower congruence approach. *Leadership and Organization Development Journal*, 39(5), 574–591. <https://doi.org/10.1108/LODJ-01-2018-0050>
- Tsigu, G. T., & Rao, D. P. (2015). Leadership styles: Their impact on job outcomes in Ethiopian banking industry. *ZENITH International Journal of Business Economics & Management Research*, 5(2), 41–52. http://zenithresearch.org.in/images/stories/pdf/2015/FEB/ZIJBEMR/5_ZIJBEMR_VOL5_ISSUE2_FEBRUARY_2015.pdf
- UGC. (2024). *University Grants Commission of Bangladesh*. List of Public Universities | University Grants Commission of Bangladesh. <http://www.ugc->

References

universities.gov.bd/public-universities

- Vaske, J., Beaman, J., & Sponarski, C. (2017). Rethinking Internal Consistency in Cronbach's Alpha. *Leisure Sciences*, 39, 163–173. <https://doi.org/https://doi.org/10.1080/01490400.2015.1127189>.
- Viitala, R. (2004). Towards knowledge leadership. *Leadership & Organization Development Journal*, 25(6), 528–544. <https://doi.org/10.1108/01437730410556761>
- Visagie, J., Linde, H., & Havenga, W. (2011). Leadership competencies for managing diversity. *Managing Global Transitions*, 9(3), 225–247.
- Viitala, R. (2004). Towards knowledge leadership. *Leadership & Organization Development Journal*, 25(6), 528–544. <https://doi.org/10.1108/01437730410556761>
- Von Krogh, G., Nonaka, I., & Rechsteiner, L. (2012). Leadership in organizational knowledge creation: A review and framework. *Journal of Management Studies*, 49(1), 240–277. <https://doi.org/10.1111/j.1467-6486.2010.00978.x>
- Walter, S., Eliasziw, M., & Donner, A. (1998). Sample size and optimal designs for reliability studies.. *Statistics in Medicine*, 17(1), 101–110. [https://doi.org/https://doi.org/10.1002/\(SICI\)1097-0258\(19980115\)17:1<101::AID-SIM727>3.0.CO;2-E](https://doi.org/https://doi.org/10.1002/(SICI)1097-0258(19980115)17:1<101::AID-SIM727>3.0.CO;2-E).
- Weiner, S. G. (2017). Leadership of academic libraries: A literature review. *Education Libraries*, 26(2), 5. <https://doi.org/10.26443/el.v26i2.187>
- Wicks, A. M., & Roethlein, C. J. (2009). A Satisfaction-Based Definition of Quality. *Journal of Business & Economic Studies*, 15(1), 82–98.
- Winston, M. D., & Dunkley, L. (2002). Leadership competencies for academic librarians: The importance of development and fund-raising. *College and Research Libraries*, 63(2), 171–182. <https://doi.org/10.5860/crl.63.2.171>
- Wójcik, M. (2023). Areas and contexts of the use of robotics in libraries: an overview of the applied solutions and a discussion of prospects. *Library Hi Tech*. <https://doi.org/10.1108/LHT-10-2022-0487>
- Wong, G. K. W. (2017). Leadership and leadership development in academic libraries: a review. *Library Management*, 38(2–3), 153–166. <https://doi.org/10.1108/LM-09-2016-0075>

References

- Xu, F., & Du, J. (2018). Factors influencing users' satisfaction and loyalty to digital libraries in Chinese universities. *Comput. Hum. Behav.*, 83, 64–72. <https://doi.org/https://doi.org/10.1016/j.chb.2018.01.029>.
- Yang, T. T., Sidorko, P. E., & Woo, E. M. W. (2016). Cultivating leadership in Asian libraries: a longitudinal impact study. *Library Management*, 37(4–5), 243–264. <https://doi.org/10.1108/LM-02-2016-0012>
- Yu, L., Hong, Q., Gu, S., & Wang, Y. (2008). An epistemological critique of gap theory based library assessment: The case of SERVQUAL. *Journal of Documentation*, 64(4), 511–551. <https://doi.org/10.1108/00220410810884066>.
- Zabed Ahmed, S. M., & Hossain Shoeb, Z. (2009). Measuring service quality of a public university library in Bangladesh using SERVQUAL. *Performance Measurement and Metrics*, 10(1), 17–32. <https://doi.org/10.1108/14678040910949666>.
- Zaccaro, S. J., & Klimoski, R. J. (2002). The nature of organizational leadership : Understanding the performance imperatives confronting today's leaders. <https://www.researchgate.net/publication/237290329>, July, 3–41.

APPENDIX

Appendix A: Questionnaire set-1**Confidential**

Sample No.:

Research Questionnaire

(Library Professionals)

**Impact of Knowledge and Leadership Quality on User Satisfaction:
Investigating the Situation of Selected Academic Libraries of Bangladesh**

Dear Sir/Madam,

I am pursuing PhD at the University of Dhaka (DU) on the topic ***Impact of Knowledge and Leadership Quality on User Satisfaction: Investigating the Situation of Selected Academic Libraries of Bangladesh*** under the supervision of Dr. Md. Nasir Uddin Munshi, Professor, Department of Information Science and Library Management, University of Dhaka.

*[Knowledge and Leadership Quality is defined for this study as the librarianship performance of LIS professionals to meet the demand of user expectations; and their perceptions of the leadership experience. The **Impact** is defined as the significant influence of leadership quality on user satisfaction in the academic libraries of Bangladesh. **User satisfaction** is specified as the perception of the library users that contributes to his satisfaction on librarians' leadership performance.]*

In order to get a comprehensive understanding of the impact of knowledge and leadership quality in the academic libraries of Bangladesh, I am here by submitting a set of questionnaire to you. This survey is strictly confidential and will be used only for the purpose of academic research. I would appreciate while you could kindly spare your valuable time to fill up the questionnaire.

Thanking you in anticipation.

Supervisor:


Dr. Md. Nasir Uddin Munshi

Professor

Dept. of Information Science and Library Management

University of Dhaka

Email: ramanasir@yahoo.com

Sincerely Yours,


Md. Monirul Islam

PhD Research Fellow

University of Dhaka (DU)

Cell: 01871-038425

Email: mislamdu193@gmail.com

1. General Information of the University:

1.1 Name of the university:

1.2 Year of the establishment:

1.3 Category of university: ☐ Public ☐ Private ☐ International

1.4 The number of students at the university:

1.5 The number of teachers at the university:

2. General Information of the Library:

2.1 Name of the library:

2.2 Establishment year of the library:

2.3 Does the library have a Library Committee? ☐ Yes ☐ No2.4 Does your library have the membership of the following organizations? *(Select all that apply)*☐ Library Consortium of Bangladesh (LiCoB)/BIPC☐ UGC Digital Library (UDL)☐ BdREN☐ Others: specify2.5 Which of the following social media are used to provide info of your library? *(Select all that apply)*☐ Facebook ☐ YouTube ☐ Twitter☐ LinkedIn ☐ Instagram ☐ Telegram

2.6 Please mention the library opening and closing hours:

Opening hour: am/pm

Closing hour:am/pm

2.7 Total seating capacity of the library:

2.8 Please mention the total collection in your library during the last 3 years:

Year-2019 :Copy

Year-2020 :Copy

Year-2021 :Copy

Total collection:Copy

2.9 Mention the number of staff at your library as per the following designations:

Designation	Number of Staff
Librarian/equivalent	

Deputy/Joint/Additional Librarian/equivalent	
Assistant/Senior Assistant Librarian/equivalent	
Executive/Library Officer/Junior Assistant Librarian/equivalent	
Assistant Executive/Library Officer//equivalent	
Library assistant/attendant/Book Sorter/equivalent	
Peon/LMSS/Bag keeper/Gate Keeper/Book Cleaner/equivalent	
Total Manpower	

Knowledge and Leadership Quality/Activities/performance

3. Knowledge competency

3.1 The number of library staff having the following highest professional degree:

Certificate course in LIS	:person
Diploma in LIS	:person
Bachelor in LIS	:person
Master in LIS	:person
MPhil in LIS	:person
PhD in LIS	:person

3.2 The number of library staff having the following highest ICT degree:

Certificate course in ICT	:person
Diploma in Computer Science/ICT	:person
Bachelor in ICT	:person
Master in ICT	:person
MPhil in ICT	:person
PhD in ICT	:person

4. Professional course/workshop/training

4.1 Please, tick professional courses completed by library staff? (Select all that apply)

- ☐ Workshop on library automation software like koha, CDS-ISIS, SLiMS etc.
- ☐ Workshop on Digital library software like DSpace, Greenstone, SLiMS etc.
- ☐ Course on Archives Management.
- ☐ Course on Database management
- ☐ Training on Statistical Analysis like SPSS, STATA, R, Python, excel etc.
- ☐ Training on plagiarism checker like Turning, grammarly, Duplichecker, etc.

☐ Others:

4.2 Please, tick seminar and conference program library staff attended? *(Select all that apply)*

- ☐ Seminars organized nationally
- ☐ Seminar organized by Professional body like LAB, BALID, MEDLAB etc.
- ☐ Seminar organized by other skilled development programs
- ☐ Conference organized by Universities
- ☐ Conference organized by Professional body like LAB, BALID, MEDLAB etc.
- ☐ Attended Int'l conference held in abroad
- ☐ Conference organized by associations like ASIS&T, IFLA etc.
- ☐ Others:

5. Engagement with professional body

5.1 Please, mention the number of library staffs who are member of following professional body? *(Select all that apply)*

- ☐ Library Association of Bangladesh (LAB) :person
- ☐ BALID :person
- ☐ Medical Library Association of Bangladesh (MEDLAB) :person
- ☐ IFLA (International Federation of Library Association) :person
- ☐ Association of Information Science and Technology (ASIS&T) :person
- ☐ The American Library Association (ALA) :person
- ☐ The British Library Association (BLA) :person
- ☐ The Asian Library Association (ASIALA) :person
- ☐ others: :person

5.2 Please, tick the leading position your library staff owned in professional body? *(Select all that apply)*

- ☐ President
- ☐ Vice president
- ☐ General Secretary
- ☐ Member
- ☐ Treasurer
- ☐ Councilor
- ☐ Country co-coordinator/representative/Chapter chair
- ☐ Officer/Social Media Officer/Webmaster/Equivalent
- ☐ Other: specify:.....

6. Arranging Training/Promotional program

6.1 Please, tick the training programs that are ensured for library staff? *(Select all that apply)*

- ☐ In-house training program on library automation
- ☐ In-house training program on digital library management system
- ☐ Soft skill training
- ☐ Managerial training
- ☐ Technical training
- ☐ Library orientation program
- ☐ Webinar on different issues
- ☐ Assign staff for attending training organized by other organizations
- ☐ Others:

6.2 Which of the following promotional activities are done by your library? *(Select all that apply)*

- ☐ Organizing seminar/workshop/webinar for library professionals/users
- ☐ Conducting library information literacy program
- ☐ Arranging library orientation program
- ☐ Publishing library brochure
- ☐ Providing library orientation guide
- ☐ Publishing newsletter
- ☐ Arranging exhibition and special display

7. Infrastructural development and Library Automation

7.1 Please, tick the infrastructural development that is ensured in the library premise? *(Select all that apply)*

- | | |
|---|---|
| ☐ Individual study carrels | ☐ Group study room |
| ☐ Seminar room | ☐ Air condition facility |
| ☐ Teachers Corner | ☐ Baggage counter |
| ☐ Library Café | ☐ CC Camera |
| ☐ Fire control system | ☐ Sleeping room |
| ☐ Others: | |

7.2 The shelving system is existed in the library- *(Select any one)*

- ☐ Open-shelf system
- ☐ Close-shelf system
- ☐ Semi-open-shelf system

7.3 The library is: ☐ Fully automated ☐ Semi-automated ☐ Manual

7.4 Which automation software has your university library implemented?

- ☐ Koha ☐ Evergreen ☐ NewGenLib ☐ SLiMS ☐ OpenBiblio

☐ PMB ☐ OPALS ☐ Other (please specify):

7.5 Is RFID technology integrated with the existing automation software of the library?

☐ Yes ☐ No

7.6 Does the library have a digital Institutional Repository?

☐ Yes ☐ No

7.7 If yes, which software is used for Institutional Repository?

☐ DSpace ☐ Greenstone ☐ e-Print
☐ Fedora ☐ SLiMS ☐ other (Specify):

7.8 Is the IR is registered with the following directories: *(Select all that apply)*

☐ Directory of Open Access Repositories (OpenDOAR)
☐ Registry of Open Access Repositories (ROAR)

7.9 Library Automation work done by-

☐ Your library team
☐ With the help of someone or expert from other institution
☐ Others:

8 Library Services/facilities

8.1 Which of the following general services are provided in the library? *(Select all that apply)*

☐ Circulation service ☐ Current Awareness Service (CAS)
☐ Selective Dissemination of Information (SDI) service ☐ Bibliographical services
☐ Research support services ☐ Photocopy service ☐ Printing service
☐ Scanning service ☐ Inter-Library Loans ☐ Resources sharing
☐ News clipping ☐ Referral Service ☐ Indexing services
☐ Abstracting services ☐ Instruction of library use

8.2 Which of the following innovative services are available in the library? *(Select all that apply)*

☐ Anti-Plagiarism software (if yes, specify: Turnitin/iThenticate/PlagScan etc.)
☐ Grammar checking software (if yes, specify: Grammarly etc.)
☐ Remote access (if yes, specify: RemoteXs/MyAthens/EZProxy etc.)
☐ Discovery tools (if yes, specify: EBSCO/Vufind etc.)
☐ Citation & reference software (if yes, specify: EndNote/Mendeley/Zotero etc.)
☐ Paraphrasing software (if yes, specify: Spin Rewriter/QuillBot etc.)
☐ Data analysis software (if yes, specify: SPSS/STATA/AMOS/SmartPLS etc.)

8.3 Which of the following ICT facilities/services are existed in the library? *(Select all that apply)*

- | | |
|---|---|
| ☐ Computer Lab | ☐ OPAC Service |
| ☐ Electronic content download and printing | ☐ Web 2.0 interactive sharing |
| ☐ Email notification | ☐ SMS notification |
| ☐ Receipt printing service while check-in and check-out of books | |
| ☐ Online book reservation facility | ☐ online self-renewal facility |
| ☐ Online document delivery service | ☐ Virtual reference service |
| ☐ WiFi | ☐ LAN |
| ☐ Multimedia projector | ☐ others..... |

8.4 Which of the following facilities are available in the library? *(Select all that apply)*

- ☐ Availability of Recommendation/complain box
- ☐ Book purchase suggestion by students
- ☐ Book purchase suggestion by Teacher
- ☐ Book purchase suggestion by MPhil/PhD researchers

9. Library Collections and Access

9.1 Which of the following resources are available in the library? *(Select all that apply)*

- | | |
|---|---|
| ☐ Books | ☐ Journals |
| ☐ Reports | ☐ Conference proceedings |
| ☐ Theses & dissertations | ☐ Research papers |
| ☐ Internship/Project/Term Papers | ☐ Magazines |
| ☐ Newspapers | ☐ Reference collections |
| ☐ Audio visual items | ☐ Muktijoddha/Ekushy/Career Corner |
| ☐ Manuscripts and other archival | ☐ Others: specify..... |

9.2 Which of the following online journal database's access are available in the library? *(Select all that apply)*

- | | |
|---|--|
| ☐ ACM Digital Library | ☐ EBSCO |
| ☐ Cambridge University Press | ☐ Emerald |
| ☐ Elsevier | ☐ IEEE |
| ☐ JSTOR | ☐ Oxford University Press |
| ☐ Sage | ☐ Springer |
| ☐ Taylor and Francis | ☐ Wiley |
| ☐ Other: specify | |

9.3 Which of the following e-book publishers' databases access are available in the library?*(Select all that apply)*

- | | |
|---|---|
| ☐ Cambridge University Press | ☐ Emerald |
| ☐ Elsevier | ☐ McGraw-Hill |
| ☐ Oxford University Press | ☐ Pearson |
| ☐ ProjectMUSE | ☐ Sage |
| ☐ Springer | ☐ Taylor and Francis |
| ☐ Wiley | ☐ other: specify |

9.4 Which of the following other e-resources database's access are available in the library?*(Select all that apply)*

- | | |
|--|---|
| ☐ Clinical reports | ☐ Encyclopedia |
| ☐ Magazine | ☐ Newspapers |
| ☐ Synopses | ☐ Theses and Dissertations |
| ☐ Others: specify | |

10 Suggestion and comments:

State below your suggestions to improve the service quality of university libraries in Bangladesh
(If necessary please use separate sheet):

.....

11 Respondent's Information:

11.1 Designation:

11.2 Email:

11.3 Age:

THANK YOU FOR YOUR NICE CO-OPERATION

Appendix B: Questionnaire set-2

Confidential

Sample No.:

Research Questionnaire (Library Users- Faculty/Student/Researcher)

Impact of Knowledge and Leadership Quality on User Satisfaction: Investigating the Situation of Selected Academic Libraries of Bangladesh

Dear Sir/Madam,

I am pursuing PhD at University of Dhaka (DU) on the topic ***Impact of Knowledge and Leadership Quality on User Satisfaction: Investigating the Situation of Selected Academic Libraries of Bangladesh*** under the supervision of Dr. Md. Nasir Uddin Munshi, Professor, Department of Information Science and Library Management, University of Dhaka.

*[Knowledge and Leadership Quality is defined for this study as the librarianship performance of LIS professionals to meet the demand of user expectations and their perceptions of the leadership experience. The **Impact** is defined as the significant influence of leadership quality on user satisfaction in the academic libraries of Bangladesh. **User satisfaction** is specified as the perception of the library users that contributes to his satisfaction on librarians' performance.]*

In order to get a comprehensive understanding of the impact of knowledge and leadership quality in the academic libraries of Bangladesh, I am here by submitting a set of questionnaire to you. This survey is strictly confidential and will be used only for the purpose of academic research. I would appreciate while you could kindly spare your valuable time to fill up the questionnaire.

Supervisor:



Dr. Md. Nasir Uddin Munshi
Professor
Dept. of Information Science and Library Management
University of Dhaka
Email: ramanasir@yahoo.com

Sincerely Yours,



Md. Monirul Islam
PhD Research Fellow
University of Dhaka (DU)
Cell: 01871-038425
Email: mislamdu193@gmail.com

1. Demographic Information

1.1 Name of the university:

1.2 Category ☐ Public ☐ Private ☐ International

1.3 Gender: ☐ Female ☐ Male

1.4 Type of users: ☐ Teacher ☐ Student ☐ Researcher

1.5 Status: ☐ Professor ☐ Associate Professor ☐ Asst. Professor ☐ Sr. Lecturer
☐ Lecturer ☐ M.Phil/PhD Researcher ☐ Master's Student ☐ Hon's Student

1.6 Age group: ☐ Under 20 years ☐ 20 - 29 years ☐ 30 - 39 years
☐ 40 - 49 years ☐ 50 -59 years ☐ 60 and above years

1.7 How frequently do you use the library? ☐ Daily ☐ Twice a week ☐ Weekly
☐ Fortnightly ☐ Monthly ☐ Occasionally

2. Knowledge and Leadership Quality Assessment Tool

You are requested to give your opinion on the **Minimum leadership Expectation**, **Desired leadership Expectation**, and **Actual Leadership Performance** on the following statements. (7-point likert scale considers as from 1= **Lowest** to 7= **Highest**)

SL	Knowledge Competency (Theoretical and practical understanding of the subject)	Minimum Leadership Expectation (Lowest 1- Highest 7)							Desired Leadership Expectation (Lowest 1- Highest 7)							Actual Leadership Performance (Lowest 1- Highest 7)						
1.	Library professionals are knowledgeable	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
2.	They provide services as promised	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
3.	They emphasis on information literacy	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
4.	The library resource are organized in standard format	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
5.	All resources are easily accessible	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7

SL	Technical Competency (Abilities required to apply techniques in job function)	Minimum Leadership Expectation (Lowest 1- Highest 7)							Desired Leadership Expectation (Lowest 1- Highest 7)							Actual Leadership Performance (Lowest 1- Highest 7)						
6	Library officers are technically sound	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
7	Able to handle the technical issues	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
8	They ensure technical support promptly to the users	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
9	Able to guide users in technical problem	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
10	Handles the library automation function properly	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7

SL	Negotiation skill (Inherent qualities that help professionals and authorities agree to a common logical solution)	Minimum Leadership Expectation (Lowest 1- Highest 7)							Desired Leadership Expectation (Lowest 1- Highest 7)							Actual Leadership Performance (Lowest 1- Highest 7)						
11	Library officials are able to achieve sufficient budget	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
12	Ensure infrastructural development	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
13	Makes sure library facilities	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
14	Looks confident	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
15	Introduce new item and services in time	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7

SL	Visionary (Thinking about or planning the future with imagination or wisdom)	Minimum Leadership Expectation (Lowest 1- Highest 7)							Desired Leadership Expectation (Lowest 1- Highest 7)							Actual Leadership Performance (Lowest 1- Highest 7)						
16	Library staffs are always positive to library development	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
17	Give attention to adopt modern technology	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
18	Deal with users in a considerate manner	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
19	Vigorous to make top ranked university	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
20	Hold positive mind for positive change	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7

SL	Responsiveness (The quality of reacting quickly and positively)	Minimum Leadership Expectation (Lowest 1- Highest 7)							Desired Leadership Expectation (Lowest 1- Highest 7)							Actual Leadership Performance (Lowest 1- Highest 7)						
21	Library professionals have willingness to assist users	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
22	They give priority of the user's interest	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
23	They serve the users promptly	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
24	Make sure the regular update of library service	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7
25	They are available to get library service	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7

3. Satisfaction level of library users towards the library leader

7-point satisfaction scale considers as from 1= **Lowest** to 7 = **highest** satisfaction

SL	Satisfaction Level (the perception of the library users that contributes to his/her satisfaction on library leadership)	(Lowest 1- Highest 7)						
26	The library professionals' Knowledge Competency is satisfactory	1	2	3	4	5	6	7
27	I am satisfied with the professionals' Technical Competency	1	2	3	4	5	6	7
28	I am satisfied with the their Negotiation Skills	1	2	3	4	5	6	7

29	The Visionary performance of the library staff is satisfactory	1	2	3	4	5	6	7
30	I am satisfied with their Responsive Behavior	1	2	3	4	5	6	7
31	The library has sufficient resources which are satisfactory	1	2	3	4	5	6	7
32	The library environment is satisfactory	1	2	3	4	5	6	7
33	Overall, I am satisfied with my library experience	1	2	3	4	5	6	7
34	I would like to use the library in future	1	2	3	4	5	6	7
35	I would like to suggest others to use the library	1	2	3	4	5	6	7

THANK YOU FOR YOUR NICE CO-OPERATION