

COLLECTION DEVELOPMENT PRACTICES IN LIBRARIES: APPRAISAL OF POLICIES, AND CHALLENGES



Submitted By:

TANVEER AHMAD

M. Phil Scholar

Supervisor:

DR. ASAD KHAN

Associate Professor

**DEPARTMENT OF LIBRARY & INFORMATION SCIENCE
UNIVERSITY OF PESHAWAR
SESSION: 2023-2024**

COLLECTION DEVELOPMENT PRACTICES IN LIBRARIES: APPRAISAL OF POLICIES, AND CHALLENGES



*A thesis submitted to the Department of Library Science, University of Peshawar in
Partial fulfilment of the Requirements for the Degree of*

MASTER OF PHILOSOPHY

IN

LIBRARY AND INFORMATION SCIENCE

Submitted By:

TANVEER AHMAD

M. Phil Scholar

Supervised By:

Dr. Asad Khan

**DEPARTMENT OF LIBRARY & INFORMATION SCIENCE
UNIVERSITY OF PESHAWAR
SESSION: 2023-2024**

APPROVAL CERTIFICATE

Research Title

Collection Development Practices in Libraries: Appraisal of Policies and Challenges

The examination committee has approved this thesis for the award of the Master of Philosophy in Library and Information Science degree.

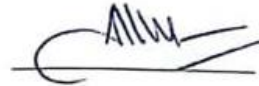
Research conducted by:



Tanveer Ahmad
(M.Phil Scholar)
Session 2023-2024

Supervised by:

Dr. Asad Khan
Associate Professor,
Department of Library and Information Science
University of Peshawar.



Internal Examiner:

Dr. Asad Khan



External Examiner:

Dr. Amjid Khan
Assistant Professor, AIOU,
Islamabad

Date: 22/04/2026

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

UNIVERSITY OF PESHAWAR

SESSION 2023-2024

DEDICATION

*To my beloved late father, whose struggles,
sacrifices, and unwavering support made me who I am today.
You left too soon, but your dreams walk with me in every step I take.
This thesis is the fruit of the seeds you planted
with your silent tears and tired hands.*

*To my mother (my pillar of strength and softest place to fall)
and family for their prayers and love,
which sustained me through the demanding hours of this research.*

ACKNOWLEDGEMENT

All praise and gratitude are due to Almighty Allah, the Most Merciful and the Most Gracious, Who bestowed upon me the strength, patience, and knowledge to complete this work. Countless blessings and peace be upon the Holy Prophet Muhammad (PBUH), whose teachings illuminate the path of seeking knowledge.

First, I extend my deepest gratitude to my supervisor, Dr. Asad Khan, Chairman, Department of Library & Information Science, University of Peshawar, for his patience, wisdom, encouragement, scholarly insight, and the gentle art of guiding without imposing, which shaped this research from its earliest proposal to its final pages.

I am also immensely thankful to the members of my Graduate Studies Committee Dr. Shakil Ahmad, Dr. Noor Sana-ud-Din, Dr. Muhammad Ismail, Dr. Sajjad Ahmad, and to my external examiner Dr. Amjad Khan, Asst. Professor, AIOU, for their valuable suggestions, critical reviews, and constant support throughout my MPhil journey.

I extend my heartfelt appreciation to my colleagues, friends, and leadership for providing a supportive professional environment, understanding, and encouragement in balancing my career with this academic pursuit.

I also want to thank the faculty and librarians of NUST, who welcomed my questions and shared their truths openly. Without them, these pages would be empty.

Finally, I acknowledge all the researchers and scholars whose works I have cited in this thesis. You built the foundation upon which I could stand and see a little further.

This thesis is not the end of a journey, but a beginning. May it serve as a small contribution to the field of Library and Information Science, and may it help improve collection development practices in Pakistan and beyond.

TANVEER AHMAD

TABLE OF CONTENTS

ACKNOWLEDGEMENT.....	i
TABLE OF CONTENTS	ii
LIST OF TABLES	viii
LIST OF FIGURES	x
ABSTRACT	xi
 CHAPTER ONE	 1
INTRODUCTION.....	1
1.1 Overview of the Study.....	1
1.2 Background of the Study.....	2
1.3 Statement of the Problem	7
1.3.1 Faculty Involvement Not Uniform	7
1.3.2 No Written Policies and their Application	8
1.3.3 Mismatch with Academic and Research Requirements	8
1.3.4 Balance between Digital and Physical Resources	8
1.3.5 Dwindling Technological Demands	9
1.3.6 Resource Constraints and Stakeholder Awareness.....	9
1.4 Research Objectives	11
1.5 Research Questions	12
1.6 Theoretical Support for the Study	13
1.6.1 Strategic Planning and Policy Formulation	13
1.6.2 User-Centricity	13
1.6.3 Total Management	14
1.6.4 Electronic Resources Incorporation.....	14
1.6.5 Evaluation and Assessment	14
1.6.6 Collaboration and Outreach.....	15
1.7 Significance of the Study	18
1.7.1 For NUST Library Administration and Practitioners	18
1.7.1.1 <i>Better Collaboration</i>	18
1.7.1.2 <i>Optimizing Collections and Services</i>	19
1.7.2 For NUST Faculty and Researchers	19
1.7.2.1 <i>Resource Access</i>	19
1.7.2.2 <i>Regarding Collection Building Clarification of Roles and Channels</i>	19
1.7.3 For NUST Leadership	19
1.7.3.1 <i>Strategic Decision Support</i>	19
1.7.3.2 <i>Benchmarking and Accountability</i>	20
1.7.4 For the Wider LIS Community (Pakistan & Internationally).....	20
1.7.4.1 <i>Local Knowledge</i>	20
1.7.4.2 <i>To Comparable Institutions</i>	20
1.7.4.3 <i>Theoretical Contribution</i>	21
1.7.4.4 <i>Systemic Challenges</i>	21
1.8 Limitations and Delimitations of the Study	21
1.8.1 Limitations.....	21
1.8.1.1 <i>Generalizability of Qualitative Results</i>	22
1.8.1.2 <i>Depending on Self-Reported Data</i>	22
1.8.1.3 <i>Time Constraints</i>	22

1.8.1.4 <i>Implicit Funding Constraints</i>	23
1.8.2 Delimitations	23
1.8.2.1 <i>Geographical Scope</i>	23
1.8.2.2 <i>Target Population</i>	23
1.8.2.3 <i>Particularities of Collection Development Practices</i>	24
1.8.2.4 <i>Theoretical Framework</i>	24
1.8.2.5 <i>Period of Supporting Literature</i>	24
1.9 Definition of Technical Terms	25
1.9.1 Collection Development (CD).....	26
1.9.2 Collection Development Policy (CDP)	26
1.9.3 Collection Development Practice (CD Practice)	27
1.9.4 Academic Library	27
1.9.5 User Need Analysis	27
1.9.6 Selection	27
1.9.7 Acquisition.....	28
1.9.8 Weeding (De-selection).....	28
1.9.9 Evaluation.....	28
1.9.10 Head Librarian	28
1.9.11 Mixed-Methods Approach.....	28
1.9.12 Data Saturation	29
1.9.13 Thematic Analysis	29
1.9.14 National University of Sciences & Technology (NUST).....	29
1.10 Organization of the Thesis	30
1.10.1 Chapter 1: Introduction.....	30
1.10.2 Chapter 2: Literature Review	30
1.10.3 Chapter 3: Research Methodology	31
1.10.4 Chapter 4: Data Analysis and Presentation of Findings	31
1.10.5 Chapter 5: Discussion, Conclusion, and Recommendations of Findings..	32
1.11 Summary of the Chapter	32
CHAPTER TWO	35
LITERATURE REVIEW	35
2.1 Overview	35
2.2 Collection Development, Conceptual Boundaries and Definitions	35
2.3 The Significance of Written Collection Development Policies (CDPs)	36
2.4 Selection and Acquisition Practices; Methods, Criteria, and Instruments	38
2.5 Faculty-Librarian Collaboration in Selection and its Practical Forms	40
2.6 Electronic Resources, "Big Deals" And Hybrid Collection Issues	43
2.7 Collection Evaluation and Weeding (Deselection)	44
2.8 Challenges in Collection Development Practices	47
2.8.1 Budgetary Constraints, Procurement Rules, and Administrative Barriers ..	47
2.8.2 Technological and Digital Challenges.....	48
2.8.3 Dynamic User Needs and Publishing Landscape	49
2.8.4 Awareness and Professional Development.....	49
2.8.5 Collection Development Training, Competencies, and Staffing	50
2.8.6 Tools and Metrics: Using Data to Guide Decisions	50
2.8.7 Diversity and Inclusion in Collection Development	51
2.9 Regional case studies and empirical findings	51
2.9.1 Pakistan Perspective	51

2.9.2 Africa and Developing Regions	53
2.10 Policy Content: Recommended Elements and Modern Concerns	54
2.11 Synthesis: How this Literature Informs the NUST Study.....	54
2.12 Gaps in the Literature and Justification for the Present Study	55
2.12.1 Contextual Studies of Science & Technology Universities in Pakistan....	55
2.12.2 Empirical Evidence of Policy Implementation (Not Just Presence).....	55
2.12.3 Mixed-Methods Triangulation Combining Faculty and Librarian Perspectives	55
2.12.4 Detailed Attention to Deselection/Weeding and Green Audits in Pakistan	56
2.13 Summary of the Chapter	57
CHAPTER THREE	59
METHODOLOGY	59
3.1 Overview	59
3.2 Research Paradigm.....	59
3.3 Research Design.....	60
3.3.1 Comprehensiveness	61
3.3.2 Triangulation	61
3.3.3 Complementarity	62
3.4 Research Setting and Context	62
3.5 Research Questions and Objectives (Operational Alignment).....	62
3.6 Population, Sampling, and Sample Size Determination	63
3.6.1 Population.....	63
3.6.1.1 <i>Quantitative Strand</i>	63
3.6.1.2 <i>Qualitative Strand</i>	64
3.6.2 Sampling Techniques and Sample Size.....	64
3.6.2.1 <i>Quantitative Sampling: Proportionate Stratified Random Sampling</i>	64
3.6.2.2 <i>Qualitative Sampling</i>	67
3.6.3 Unit of Analysis.....	67
3.6.4 Data Collection Methods and Instruments	68
3.6.4.1 <i>Validity and Reliability of the Instrument.</i>	68
3.6.4.2 <i>Quantitative Instrument: Faculty Questionnaire.</i>	68
3.6.4.3 <i>Pilot Testing and Reliability</i>	70
3.6.4.4 <i>Qualitative Instrument: Semi-Structured Interview Guide</i>	70
3.6.5 Data Analysis Techniques	71
3.6.5.1 <i>Quantitative Data Analysis</i>	71
3.6.5.2 <i>Qualitative Data Analysis</i>	72
3.6.6 Data Integration	73
3.7 Ethical Considerations.....	74
3.7.1 Informed Consent	74
3.7.2 Confidentiality and Anonymity	74
3.7.3 Voluntary Participation.....	74
3.7.4 Data Security	75
3.8 Limitations of the Methodology.....	75
3.8.1 Generalizability of Qualitative Results.....	75
3.8.2 Self-Reported Data	75
3.8.3 Cross-Sectional Character	75
3.8.4 Researcher Role	75

3.9 Summary of the Chapter	76
CHAPTER FOUR.....	78
DATA ANALYSIS	78
4.1 Overview	78
4.2 Quantitative Data.....	78
4.2.1 Data Cleaning and Response Rate.....	81
4.2.2 Distribution by Gender, Age Group, Designation, and Experience	83
4.2.2.1 Gender	83
4.2.2.2 Distribution by Professional Designation and Experience.....	84
4.3 Quantitative Results: Faculty Perceptions of Collection Development	86
4.3.1 Awareness and Accessibility of Policy	87
4.3.2 Collection Practices and Effectiveness (Q17-Q26)	88
4.3.3 Faculty Involvement and Collaboration (Q27-Q36)	89
4.3.4 Perceived Challenges and Constraints (Q37-Q46).....	91
4.4 Qualitative Analysis: Themes from Head Librarian Interviews	95
4.5 Qualitative Results from NVivo.....	102
4.5.1 Theme 1: Existence, Scope, and Awareness of Collection Development Policy	104
4.5.1.1 Triangulation with Quantitative Data.....	106
4.5.2 Theme 2: Operational Practices and Workflow	106
4.5.2.1 Analytic Summary.....	106
4.5.2.2 Main Results	108
4.5.2.3 Triangulation with quantitative data.....	108
4.5.2.4 Interpretation.....	108
4.5.3 Theme 3: Selection Criteria and Evidence-Based Practice	109
4.5.3.1 Analytic Summary.....	109
4.5.3.2 Interpretation.....	110
4.5.4 Theme 4: Faculty-Librarian Collaboration.....	110
4.5.4.1 Analytic Summary.....	110
4.5.4.2 Main Results	112
4.5.4.3 Triangulation with quantitative data.....	112
4.5.5 Theme 5: Authority and Professional Empowerment of Librarians.....	113
4.5.5.1 Analytic Summary.....	113
4.5.5.2 Main Results	114
4.5.5.3 Interpretation.....	114
4.5.5.4 Triangulation with quantitative data.....	115
4.5.6 Theme 6: Budgetary and Procurement Challenges	115
4.5.6.1 Analytic Summary.....	115
4.5.6.2 Main Results	116
4.5.6.3 Interpretation.....	117
4.5.6.4 Representative excerpts	117
4.5.6.5 Interpretation.....	117
4.5.6.6 Triangulation with quantitative data.....	117
4.5.7 Theme 7: E-Resource Management	118
4.5.7.1 Analytic Summary.....	118
4.5.7.2 Main Results	119
4.5.7.3 Interpretation.....	119
4.5.8 Theme 8: Weeding and Evaluation	119

4.5.8.1 <i>Analytic Summary</i>	119
4.5.8.2 <i>Interpretation</i>	121
4.5.9 Theme 9: User Needs and Service Orientation	121
4.5.9.1 <i>Analytic Summary</i>	121
4.6 Integration and Triangulation	123
4.7 Summary Answers to Research Questions	125
4.7.1 RQ1 & RQ2	125
4.7.2 RQ3.....	125
4.8 Limitations	126
4.9 Summary of Chapter	126
CHAPTER FIVE	127
DISCUSSION, CONCLUSION, AND RECOMMENDATIONS	127
5.1 Overview	127
5.2 Summary of the Study	128
5.3 Major Findings and Discussion of the Study	129
5.3.1 Awareness and Communication of Policy.....	129
5.3.2 Faculty Participation in Collection Development	129
5.3.3 Operational Procedures and Procurement	130
5.3.4 Role and Empowerment of Librarians.....	130
5.3.5 Challenges Faced by Libraries	130
5.3.6 E-Resource Management.....	131
5.3.7 Weeding and Collection Evaluation	131
5.4 Analysis of the First Research Objective	131
5.4.1 Policy Existence vs Policy Engagement.....	131
5.4.2 Collaborative Selection Practices	132
5.4.3 Librarian Roles and Professional Identity	132
5.4.4 Evidence-Based Practice vs. Traditional Practices.....	132
5.5 Research Objective Two's Discussion	133
5.5.1 Budget Limitations	133
5.5.2 Procurement Complexity	133
5.5.3 E-Resource Limitations	134
5.5.4 Weak Weeding and Evaluation Practices.....	134
5.6 Conceptual Model Derived from Findings.....	134
5.6.1 Components	134
5.7 Study Conclusion	135
5.8 Achievement of Research Objectives	135
5.9 Implications of the Study	136
5.9.1 Practical Implications	136
5.9.1.1 <i>Enhanced Policy Communication</i>	136
5.9.1.2 <i>Greater Librarian Empowerment</i>	136
5.9.1.3 <i>Evidence-Based Choice</i>	136
5.9.1.4 <i>More Productive Procurement</i>	136
5.9.1.5 <i>Staff Development</i>	137
5.9.2 Theoretical Implications	137
5.9.3 Institutional Implications	137
5.9.4 Managerial Implications	137
5.10 Recommendations of the Study.....	138
5.10.1 Strengthen Policy Communication and Review	138

5.10.2 Enhance Librarian Autonomy and Professional Roles	138
5.10.3 Improve Procurement and Acquisition Efficiency	139
5.10.4 Technological / Digital Collection Development	139
5.10.5 Establish a Structured Weeding and Evaluation Plan	139
5.10.6 Strengthen Faculty-Librarian Collaboration.....	139
5.11 Suggestions for Future Research.....	140
5.12 Summary of the Chapter	141
REFERENCES.....	142
Appendix A.....	148
QUESTIONNAIRE.....	148
Appendix B	152
INTERVIEW GUIDE FOR LIBRARIANS	152
Appendix C	155
QEC PLAGIARISM REPORT	155

LIST OF TABLES

Table 1.1: Peggy Johnson Theory Mapping.....	17
Table 3.1: Representation of Research Design	63
Table 3.2: Formula for Proportionate Sample.....	65
Table 3.3: Detailed Sample Size Calculation – (School-wise)	66
Table 3.4: RQs, Tools, & Analysis.....	76
Table 4.1: Faculty Distribution Across Campuses	79
Table 4.2: Reliability Analysis of Questionnaire	82
Table 4.3: Proportionate Stratified Sampling Formula	83
Table 4.4: Faculty Distribution (Gender-Wise)	83
Table 4.5: Distribution by Faculty Designation.....	85
Table 4.6: Distribution by Faculty Teaching Experience.....	85
Table 4.7: Descriptive Statistics for Collection Development Policy (CDP) Awareness	87
Table 4.8: Descriptive Statistics for Collection Practices and Effectiveness.....	89
Table 4.9: Descriptive Statistics for Faculty Involvement and Collaboration	90
Table 4.10: Descriptive Statistics for Perceived Challenges and Constraints	91
Table 4.11: Descriptive Statistics for Overall Questionnaire.....	92
Table 4.12: Main Nodes & Sub-Nodes of NVIVO.....	96
Table 4.13: Matrix Coding (Cross-Tabulation) of Themes and Interviews References	98
Table 4.14: Schools of Participated Respondents	99
Table 4.15: Total Themes with Source, References	103
Table 4.16: Sub-Themes with Source, References (Theme-1)	104
Table 4.17: Sub-Themes with Source, References (Theme-2)	106
Table 4.18: Sub-Themes with Source, References (Theme-3)	109
Table 4.19: Sub-Themes with Source, References (Theme-4)	111

Table 4.20: Sub-Themes with Source, References (Theme-5)	113
Table 4.21: Sub-Themes with Source, References (Theme-6)	115
Table 4.22: Sub-Themes with Source, References (Theme-7)	118
Table 4.23: Sub-Themes with Source, References (Theme-8)	120
Table 4.24: Sub-Themes with Source, References (Theme-9)	122
Table 4.25: Triangulation & Matrix Coding	124

LIST OF FIGURES

Figure 4.1: Faculty Distribution (Designation).....	80
Figure 4.2: Faculty Distribution (School-Wise)	81
Figure 4.3: Faculty Distribution (Gender)	84
Figure 4.4: Distribution by Faculty Teaching Experience	86
Figure 4.5: Themes & Sub-Themes from NVIVO	97
Figure 4.6: Distribution of Librarians by Gender	100
Figure 4.7: Distribution of Librarians by Age	100
Figure 4.8: Distribution of Librarians by Designation.....	101
Figure 4.9: Distribution of Librarians by Experience	101
Figure 4.10: Total Themes with Source, References	103
Figure 4.11: Sub-Themes with Source, References (Theme-1).....	105
Figure 4.12: Sub-Themes with Source, References (Theme-2).....	107
Figure 4.13: Sub-Themes with Source, References (Theme-3).....	109
Figure 4.14: Sub-Themes with Source, References (Theme-4).....	111
Figure 4.15: Sub-Themes with Source, References (Theme-5).....	113
Figure 4.16: Sub-Themes with Source, References (Theme-6).....	115
Figure 4.17: Sub-Themes with Source, References (Theme-7).....	118
Figure 4.18: Sub-Themes with Source, References (Theme-8).....	120
Figure 4.19: Sub-Themes with Source, References (Theme-9).....	122

ABSTRACT

This study aims to examine and evaluate collection development in academic libraries, with a focus on policy implementation, stakeholder roles & their collaboration, and operational challenges in the libraries of the National University of Sciences & Technology (NUST), Pakistan. The purpose of the research is to provide an empirical understanding of how collection development policies are translated into practice in a research-intensive academic environment, and to identify gaps that affect the efficiency, relevance, and sustainability of library collections. Grounded on Peggy Johnson's Collection Development Theory, the study conceptualizes collection development as an integrated process involving policy formulation, resource selection & acquisition, evaluation, and collaboration between librarians and faculty. Mixed method research design was adopted to ensure breadth and depth of analysis. Quantitative data were collected through a structured questionnaire from 265 teaching faculty using proportionate stratified sampling, yielding 233 valid responses. Qualitative data were obtained through semi-structured interviews from head librarians of NUST libraries. The data were analyzed using descriptive statistical techniques (SPSS) and thematic analysis (NVivo) and then triangulated to strengthen the validity of the findings. The findings reveal that formal collection development policies exist, but their dissemination and practical implementation is limited. Faculty participation is mostly limited to resource recommendation, while librarians primarily act as facilitators with constrained decision-making authority. Key challenges include budgetary limitations, procedural delays in acquisition, inadequate integration of electronic resources, and the absence of a systematic evaluation and weeding process. The study highlights the gap between policy frameworks and operational realities. This research contributes to the field of library and information science by providing institution-specific, theory-guided, and empirically grounded analysis of CD practices in Pakistan. It underscores the need for improved policy communication, strengthened collaborations, enhanced librarians' empowerment, and more evidence-based, user-centered collection development approaches.

CHAPTER ONE

INTRODUCTION

This chapter provides a background to the research, as it gives a comprehensive introduction to the study of collection development practices, policies and challenges in libraries of the National University of Sciences and Technology (NUST), Pakistan. It defines the scope of the study, research objectives and theoretical foundation, defining the critical significance of this investigation in the whole context of library and information science.

1.1 OVERVIEW OF THE STUDY

In fact, academic libraries are the intellectual pulse of universities, organizing knowledge and making discoveries. This research has its core in the CDP, i.e., that strategic and ongoing activity of developing and maintaining a library collection with evolving educational and research requirements (Johnson, 2018). Due to the huge volume of information the world now experiences, coupled with digital transformation (Jahnke et al., 2022) and constrained budgets (McCord et al., 2025), proper CDP is not only beneficial, it is necessary now to excellence within an institution. The research proceeds to a critical, detailed discussion of the role of CDP in a high-profile organization in Pakistan: The National University of Sciences and Technology (NUST). It starts with the background of the significance of CDP before proceeding with further detailed issues identified in NUST, which claim to be objectives and research questions designed to inform the study. An etched theoretical base is presented alongside recommendations on future research opportunities amongst others. Ultimately, this chapter provides the foundation and framework to

establish an understanding of policies practices issues or collaborative behaviours that shape CDP in NUST libraries.

The main focus of the study is to conduct a systematic investigation of the present condition of collection development in the wide network of NUST libraries. The particular purpose of the study is to evaluate the effectiveness of the current policies and the many obstacles to their best implementation and the overall efficiency of the collection management. By addressing such key areas, this study offers a better comprehension of the complexities involved in the development and sustenance of relevant collections of libraries in a major academic institution under the developing country setting. The very first introduction of the university and department already positions the research in a particular academic tradition and geographical location. It matters, as practices in libraries, especially collection development, are extensively influenced by the educational philosophy of the area, current funding patterns, and cultural subtleties. By explicitly presenting this background information early in the study, the study implicitly recognizes these factors as influential, which in turn provides a realistic expectation of the generalizability and applicability of its results. This method is also a subtle way to emphasize the institutionalization of such scholarly inquiries in the Library and Information Science (LIS) circles in Pakistan.

1.2 BACKGROUND OF THE STUDY

Academic libraries are no longer seen as archives that contain knowledge they can store but as active service-oriented learning and research institutions (Heisserer-Miller, 2023). Collection Development Practice (CDP) is a strategized and structured approach to building and maintaining collections, which is essential to this change, whereby libraries equip their users with data that they can utilize efficiently to address

instructional, research, or informational requirements (Uwandu & Okere, 2022). The process starts with a review of user requirements, selection and acquisition of the appropriate materials (print or digital) and the tracking of the usage of collections (devaluation) de-selection (weeding) the removal of outdated items off the shelf because their application has passed the wear and tear stage (Hussaini, 2020; Johnson, 2018). The basis, a strategic roadmap that requires a clear Collection Development Policy (CDP). It provides the mission of the library, the selection of materials, what holds precedence over other things, and how they judge all this type of material and even how they make a budget to cover everything in order to stay coordinated and consistent to the manner in which there intended to go (Jamison & McNamara, 2025; Smith, 2024). The quality and the availability of information resources in these institutions is inherently related to the ability to effectively cover their overarching missions (Moustapha & Abubakar, 2023).

The holistic view of CDP covers a list of interrelated activities, each of which is crucial to the well-being and responsiveness of the collection of a library. The most important of these is **User Needs Assessment**, which is a preliminary stage that entails the process of identifying the information needs of the target population in a systematic manner. This is also known as community analysis or user studies and incorporates many different approaches, such as formal surveys, direct interviews with members of the faculty, and an in-depth review of curriculum documents, so that the choices that are made regarding collections are data-informed and in line with the academic programmes. After this, there is **Selection** which entails cautious selection of information resources. Selection criteria usually emphasize the relevance of the subject, scholarly quality, and cost-effectiveness, and they are usually based on the usage data and interlibrary loan requests to ensure the best possible utilization of the

resources. After the selection, **Acquisition** is the orderly process of obtaining such materials in several ways, such as by direct purchase, acceptance of gifts and donations, taking part in exchange programmes, and more and more, the complicated licensing of electronic resources. **Evaluation** is another equally crucial element that is a continuous measurement of how the collection is being used, how relevant it is to the user, and how effective it is as a whole in addressing the needs of the user. This is done by examining the circulation statistics of physical materials and the network usage statistics of digital resources. Lastly, **Weeding**, or de-selection, is the scheduled and structured elimination of outdated, abraded or less frequently utilized materials. The practice is necessary to have a current, well-organized, and space-saving collection so that resources can be relevant and accessible. These interrelated terms emphasize the fact that collection development is not a sequence of disjointed ideas but a sequence of stages that rely on each other but is part of an ongoing cycle. This stresses the point that good collection development is a dynamic process that needs continual concentration on every aspect. Any failure in any of the stages, including failure to assess the user needs effectively which results in selection being ineffective will affect the quality and relevance of the complete collection. This interconnectedness accentuates the complexity that the collection development issue under study at NUST is inherent.

Formal Collection Development Policies (CDPs) are documents that cannot be ignored as they help libraries to develop and manage their collections effectively. The policies express the institutional mission, selection criteria, and lay down clear guidelines on how decisions and deselection are made, creating consistency, transparency, and overall conformity to institutional objectives. In addition, CDPs are also important in facilitating budget allocation as they help libraries focus on

acquisitions that directly benefit academic programmes and research activities. According to research, the policy of collection development is obligatory in any academic institution and library. The interesting fact, though, is the fact that policies might be present or even enforced, but their implementation and incorporation into the daily library activities frequently fail. The implication here is that it is not enough to have a policy document but rather the key challenge is to operationalize it effectively, enforce it regularly and keep up with the changing nature of information world. This disconnect between policy presence and practice is a typical phenomenon that is witnessed in academic libraries in third world countries.

Effective implementation of CDP depends largely on two important aspects, namely, sufficient budgetary allocation and effective cooperation. Adequate funding is a key success factor in CDP, which requires effective planning in different fields to guarantee a balanced and complete collection. Effective CDP involves collaboration among librarians with their information management and collection planning skills and teaching faculty with their in-depth subject knowledge and comprehending curricular and research needs (Ashilungu & Onyancha, 2024; Singh & Mahajan, 2021). This lack of synergy may lead to libraries acquiring irrelevant materials, duplicating resources or content, and leaving important subjects uncovered (Ifijeh & Yusuf, 2013). In addition, libraries all over the world, particularly in developing countries like Pakistan have significant challenges to handle with their budget-constrained and fluctuating budgets, outstandingly expensive and rapid obsolescence of resources (esp., electronic), the need for costly technological infrastructures, adaptation of collections with various view points as well as new programs (Anwar, 2021; Khan & Bhatti, 2017; Yakubu, 2023).

In Pakistan, in-depth research on CDP has highlighted recurring problems. Many university libraries lack systematic planning to improvise and Tennessee of collection in the digital import segment, such as there were few writers discovered created regarding obsolete center government policies (Ameen, 2006; Mushtaq & Shah, 2023). Even where there are policies, implementation is patchy. Faculty involvement in the selection of resources is often described as ad-hoc or insignificant, which limits how faculty needs can be satisfied by the collection (Khan & Bhatti, 2016, 2024). Across settings, resource limitations, including financial restrictions, present a ubiquitous challenge and one that often necessitates uncomfortable prioritization (Warraich et al, 2018; Arshad et al, 2021). As NUST is the premier science and technology university of Pakistan with a multi-campus, multiple academic programs making it an interesting case study. Its libraries are here to support a broad yet specialized constituency with multifaceted and ever-changing information demands. How CDP functions in this increasingly competitive environment, its governance frameworks and operational modalities, the collaboration it has been built upon along with the challenges being faced by it is key to improving NUST library services thereby impacting its academic as well as research output (Khan et al., 2023).

The dynamic and continuous nature of Collection Development Practices, as described, suggests that it functions as a multifaceted ecosystem rather than a series of isolated, linear steps. This implies that insights gathered from evaluation and user studies should consistently feed back into policy refinement and resource selection, creating an iterative loop. This understanding is crucial because it underscores the necessity for flexible, responsive systems rather than rigid, one-off procedures, especially in environments characterized by rapid information changes and resource

limitations. Furthermore, the effectiveness of CDP is profoundly dependent on the interplay of adequate financial resources, well-defined policies, and robust collaboration between librarians and faculty. A deficiency in any one of these areas can severely undermine the others. For instance, if the budget is limited, even the most meticulously crafted policies might be rendered inexecutable. Similarly, if faculty involvement is inconsistent, the collection may fail to align with academic needs, regardless of the budget or policy framework. This interdependence signifies that addressing challenges in CDP requires a holistic strategy that considers all three elements simultaneously, rather than tackling them in isolation. This points to a systemic challenge that extends beyond individual components, necessitating a comprehensive approach to improvement.

1.3 STATEMENT OF THE PROBLEM

The NUST libraries serve a large, varied, socio-academically diverse community spread over multiple campuses. That complexity, in turn, requires an ongoing, intentional, user-centric, and policy-based approach to collection development to ensure that resources are closely aligned with teaching, learning and research use (Johnson, 2018; Oza & Patel, 2020). Nevertheless, preliminary observations and anecdotal evidence strongly indicate that the existing CDP practiced by NUST libraries is highly erratic, and there are hardly any well-defined policies in place. The key issues that led to this problem are:-

1.3.1 Faculty Involvement Not Uniform

The important partnership between librarians and teaching faculty with respect to resource selection seems haphazard, uneven, or non-existent across campuses and disciplines (Ashilungu & Onyancha, 2024). Failure to establish systematic faculty

involvement could lead to a situation where the collections are out of sync with both curricula and ongoing research areas prioritized by faculties (Ifijeh & Yusuf, 2013; Singh & Mahajan, 2021).

1.3.2 No Written Policies and their Application

There is scanty documentation on written collection development policies enforced at NUST libraries. Or even where policies may exist, the consistent application in daily decision-making (selection, acquisition, deselection) is uncertain which results in ad-hoc practices and absence of transparency (Ameen, 2006; Mushtaq & Shah, 2023; Kate et al., 2022).

1.3.3 Mismatch with Academic and Research Requirements

Incomplete faculty participation along with the poor implementation of policy, as indicated earlier, could lead to having collections at NUST that do not adequately or efficiently cater to the needs of various academic programs and contemporary research endeavors (Khan & Bhatti, 2020; Mwilongo et al., 2020). This may result in a lack of coverage of the subject, duplication, and underuse of faculty-acquired resources.

1.3.4 Balance between Digital and Physical Resources

Hybrid Collections Librarians face the challenge of balancing print and digital resources (e-journals, databases, e-books) using a limited budget and constrained infrastructure (Laure, 2024; Zabala & Natividad, 2024).

1.3.5 Dwindling Technological Demands

These are a great challenge to libraries whose infrastructure and skills are constrained. The increasing sophistication of technologies of information delivery and access, the inclusion of e-resources and artificial intelligence, require sustained investment and knowledge that might not be easily maintained.

1.3.6 Resource Constraints and Stakeholder Awareness

The usual squeeze is financial boundaries (Anwar, 2021). Moreover, planning and advocacy would also be more challenging due to the possibility of low knowledge and awareness of CDP among key stakeholders (such as faculty and administrators) (Yakubu et al., 2022).

Little empirical research has been undertaken direct to the NUST setting to have a holistic analysis of the effectiveness of the current CDP and the reality of the extent to which librarians and teaching faculty are collaborating.

These unanswered issues coming together are devastating. In the absence of a well-coordinated mechanism and a clear policy framework, NUST libraries are at a remarkably considerable risk of resource duplication, which results in inefficient use of limited funds. In addition, the probability of major gaps in the coverage of the subjects, which could not fully support the various academic programmes, is high. These problems eventually lead to the overall underutilization of useful library sources which negates the very purpose of the library and jeopardizes the quality of academic guidance and research work at one of the foremost institutions such as NUST.

The problem statement shows that the fundamental problem at NUST is not just an operation issue but rather a far reaching and systemic failure to translate the identified need of strong collection development into uniform, written, and operational policies and practices. It is an imperative and prevalent policy-practice gap in developing countries. The different problems that were identified including inconsistent faculty participation, limited policy documentation and weak alignment are not standalone and are systemic gaps that compound each other. To illustrate, due to the constrained budget, there is a difficulty in obtaining a wide range of digital resources, and consequently, this complicated the problem of fulfilling the changing needs of the users. Lack of clear policies implies that there is no structured model to fall back on and address such financial and technological strains, instead, making ad-hoc decisions, which further introduces inconsistencies. This forms a vicious circle where one difficulty boosts the other, and it is a steep climb that successful collection development takes. Explicit reference to the limited empirical research in the NUST context is an important aspect of the issue. This suggests that it is based on informal knowledge or anecdotal information as opposed to information. Lack of empirical data may complicate the decision making about collection development at NUST because it may be informed by assumptions or partial perceptions, preventing strategic improvements and policy changes. The study thus becomes necessary to go beyond anecdotal observations and have tangible empirical data.

In the context of this research, the operational definition of collection development practices is the coordinated actions of formulating policy, selecting and acquiring, evaluating and managing print and electronic resources in academic libraries, and librarian-faculty partnership as well as budgetary decision-making.

To discuss the issues more systematically, the current research is going to conceptualize the collection development practices in the four dimensions: (1) policy awareness and availability, (2) faculty involvement in selection and decision-making, (3) acquisition and evaluation operational procedures, and (4) institutional issues, such as financial, administrative, and technological limitations. These dimensions are guided by the framework of collection development proposed by Johnson that focuses on policy development, user-oriented selection, ongoing review, and flexibility. The operationalization of these constructs enables the study to offer a narrow and quantifiable perspective of the practice of collection development at NUST.

1.4 RESEARCH OBJECTIVES

The research is thoroughly planned to deliver specific research objectives that directly respond to the stated problems in the NUST libraries in Pakistan. These goals outline the principles of the whole investigative process, providing a specific and meaningful investigation.

The main objectives of the research are:

- 1) To know the collection development policies, practices, and the roles of librarians and teaching staff in the libraries of NUST, Pakistan
- 2) To explore the key challenges influencing the effective collection development practice in libraries of the NUST, Pakistan.

These two goals, despite being different, are closely intertwined. An integrated perception of the available collection development policies, existing practices, and assigned duties of librarians and teaching staff is a condition that would be essential in identifying and examining the challenges. On the alternative, the examination of these

issues is bound to give insight into the weaknesses or strengths of the current policies, practices, and collaboration mechanisms. The combination will mean that the results of the first objective will shape and contextualize the results of the second objective and provide a more comprehensive and detailed picture of the landscape of collection development at NUST. This interrelatedness emphasizes the holiness of this study that guides us to have a full picture of the situation.

1.5 RESEARCH QUESTIONS

To tackle the above research objectives systematically, the current research will explore the following research questions in context of the NUST libraries in Pakistan:

- 1) What are the current collection development policies, practices, and the roles of librarians & teaching staff in the libraries of NUST, Pakistan?
- 2) What are the key challenges influencing the effective collection development practice in libraries of the NUST, Pakistan?

These research questions are essentially the questions that point to the major exploratory and descriptive aspects of the present study. The specific problems and the problematic state should be defined before any solutions or interventions are suggested. The study seeks to set up a baseline level of knowledge by addressing what policies, practices, roles, and challenges are. Such background knowledge is an essential requirement for any significant appraisal or subsequent improvement initiatives, particularly where empirical research remains unavailable, as it is with NUST. The design of these questions makes sure that the investigation is focused on the collection of the most important descriptive data to be used in further analysis and recommendations.

1.6 THEORETICAL SUPPORT FOR THE STUDY

The theoretical basis of the study methodology was pegged on the Collection Development Theory that Peggy Johnson came up with in her landmark publication of Collection Development and Management, i.e., Fundamentals of Collection Development and Management (Johnson, 2018). The CDP canvas gives a holistic and strategic understanding of what CDP means, as per Johnson. It goes deeper than the way of collection development, not merely a choice of which titles to choose and purchase. Instead, it perceives CDP as an advanced, multi-layered, and continuous management practice that is highly centralized in larger mission and strategy objectives of the library and parent organization (Johnson, 2018).

The main premises of the Collection Development Theory developed by Johnson are multifaceted and give a powerful conceptual framework for the complexities of library collections. These principles include:

1.6.1 Strategic Planning and Policy Formulation

According to Johnson, there is a strong need for and importance of clear policies and strategic planning, which has a strong connection with the mission of the institution. The policies are templates to follow in making uniform decisions and distributing resources so that the collection development activities are geared towards the overall organizational goals.

1.6.2 User-Centricity

As a fundamental principle of the theory, Johnson teaches the necessary inquiry and active reaction to the user's needs in terms of information requirements. This principle emphasizes that collections must be constructed and operated with the

principal goal being to support the varied needs of the patrons of the library, user studies and feedback systems play a significant role in this process.

1.6.3 Total Management

The theory recommends an interdependent view on collection management, including all the crucial points of organization and staffing schemes, budgeting, vendor relations, and the ongoing organizational services, such as weeding and preservation. This all-encompassing picture has the added advantage of making sure that every aspect of collection development is integrated in a holistic manner.

1.6.4 Electronic Resources Incorporation

Incorporating the radical influence of the technological factor on information availability, the framework proposed by Johnson emphasizes the necessity to incorporate electronic resources into all aspects of collection development. This encompasses the aspect of licensing, access, as well as digital preservation, considering the dynamism of library collections in the digital era.

1.6.5 Evaluation and Assessment

The theory emphasizes continuous assessment and evaluation of collection performance and value. It includes purposeful approaches to defining the success of the collection in addressing the needs of the users, the relevance of the collection, and its total effect on the purposes of the institution, which enables making adjustments and defining the improvement of the collection with the help of data.

1.6.6 Collaboration and Outreach

Another aspect identified in the work of Johnson is the need to build good collaborative relations with the faculty and other stakeholders, and active involvement in marketing and outreach efforts to make the collection relevant and useful to the community in which it operates.

It is not a pure description study since it uses the theory proposed by Johnson as a model. It also provides a framework to professionals who want to identify the success of strategic functions in collection development management and critical gaps and barriers in NUST Libraries (Moustapha & Abubakar, 2013; Ratkanthiwar & Prakashe, 2014). The findings will be interpreted by referring to this theoretical understanding in a manner that will not be realistic to the field.

The current study, which has acquired a specific area of collection development practice, policy, driving forces and issues in NUST libraries, directly concurs with the principles of the theory offered by Johnson. The research questions are carefully formulated to address the systematic character of the existing practices, the presence and use of formal policies, the importance of the institutional and user elements of the collection choices, the essential element of the collaboration between librarians and the teaching staff, and the difficulties of managing this complex process within the context of the particular academic environment of NUST.

In addition, Johnson's framework encompasses aspects such as organization, staffing, policy, budgeting, selection, acquisition, weeding, evaluation, and collaboration. The study can identify the specific areas that are not aligned with the theoretical ideal by considering practices at NUST through this lens. This systematic practice enables accurate determination of shortcomings and possible ways of

improvement and therefore, the theory is not only a description tool but a diagnosis to the effectiveness of organizations in collection development. The applicability of the theory of Johnson also implicitly explains the wide scope of the study that includes policies, practices, roles and challenges as they are all parts of a comprehensive collection development model. The theory also offers an intellectual sense of integrity, in that the multi-faceted nature of the approach to this study is not frivolous, but is founded on an existing, comprehensive understanding of the concept of collection development, thus enhancing the overall academic integrity and unity of this thesis.

Table 1.1: Peggy Johnson Theory Mapping

Johnson Principle	What Johnson Emphasizes	Observed/Reported at NUST Libraries	Suggested Response
Strategic planning & CD policy	Written, mission-aligned CD policy guiding selection, deselection, budgeting, and cooperation	Scant or inconsistent written policies; ad-hoc decisions across campuses	Draft/ratify system-wide CD Policy; set governance & review cycle
User-centricity (needs assessment)	Ongoing user studies, curriculum mapping, data-informed selection	Irregular/unsystematic faculty input; possible misalignment with programs	Establish liaison program; annual curriculum scans; analyze usage/ILL data
Comprehensive management	Integrated processes: selection, acquisitions, licensing, evaluation, weeding, preservation	Process fragmentation; unclear deselection and evaluation routines	Document workflows; KPI dashboard for print & e-resources
Integration of e-resources	License management, access, discovery, and digital preservation	Budget/infrastructure constraints; hybrid balance challenges	Negotiate consortia deals; prioritize high-value packages; enhance discovery
Evaluation & assessment	Continuous assessment of relevance/usage/value; collection analysis	Limited evidence of systematic assessment or feedback loops	Implement usage analytics & ROI reporting; feed into policy updates
Collaboration & outreach	Strong librarian–faculty partnerships; proactive marketing	Inconsistent collaboration across disciplines/campuses	Formalize liaison roles; shared selection platforms; communications plan
Budgeting & vendor relations	Transparent allocation; cost-benefit analysis; vendor negotiation	Chronic budget constraints; duplication risk	Zero-based or formula funding; reduce duplication; shared purchasing

This operational mapping makes sure that the theoretical principles of Peggy Johnson are converted into variables that can be empirically observed and measured using survey items and interview themes in the current study.

1.7 SIGNIFICANCE OF THE STUDY

The research is of significant depth, and it has made substantial contributions both at local, national, and international levels, as well as offered practical implications of the study with regard to the library professionals.

1.7.1 For NUST Library Administration and Practitioners

Making Evidence-Based improvement- It will serve to point out the real picture of CDP in the NUST campuses in terms of strengths and weaknesses and certain challenges that are useful to discuss this (policy gaps, collaborative failures, budgetary constraints etc.). The library leadership can utilize such evidence to develop focused strategies, re-evaluate/create effective collection development policies, redistribute resources depending on the needs and raise concerns that require the budgetary allocation to be improved (Johnson, 2018; Oguntuase et al., 2025).

1.7.1.1 *Better Collaboration*

This study can create improved opportunities to enhance more effective and better collaboration by evaluating the status quo and the barriers to librarian-faculty collaboration. These programmes may include the establishment of formal liaison programmes, the improvement of the communication line, or the creation of shared

resource recommendation portals (Ashilungu & Onyancha, 2024; Singh & Mahajan, 2021).

1.7.1.2 Optimizing Collections and Services

This will allow more relevant and utilized collections, reduce wasteful duplication, and enhancement around quality and impact of library services on teaching, learning, and research outcomes (Khan & Bhatti, 2020; Heisserer-Miller, 2023).

1.7.2 For NUST Faculty and Researchers

1.7.2.1 Resource Access

A better and more responsive CDP process is based on the results of these studies but should be more closely aligned with the priorities of curriculum and faculty research that, in its turn, will result in the ease of access to the required high-quality resources (Ifijeh & Yusuf, 2020).

1.7.2.2 Regarding Collection Building Clarification of Roles and Channels

The research may be handy in indicating how the faculty role may best fit into collection building- this is to make it visible and accessible (Nengomasha & Kasanda, 2023).

1.7.3 For NUST Leadership

1.7.3.1 Strategic Decision Support

The results provide solid facts of the correlation between well-resourced and strategically managed library collections and institutional excellence in education and

research. These data, in their turn, can become part of library-of-the-future decision-making at the highest levels regarding budgeting libraries, infrastructures to support new ways of working, and integration of library services in the strategic plan of the larger university (Jahnke et al., 2022).

1.7.3.2 Benchmarking and Accountability

The results would give a benchmark to the assessment of the performance of library collections to aid the mission of NUST and by extension, statutory accountability.

1.7.4 For the Wider LIS Community (Pakistan & Internationally)

1.7.4.1 Local Knowledge

The work introduces substantial empirical information on CDP practices and dilemmas in one of the largest research universities and an environment that is a leading university of Pakistan. This adds a valuable layer to literature existing in the West, generally in view of scholarly librarianship in the global South (Khan & Bhatti, 2024; Mwilongo et al., 2020; Laure, 2024).

1.7.4.2 To Comparable Institutions

This is a mixed-method study, and the views of the library faculty that might have been modelled could be instrumental in other multi-campus large universities in Pakistan or other settings with similar circumstances to evaluate and enhance their CDP.

1.7.4.3 Theoretical Contribution

The work uses the theory of collection development introduced by (Johnson, 2018) to a particular, under-studied situation, thus contributing to the theory-practice connection and further one-dimensional optimization of theoretical knowledge regarding the complexities of CDP in different settings (Arda et al., 2024).

1.7.4.4 Systemic Challenges

The study will report systemic challenges like budgetary limitations and technological impediments affecting most of the developing nations, pave the way to a better international comprehension of the predicaments faced by academic libraries, and instigate advocacy intervention (Anwar, 2021; Yakubu, 2023).

1.8 LIMITATIONS AND DELIMITATIONS OF THE STUDY

To ensure transparency and provide a precise context for interpreting the research findings, it is crucial to articulate both the inherent limitations of the study and the conscious delimitations set by the researcher.

1.8.1 Limitations

Factors that are usually beyond the control of the researcher are limitations that might affect the results or their interpretation. The recognition of these allows for a clear and correct comprehension of the scope of the study and its generalizability.

1.8.1.1 Generalizability of Qualitative Results

Although the qualitative part of the study will use purposive sampling, including 15 head librarians to reach the data saturation required and collect rich and deep data, the small scale of this sample, as well as its non-randomness, could be implicitly limiting to the external validity of certain qualitative results to all the NUST campuses or to other academic institutions in Pakistan, overall. The outcomes of the insights gained will be deep and contextual, yet their general applicability might be a subject of further research.

1.8.1.2 Depending on Self-Reported Data

The study will have quantitative data that is going to be gathered through structured questionnaires to teaching faculty. The answers obtained by means of self-reporting can be prone to numerous biases that can be split into recall bias (inability to remember past events), social attraction bias (the desire to give answers that are viewed as positive), and the inability to be fully candid. These variables may also have the potential to influence the validity and objectivity of the perceived practices or challenges as reported by the participants.

1.8.1.3 Time Constraints

Being an M. Phil thesis, this research has a time limit of one year to accomplish the research. This time constraint is likely to reduce the possibility of longitudinal observation of the practices of collection development or of the full effects of any recent policy change or strategic project engaged in by the libraries at NUST. The results will thus be the picture of the moment.

1.8.1.4 Implicit Funding Constraints

Financial limitations are also a ubiquitous and reported issue in Pakistani university libraries, despite the research proposal not explicitly mentioning it as a direct constraint. These are larger economic facts that may implicitly alter the extent and intensity of data gathering by giving rise to the availability of some resources or more comprehensive field examinations.

1.8.2 Delimitations

Delimitations are conscious decisions and definite boundaries that the researcher sets to outline the field and subject matter of the research. Such choices are made to make the research feasible, manageable, and profound, and they all fall into the hands of the researcher.

1.8.2.1 Geographical Scope

The study is narrowly focused on the libraries of the National University of Sciences and Technology (NUST) in Pakistan. This is a conscious emphasis that enables the deep-seated and thorough investigation of a particular, notable institutional setting, as opposed to a wider and more generalized national survey that may not be as thorough as it requires.

1.8.2.2 Target Population

The study will be aimed specifically at two major stakeholders, namely, head librarians (to collect qualitative data) and teaching faculty members (to collect quantitative data) at NUST. The primary data collection is not represented by the other

possible stakeholders, including students, administrative staff not in library, or library staff not of head librarian rank or lower. Although their views are important, targeting these particular groups will be a way of having data collected by people who will be directly affected by the collection development decisions or be close to them.

1.8.2.3 Particularities of Collection Development Practices

Although the practice of collection development is a wide and complex area of research, the current study narrows down the research theme to include the appraisal of policies and challenges. The other facets of library practice, like the finer technical services processes, special digital preservation policies, or a careful study of interlibrary loan mechanics not in its role as in selection, lie beyond the scope of this study.

1.8.2.4 Theoretical Framework

The Collection Development Theory by Peggy Johnson is the main guiding theory in the study. Although many other theories can offer a different point of view, the proposed research directly uses this framework to offer a consistent, comprehensive, and well-known analytical framework to the investigation.

1.8.2.5 Period of Supporting Literature

The literature review and in-text citations of the study are restricted to high-impact journals published no earlier than 2016. This is to make sure that the currency and currency of the academic discourse that is given in support are valid.

Although the mixed-methods methodology used in this research is not a random decision, it is still prone to introducing specific constraints to its qualitative and

quantitative aspects, especially regarding generalizability and the possibility of bias. Nevertheless, it is a strategic method that is determined by the necessity to eliminate the limitations of single-method research and offer more detailed knowledge on a topic by using triangulation of data. The specific selection of NUST libraries and the target audience is a calculated move to get in-depth knowledge instead of a superficial summary, which is essential to thesis-level research. This reduces the scope, which allows the researcher to explore the details of the development of collection in a certain and complicated institutional setting. This makes it possible to produce actionable and context specific recommendations that would otherwise be difficult to produce in a more generalized study. This shows that the researcher realizes that it is not always the breadth of a thesis that matters but rather the depth. In addition, the knowledge about these limitations is not only that of being aware of the weakness but also implicitly to suggest future research opportunities. As an illustration, limitation of generalizability implies that future research may reproduce this study in other Pakistani institutions or even in other forms of libraries and compare the results to construct a more detailed picture of what is happening in the country. It is a viewpoint that changes the limitations into disclaimers to become a basis of a further scholarly discussion.

1.9 DEFINITION OF TECHNICAL TERMS

In this section, important technical terms that are used in this thesis are clearly and concisely defined. This brings about clarity and some understanding of the specialized vocabulary that is important in the academic rigor and accessibility of the report. The fact that the definition of such terms as Collection Development Policy is

similar in various sources demonstrates its vital role in the sphere and supports the necessity of such policies being missing at NUST.

1.9.1 Collection Development (CD)

A planned and systematic approach by which libraries build and maintain collections that support the education, research, and information needs of users effectively. It is a systematic process of building a library's collection to meet user information needs economically and promptly. It encompasses activities such as user need analysis, development of policies, selection, acquisition, weeding, and evaluation.

1.9.2 Collection Development Policy (CDP)

Formal documents that guide libraries in building and managing collections effectively. They articulate the institutional mission, define selection criteria, and establish frameworks for decision-making and deselection, ensuring consistency and transparency.

A formal, written statement that guides the selection, acquisition, evaluation, maintenance, and deselection procedures of the library materials. What it does is "describe the scope of the collection, set selection criteria and priorities, define who selects, what their roles and responsibilities are in selecting, and how controversial materials will be handled, as well as what to do with gifts". (Jamison & McNamara, 2025; Smith, 2024).

1.9.3 Collection Development Practice (CD Practice)

The planned and systematic development of a useful resource collection; an organized approach to meeting the needs of local users within budgetary resources through selection and acquisition or cooperative agreement with other libraries. The range of activities of holding library includes need assessment, selection, procurement, evaluation, deselection and preservation.

1.9.4 Academic Library

A library or information center situated within a higher education institution (e.g., university, or college) whose primary purpose is to support the teaching, learning, and other research activities of its students, faculty, and staff.

1.9.5 User Need Analysis

A systematic procedure of understanding the target people or patrons to identify their information needs. It is also a process commonly called community analysis, user studies, or needs assessment.

1.9.6 Selection

Mercer (1967) defines it as “The process of selecting specific information resources (e.g. books, journals, databases, media) to add to the library collection using criteria such as relevance to curriculum/research, authority, accuracy, reading level, and user needs.”

1.9.7 Acquisition

The process of obtaining library materials, which can occur through various methods including purchase, exchange programs, acceptance of gifts, legal deposit, or, increasingly, the licensing of electronic information resources.

1.9.8 Weeding (De-selection)

It is a planned and systematic process involving the discarding of or transferring to excess copies storage, the rarely used, or obsolete material from a library collection. This process is crucial for maintaining a current and relevant collection.

1.9.9 Evaluation

The ongoing process of assessing newly selected information material and already acquired collection to assess how effectively a library is serving its users. Methods for this assessment include analyzing circulation statistics, conducting user surveys, and performing citation analysis.

1.9.10 Head Librarian

The most senior-ranking professional and administrative officer in charge of the overall administration, planning and operations of a specific library, including supervision over collection development activities for that library.

1.9.11 Mixed-Methods Approach

A research design that intentionally combines data collected both qualitatively and quantitatively, and the analysis techniques within a study. A mixed-method approach

is employed to provide a more comprehensive and in-depth understanding of a research problem.

1.9.12 Data Saturation

In qualitative research, this is a point where new information or themes do not emerge from the data, indicating that enough data is collected and to confidently understand the patterns and themes pertinent to the research questions.

1.9.13 Thematic Analysis

A qualitative research method widely used, which focuses on systematically identifying, analyzing, and interpreting recurring themes or patterns of meaning within qualitative data sets.

1.9.14 National University of Sciences & Technology (NUST)

A leading public research university based in Pakistan with multiple campuses offering a wide variety of undergraduate and graduate programs focusing on science, technology, engineering, mathematics, business administration, social sciences, humanities, and art disciplines.

The terms mentioned above are used as a glossary, so that the readers, particularly those who are not more knowledgeable about the specific jargon of collection development, can easily comprehend the ideas that are being discussed in the rest of the thesis. It makes it more accessible and understandable, eliminates misunderstandings, and shows the researcher's command of the vocabulary of the subject matter.

1.10 ORGANIZATION OF THE THESIS

This fragment gives the reader a detailed roadmap, the structure of the whole thesis is given, and the content and purpose of each following chapter are described briefly. This organization is a typical, rational flow of academic research, which is meant to construct a consistent and justifiable argument between the statement of a problem and practical implications.

1.10.1 Chapter 1: Introduction

This is an introductory chapter to the research. It presents the research purpose by giving an in-depth overview of the research, the background of collection development practices, states the specific problem statement in NUST libraries, research objectives and research questions, offers theoretical support, explains on the importance of the research study, points out limitations and delimitations of the research, and defines critical technical terminologies. It also establishes the intellectual level towards the whole research process.

1.10.2 Chapter 2: Literature Review

This chapter will take a systematic review and synthesis of the available scholarly literature relevant to collection development practices, policies as well as the problems the academic libraries are experiencing. Special attention will be given to the research held in developing countries, mainly in Pakistan. This review will establish theoretical frameworks, empirical evidence, as well as methodological solutions used by prior researchers, and will finally point out the gaps in the existing literature, which the study will address.

1.10.3 Chapter 3: Research Methodology

The chapter will carefully outline the research design and methods that will be used in this study. It will explain the adopted mixed-methods design, explaining why both qualitative and quantitative methods have been adopted. In addition, it will go into detail describing the target population as well as the sampling techniques (qualitative purposive sampling of the head librarians and quantitative proportionate stratified random sampling of teaching faculty) used to collect data. It will also be described how data collection instruments (structured questionnaires and semi-structured interview guides) are to be developed and pilot tested and how the data will be analyzed (Quantitative data: Statistical Package for the Social Sciences - SPSS and qualitative data: Thematic analysis with NVivo). Precautions that will be taken to guarantee the validity and reliability of the results will be discussed as well.

1.10.4 Chapter 4: Data Analysis and Presentation of Findings

This chapter will contain the results of other findings based on the qualitative and quantitative data obtained by using the method of in-depth interviews and questionnaires of the head librarians and faculty members within the NUST campuses. It will outline the new themes, trends, and subtle insights concerning the existing collection development policies, business practices, the role/involvement of the library staff and faculty members and their perceptions of issues at hand. The thematic analysis principles, descriptive statistics, cross-tabulations, and reliability tests will be used in the analysis with the help of NVivo and SPSS software.

1.10.5 Chapter 5: Discussion, Conclusion, and Recommendations of Findings

It is the critical point of the paper because it will combine the results of the qualitative and quantitative analyses and interpretations. It will use methodological triangulation to compare themes and trends statistically, which will give a coherent and unified picture of the practice and issues in collection development at NUST. Critical analysis of the relationship between the findings and the Peggy Johnson Collection Development Theory, as well as available scholarly literature, will provide detailed responses to the research questions. It will also recap the significant discoveries of the whole research, outline the general conclusions, which are made from the integrated analysis, and elaborate on the general conclusions of the research on the NUST libraries. Moreover, it will offer useful suggestions to improve the collection development practices and policies at NUST and propose future research opportunities in this essential field of library and information science.

This logical framework makes the thesis flow in a logical manner, where one gains knowledge sequentially beginning with the introductory setting to empirical evidence, interpretation, and finally, recommendations that can be taken into action. This methodological procedure improves the effectiveness and logicalness of the study, leading the reader through the research process.

1.11 SUMMARY OF THE CHAPTER

This introductory chapter has provided the necessary base for the in-depth investigation into the collection development practices, policies, and issues in the libraries of the National University of Sciences and Technology (NUST) in Pakistan. It

started with a summary of the research, the official statement of the thesis, its author, and scholarly supervision, thus placing the research in its institutional and scholarly setting.

The chapter subsequently touched on the origins of the research; specifically, how academic libraries play an essential role in advancing higher education and how Collection Development Practices (CDP) is an active and complex process. It described the main tasks that comprise the process of CDP, including the process of assessment of user needs, selection, acquisition, evaluation, and weeding, with particular emphasis on the significance of proper budgeting and strong cooperation between librarians and teaching faculty. The issues surrounding academic libraries across the world were also put into context with the discussion of the challenges that may be experienced by academic libraries throughout the world, especially in developing nations such as Pakistan, where the lack of resources, the age of the practice, and the pressures of digital transformation pose a significant challenge. The formulation of the problem statement was another core element of this chapter, as it has correctly revealed a lack of coherence in the current collection development practices and the proper policy implementation in libraries of NUST. Particularly, inadequate faculty engagement, poor policy records, inadequate responsiveness to the requirements of the academic sector, and challenges in the administration of print and electronic resources were identified. The problem statement highlighted that they are not single problems but systemic gaps that are related to each other and are exaggerated by financial constraints, technological difficulties, and the likely ignorance of stakeholders. More importantly, the lack of empirical studies in the NUST context was also introduced as a serious impediment to evidence-based improvements. Following the problem statement, this chapter clearly stated the research

objectives and questions that are used as the principles of the whole investigation. These goals should help learn about the existing policies, practices, and roles, and investigate the most significant issues that affect the successful development of collection at NUST. This was followed by the theoretical basis of the paper that elaborated on the Collection Development Theory of Peggy Johnson, as the main theoretical instrument. The holistic view of collections management offered by this theory, including the strategic planning, user-centeredness, holistic management, and integration of electronic resources, offers a solid framework of diagnosing the discrepancies that were observed between the theoretical ideal and the practical realities within NUST collection management. The importance of the research was also explained in detail with an accent on the possible impact of the study on the local (NUST), national (Pakistan), and international (developing countries) level. The potential implications of the research to NUST, the lack of critical research on the LIS situation in Pakistan, transferable lessons to other developing countries, and empowerment of library professionals via evidence-based advocacy was pointed out. Lastly, the limitations and delimitations of the study were clearly revealed in the chapter. At the end of the chapter, it gave the structure of the entire thesis that was used as a road map to the reader on how to read the rest of the chapters.

CHAPTER TWO

LITERATURE REVIEW

2.1 OVERVIEW

This chapter reviews literature on collection development policies and practices in academic libraries, emphasizing empirical studies, policy analyses, and conceptual discussions. The review is thematically structured, including definitions and scope; policy frameworks and their benefits; selection and acquisition practices; cooperation between the faculties and the librarians; electronic resources and big deal; evaluation, deselection (weeding) and quality control; budgetary, procurement and administrative constraints; regional case studies (Pakistan, Africa, Asia); and literature gaps. These themes are linked to the chapter, and the chapter does relate them to the Johnson Collection Development Theory and the aim of research that is used in the study (to track the policies, practices and challenges at NUST).

2.2 COLLECTION DEVELOPMENT, CONCEPTUAL BOUNDARIES AND DEFINITIONS

Collection development is not only a collection of administrative activities; it is a strategic process with a certain set of theoretical principles. The most comprehensive framework for understanding this complex process is provided by Peggy Johnson in her seminal work, *Fundamentals of Collection Development and Management* (Johnson, 2018). Johnson's theory posits that effective collection development is a continuous, holistic cycle that extends far beyond simple selection and acquisition. It is a management process that is strongly associated with the mission of the parent institution

in terms of strategic alignment, systematic process and active involvement of stakeholders. It takes collection development not just as acquisition but as a cycle that comprises of needs assessment, selection, acquisition, cataloguing, use assessment and deselection (weeding) to which institutional goals are connected.

Olubiyo (2022) adds to this view and states that the effectiveness of a library is measured by the quality of its collection. He describes collection development as a synergistic process that entails selection and acquisition, user studies, stock evaluation, weeding and interlibrary cooperation.

This view is reflected in the new practical and theoretical treatments, which propose the policy documents as the source of the regular decision-making (Uwandu & Okere, 2022). The vocabulary (collection development vs. collection management) is disputed by many other authors, yet most contemporary scholars consider collection development as the strategic element and collection management as the operational follow up (Khan & Bhatti, 2021). Such conceptual clarity matters since the availability (or lack of) formal policy tends to dictate the existence of balanced and strategic development within the departments.

2.3 THE SIGNIFICANCE OF WRITTEN COLLECTION DEVELOPMENT POLICIES (CDPS)

CDPs are important because they provide a clearer understanding of the collection development process. The literature has strongly accepted the importance of having a formal, written Collection Development Policy (CDP) as the foundation of successful and justifiable collection management. It acts both as a strategic guide and a roadmap, a

communication framework, as well as an operational guide in the day-to-day activities. An increasing empirical literature demonstrates that formal CDP has various institutional advantages: transparency in the decision-making process, equitable distribution of funds, more straightforward responsibilities of those who select, and responsiveness to curriculum and research priorities (Johnson, 2018). Research also indicates that in cases where policies clearly cover electronic resource choice, licensing and access, libraries will be able to bargain more with the vendors and develop clear access policies of users. Concisely, CDPs are governance instruments that inform day-to-day and strategic decisions.

Research all over the world constantly tests the usefulness of such policies. In a report of academic libraries in Kansas, (Smith, 2024) discovered that sound policies are not only essential in its directions to selection but also in addressing issues like demands to reconsider material, to create a formal tool of defending intellectual freedom. On the same note, Jamison and McNamara (2025), in their content analysis of school library policies, demonstrated the opportunity to use policies to strategically enhance diversity, equity, and inclusion in collections, going beyond the traditional selection parameters. McCord et al. (2025) came up with the idea of a green audit template built into collection policies and the question of the library in enhancing sustainability through their acquisition and deselection activities.

Yet literature cautions that a policy on its own cannot do much: policy must be implemented, periodically reviewed, and shared with stakeholders (faculty, administrators, procurement offices). Policy has to be realistic and coordinated with

institutional processes in a setting where policies are a complicated matter due to the rules in the procurements or the legislation of a particular country. The case studies (Ghana, Kenya, South Africa) reveal that policies are hardly implemented as intended, even when well-written, if they ignore the procurement realities.

Although these studies supply useful descriptive information, most of them are based on cross-sectional surveys with little or no triangulation, which is why mixed-method, institution-based studies like the one might be conducted presently.

The first objective of the research is informed by the fact that the lack of such policies in the Pakistani context has not been documented (Ameen, 2006; Mushtaq & Shah, 2023), suggesting the necessity to determine whether NUST, being one of the most prominent institutions, has already addressed this issue or not.

2.4 SELECTION AND ACQUISITION PRACTICES; METHODS, CRITERIA, AND INSTRUMENTS

The first mechanism of a collection building is the one that chooses the type of materials. Conventionally, this is based on reviews, faculty recommendations, and approval plans. This process has been made extremely complicated by the digital age. The emergence of e-resources packaged "Big Deals," and cumbersome licensing deals has turned acquisition into a very technical and strategic process (Zabala & Natividad, 2024). The libraries now have to strike a balance between the need to spend a lot of money on digital packages and the requirement to maintain specialized print (Laure, 2024). In Pakistan, there is evidence that selection practices are usually traditional. Khan and Bhatti (2016, 2024) observed that the selection that occurs in university libraries in

Khyber Pakhtunkhwa is mostly based on librarian preference and faculty requests, although it is not always made within a framework of a criterion-based selection. The same was reported by Ameen and Haider (2007) who added that the book selection strategies in Pakistani universities were not well organized but rather informal.

Institutions use various selection methods, but some of the most common methods are faculty recommendations, review of curricula, patron requests, statistics on usage, approval plans and vendor catalogues and evidence on interlibrary loan requests (Mwilongo et al., 2020). Empirical studies highlight a mixture of traditional and emerging criteria: subject relevance, edition currency, publisher reputation, cost, and availability in electronic form. Automated tools, usage analytics (COUNTER, SUSHI), and demand-driven acquisition models are increasingly discussed in the literature as ways to optimize limited budgets.

Mwilongo et al. (2020) and related studies emphasize that while selectors prefer evidence-based criteria (usage stats, syllabus mapping), many libraries still rely heavily on individual selectors' professional judgment because of poor access to timely data and limited staff training. This uneven adoption of data-driven selection creates variability in collection quality.

Within Pakistan, Khan and Bhatti (2016, 2024) emphasized that book selection is still dominated by traditional approaches, with limited use of approval plans or demand-driven acquisition models. This reliance on informal faculty recommendations creates risks of duplication and bias toward certain disciplines. Internationally, libraries are increasingly adopting patron-driven acquisition (PDA) and evidence-based models,

where usage statistics and interlibrary loan data guide purchasing (Zabala & Natividad, 2024). These innovations remain underutilized in Pakistan, where technological and financial constraints hinder adoption. The present study will therefore examine whether NUST relies on traditional models, or if it has introduced usage-based or demand-driven practices, particularly for expensive e-resources. The reviewed studies demonstrate methodological research gaps that are addressed in the present study, thus reinforcing the research rationale and providing a strong basis for this investigation.

2.5 FACULTY-LIBRARIAN COLLABORATION IN SELECTION AND ITS PRACTICAL FORMS

One of the most emphasized themes in literature is the critical importance of a strong, structured collaboration between librarians and teaching faculty for successful CDP (Johnson, 2018; Ashilungu & Onyancha, 2024; Singh & Mahajan, 2021). Members of the faculty are experts on the subject matter and have a close knowledge of the content of the curriculum, teaching requirements as well as current trends in research in their respective fields. They are therefore essential in making sure that what is acquired by libraries is not irrelevant, authoritative, and conducive to the academic mission (Ifijeh & Yusuf, 2020). Singh and Mahajan (2021), in a comparative study of Northern Indian universities, found that institutions with formal mechanisms for faculty involvement in CDP (e.g., library committees, departmental liaisons) reported significantly higher levels of collection satisfaction among both faculty and research scholars.

Another common theme is collaboration among teaching faculty and librarians. In much recent research, the effect of faculty input on the coverage of subjects and

curricular relevance is positively associated (Ashilungu & Onyancha, 2024; Singh and Mahajan, 2021). Forms of cooperation that are reported in the literature are formal selection committees, faculty nomination lists, liaison librarian programmes, and electronic recommendation forms. In the case of institutional collaboration (i.e., formal representation of a committee), collections are better oriented towards curricular needs and faculty research directions. Ashilungu and Onyancha (2023) discovered that 62.4% of faculty at the University of Namibia had engaged in any type of collection development, especially in the selection of electronic resources. But limitations like unavailability of vendor catalogues and unavailability of librarians could not allow more of it.

On the one hand other, librarians can be equipped with the skills in the management of information resources, familiarity with the overall publishing environment, familiarity with the conditions of the use of e-resources on licensing and an understanding of the strengths and weaknesses of the collection across disciplines (Arda et al., 2024). The task of the librarian is to make the process happen, control the budget and make sure that the faculty recommendations are in line with the library overall policy and strategic objectives.

However, the obstacles also include the barriers reported in the literature: like lack of faculty engagement, which is a result of workloads, or rather lack of awareness regarding the processes of selection, or a lack of incentive to engage. African studies and South Asian ones indicate that participation is enhanced by proactive efforts by librarians

seeking faculty feedback (via liaison models or structured surveys), but only where there are administrative support and incentive.

In case of the weak collaboration, there are several issues: resources are duplicated, there are huge gaps in the priority areas, new materials are purchased that do not correspond with the actual teaching or research requirements, and, finally, the collection is underutilized (Ifijeh & Yusuf, 2013). Ashilungu and Onyancha (2024) assigned this collaboration particular focus to the case of the University of Namibia and the work with electronic resources and discovered that the faculty engagement was seen as essential, yet in most cases, it remained informal and required more formal opportunities to be effective. The studies reviewed all points to the significance of organized cooperation between librarians and teaching faculty to the successful development of collections. Faculty and librarians have complementary knowledge, yet the literature demonstrates that there are ongoing gaps in institutional, long-term faculty engagement, especially in developing-country situations. Informal or inconsistent cooperation with the lack of institutional support, limited awareness, and workload are reported in most studies. These gaps are powerful reasons to conduct the current study, which discusses the relevance of such trends to the setting of the multi-campus system of the academic library of NUST.

In the research proposal by the user, there is truly clear deficiency of consistent faculty involvement at NUST. This is a direct reflection of the general results of the local literature, which indicates that despite its institutional performance, NUST can be vulnerable to the same systemic issues that plague other academic libraries in Pakistan.

The research will offer an analytical and empirical report on the applicability of these trends in the country to the setting of NUST in respect to its multi-campus system.

2.6 ELECTRONIC RESOURCES, "BIG DEALS" AND HYBRID COLLECTION ISSUES

Academic library acquisitions over the last 20 years have had a dominant aspect known as the big deal, where large volumes of electronic journals are purchased in one subscription. Nonetheless, there is an extensive literature section where a major backlash against this model is recorded. The collection development has changed due to the electronic resources (e-books, e-journals, databases), licensing, perpetual-access negotiations, and new use metrics (COUNTER) (Johnson, 2018; Zabala & Natividad, 2024). Recent research studies investigate ‘big deal’ packages offered by large publishers, highlighting a tension: packages of bundled access can expand access to more content but might also lock budgets in rigid long-term contracts and decrease funds on local monograph purchases (Zabala & Natividad, 2024). The two-fold challenge that is confronting libraries is the need to negotiate favourable license terms as well as assess continuous value.

Several recent case studies suggest that COUNTER usage data should be utilized in conjunction with stakeholder (faculty) response to evaluate the value of electronic subscriptions; this hybrid evidence-based practice will assist in making better cancellation and negotiation decisions. It is in line with the focus of evaluation by Johnson on the cycle of development being evidence-based.

The Higher Education Commission (HEC) Digital Library in Pakistan has the largest host of thousands of e-journals and databases in universities. While this initiative has dramatically increased availability of scholarly content, studies show challenges in local adoption. Many faculty are unaware of the full range of resources, and usage statistics reveal underutilization of databases despite high subscription costs (Khan & Bhatti, 2020). Another problem is that librarians find it challenging to negotiate licensing outside HEC-hosted material, especially to specialized engineering and medical content that is not licensed by national agreements. The hybrid collections, which strike a balance between the costly electronic packages and the selective acquisitions of the print materials require proper planning and solid collaboration between faculty and the librarian. For NUST, which serves highly research-intensive faculties, effective management of hybrid collections will be a central test of its collection development capacity.

2.7 COLLECTION EVALUATION AND WEEDING (DESELECTION)

Evaluation and weeding are essential for maintaining a useful and accessible collection, but many studies report weak or inconsistent practices. In Pakistan, earlier work and more recent analyses indicate that systematic deselection is uncommon, and physical storage constraints and sentimental retention of old items hinder active weeding (Ameen, 2006; Khan, 2024). Recent reviews from the UK and US note renewed interest in green audits and sustainability in collection development, encouraging libraries to remove outdated materials responsibly while considering digital preservation and access (McCord et al., 2025). Recent studies conducted in the Pakhtunkhwa (KP) state confirm such tendency: Khan & Bhatti (2024) discovered that only thirty-nine percent of large

university libraries in the country weed at minimum levels whereas two-thirds 61% do not weed at all, mainly because there are no weeding policies.

Evaluation is a systematic method of analysis of the merits and flaws of a collection. They may involve reviewing usage data (where useful to e-resources through COUNTER reports), citation analysis, and user survey. According to Zabala and Natividad (2024), the reconsideration of the usage patterns and the use of COUNTER statistics as the means of cost-effectiveness assessment of large e-resource packages and informed choices concerning renewals or cancellations is of utmost importance. The one required corollary of selection is called deselection or weeding; it is the procedure of eliminating old, unutilized, or disheveled material to maintain the collection up to date and pertinent (Johnson, 2018). Failure to weed proactively leads to the so-called shelf clutter, poor space allocation, and may lead to the lack of trust in the reliability of the collection by users. Although a typical procedure in theory, the evidence of developing contexts indicates that it is frequently overlooked either because of staff-related issues, the absence of policy leadership, or a cultural reluctance to abandon the use of books (Mwilongo et al., 2020).

One of the key results of cross-context analysis is that deselection must be supported by clear policy language and staff development: employees who are not willing to remove at the directive of the management will not take such action, even when the usage statistics are pointing at the candidates to get eliminated. Several recent instruments and templates for conducting green audits and evidence-based deselection have been proposed to help practitioners institutionalize the practice.

In Pakistan, evaluation and weeding remain underdeveloped practices. Ameen (2006) reported that librarians were reluctant to discard materials due to cultural respect for books, even when items were obsolete. More recent accounts (Arshad et al., 2021) confirm that systematic evaluation is rarely undertaken, largely because of inadequate staff training and absence of policy directives. He also reported that in college libraries of Lahore, book selection was dominated by faculty recommendations, publisher catalogues, and visits to bookshops, and that budgets were small and often insufficient for more strategic models. This contrasts with international contexts where usage-based evaluation and green audits are increasingly institutionalized (McCord et al., 2025). Investigating whether NUST libraries conduct routine evaluation and how they handle deselection will therefore provide critical insights into the maturity of their collection management practices.

The literature shows that despite evaluation and weeding being key elements of effective collection management, they are inadequately practiced especially in Pakistan. The lack of a formal policy regarding weeding, the cultural unwillingness to dispose of materials and low employee capacity are consistently mentioned in studies as major obstacles to systematic deselection. Conversely, the global environment is shifting towards evidence-based analysis, usage rate, and green audits to inform sustainable growth of collection. Such gaps explain why this current research will be interested in investigating the practices of evaluation and deselection at NUST, to determine the level of maturity and adherence to the emerging best practices.

2.8 CHALLENGES IN COLLECTION DEVELOPMENT PRACTICES

2.8.1 Budgetary Constraints, Procurement Rules, and Administrative Barriers

Insufficient and unpredictable budgets are arguably the most significant and universal challenge (Anwar, 2021; Olubiyo, 2023). Libraries face a "double squeeze": the escalating costs of scholarly resources, especially scientific journals and databases, combined with stagnant or declining budgets (Khan & Bhatti, 2020). This forces difficult trade-offs, such as canceling journal subscriptions, reducing monograph acquisitions, or being unable to subscribe to new and emerging resources. One more theme that has been reflected on a consistent basis through the Pakistani context, as both Hussaini (2020) and Warraich et al. (2018) emphasized, is the severe limitation of funding. It is not only an operating challenge, but a systemic problem associated with education funding in the nation, as it pushes libraries into reactive and not strategic collection management.

Pakistan and most developing countries have limited per-student funding and a library budget in general that reduces the choice of either print monographs or e-resources and subscription renewals (Khan and Bhatti, 2016; Mwilongo et al., 2020). Procurement rules (tendering, approval cycles) and decentralized financial control can delay acquisitions or make direct faculty requests difficult to satisfy. Such systemic issues often reduce the responsiveness of libraries to emerging curricular or research needs. Empirical evidence suggests a twofold approach to mitigate budget pressures: (1) prioritization through policy and liaison (ensuring funds go to the highest institutional need), and (2) consortia purchasing or national-level negotiating to secure better license

terms. The literature reports some success with consortia in lowering unit costs, though administrative complexity and unequal institutional bargaining power remain challenges.

2.8.2 Technological and Digital Challenges

Some challenges accompany the fast transition to digital resources. Among them are the expensive nature of maintaining digital infrastructure, the intricacy of dealing with the establishment of licenses and access rights to e-resources, and the necessity of constant staff training (Laure, 2024). Moreover, the appearance of new formats (e-books, streaming media, datasets) presupposes the necessity of new acquisition and management skills (Zabala & Natividad, 2024). The technological infrastructure and unreliable internet connection, a widespread problem in libraries in developing countries, may restrict access to the same digital resources that they invest in (Mwilongo et al., 2020). Over the past few years, collection development policies have been evaluated in a new dimension, environmental sustainability. Another concept of ‘green libraries’ that has become known is a green audit through which libraries can evaluate their environmental footprint, not only through energy consumption and waste, but also through the life cycle of their collections. This entails the analysis of environmental cost in terms of the production and transportation of the physical material and using energy resources of the digital resources. Although the current literature on this topic remains dynamic, the research findings indicate some measures to address the issue, including moving away from print in favour of digital content, sharing of resources to prevent unnecessary duplication, and implementing sound weeding policies so that collections are in use (Adams, 2021). With a multi-campus institution such as NUST, a green audit would also

evaluate how an environmental efficient model of centralized versus a distributed collection would be.

2.8.3 Dynamic User Needs and Publishing Landscape

The needs and behaviours of users keep on changing. Researchers and students are increasingly in demand to access full-text resources online in real time, no matter where they are, which is hard to fulfil comprehensively (Heisserer-Miller, 2023). At the same time, the scholarly publishing industry is evolving, and the phenomenon of open access and new pricing schemes, as well as the emergence of pre-print servers, are also forcing libraries to become more responsive and informed (Jahnke et al., 2022).

2.8.4 Awareness and Professional Development

Another prominent issue that is less evident is the absence of awareness and updated knowledge among the stakeholders. Yakubu et al. (2022) evaluated academic librarians in Nigeria and concluded that the awareness and knowledge of the significance of CD policies were largely missing. Unless librarians themselves are well-versed in current collection management principles, good practice cannot be achieved. Likewise, insufficient understanding of the faculty on how the acquisition process in the library works or how to adequately recommend resources may kill collaboration (Nengomasha & Kasanda, 2023).

According to Mushtaq and Shah (2023) most of the public libraries in Punjab had given the reason for lack of sufficient funding and training of the library workers to remain abreast with the current selection or e-resource licensing practices.

2.8.5 Collection Development Training, Competencies, and Staffing

Contemporary collection development needs to include more than bibliographic expertise: negotiation, data analysis (usage statistics), budget projections, understanding of licensing terms, etc. It has been noted in numerous studies that the competency gap in developing countries is that librarians are generally not formally trained in e-resource management and evidence-based selection, thus making it difficult to implement policies (Ameen, 2009). Literature advocates special professional growth and lifelong learning as key supplements to policy reform. More than ten years ago, Ameen (2009) observed that the Pakistani collection managers did not have the required competencies to manage digital resources, negotiation, and budgeting, and these shortcomings still exist. Recent research (Mushtaq & Shah, 2023) demonstrates that most librarians still use traditional methods of selection as they do not have enough professional development opportunities. On the contrary, the advanced nations have incorporated continuing education and the certification programme in order to make the librarian abreast of the changing trends. Yakubu et al. (2022) showed that the effectiveness of CDP implementation is much higher when the librarians are trained in modern policy usage as well as managing e-resources. Awareness and capacity-building, therefore, turn out to be not only desirable but also a key factor in the success of collection development in universities such as NUST, where the advanced scientific and technological facilities are needed.

2.8.6 Tools and Metrics: Using Data to Guide Decisions

The most prominent theme of the past five years is the application of analytics; COUNTER reports to use in journals, circulation statistics in monographs, interlibrary

loan requests, and syllabi analysis as the objective in making acquisition decisions (Zabala & Natividad, 2024). It is suggested that hybrid methods involving the use of quantitative measurement with the qualitative contribution of the faculty should be used; the sole reliance on the utilization may harm the niche research topics that lack immediate usage but have immense scholarly value. It is then suggested in the literature that a balanced, triangulated approach to decision making is recommended.

2.8.7 Diversity and Inclusion in Collection Development

In addition to subject relevance and user needs, which remain classic measures of collection development, modern collection development is now shaped by the principles of diversity, equity, and inclusion (DEI). A novel approach to systematic evaluation of a library collection to detect gaps in representation has become known as diversity audits to assess the collection systematically by author background, subject matter, or perspective. To an institution that intends to become a leader in a diverse environment, a DEI-informed collection development policy would not only purchase the resources that advance the curriculum but would also make sure that the collection is inclusive of many voices and experiences. This is especially applicable to the research since it could be applied to assess whether the collection offered by NUST is sufficient to reflect a variety of perspectives on engineering, science, and technology.

2.9 REGIONAL CASE STUDIES AND EMPIRICAL FINDINGS

2.9.1 Pakistan Perspective

Studies of CDP in Pakistan have found a definite, although disturbing, benchmark. A general body of work has consistently identified similar themes: a general dearth of

formal policies, intense dependence on small budgets, unstructured processes of selection, and undeveloped frameworks of librarian-faculty cooperation (Ameen, 2006, 2008, 2009; Khan & Bhatti, 2016, 2017, 2020, 2024). The studies also serve as a rich national background and indicate that the issues are systemic. The literature of collection development in Pakistan presents a trend story: initial descriptive research (Ameen, 2006, 2007) identified underdeveloped formalization of policies and insufficient skills, followed by reports about the advancement of awareness but the same issues of implementation, particularly downsizing, hybrid collections, and faculty-librarian cooperation (Khan & Bhatti, 2016, 2024; Mushtaq and Shah, 2023). Khan & Bhatti's multi-year investigations across Khyber Pakhtunkhwa revealed uneven practice: many libraries claim to be user-centered, but systematic policy use and routine assessment lag behind best practices. Studies of public libraries in Punjab (Mushtaq & Shah, 2023) similarly highlight budget and administrative challenges.

However, a significant gap exists in literature. While these studies offer a macro-view of the situation in Pakistan, and specifically in other regions of Pakistan, there is a scarcity of recent, in-depth, empirical research focused on individual, leading institutions. NUST, as a premier, research-intensive university located in the capital of the country, with a complex multi-campus structure, represents a critical case study. Its libraries presumably serve a more specialized and research-driven community with potentially more complex information needs. The existing national-level findings cannot be automatically assumed to apply to NUST; its practices could be more advanced, or it could face unique, magnified versions of these usual challenges due to its scale and mission. No dedicated study was found in the literature that systematically investigates

the CDP of NUST libraries using a mixed-methods approach to gather and triangulate data from both librarians and faculty. This research intends to bridge this very gap. In this manner, it will not only be offering actionable information to NUST itself, but it will also add a unique, institution-specific example to the larger literature on academic librarianship in Pakistan, replacing generalized surveys with a more focused, in-depth examination.

Most notably, whereas general surveys and descriptive research have been carried out in the Pakistani literature, there exist limited institution-specific research based on evidence. Multi-campus, research-intensive in character, NUST has been barely researched in relation to collection development. Such a lack of concentrated investigation warrants the current study: it will present a case study unlike others that will fill the gap between the general trends of the nation and the operational facts of a top-tier science and technology university.

2.9.2 Africa and Developing Regions

Studies from Tanzania, Namibia, Nigeria, and Ghana provide rich comparative data. Mwilongo et al. (2020) found that Tanzanian academic libraries faced issues like a shortage of funds, weak weeding practices, and limited staff training across the region. In Namibia, Ashilungu and Onyancha (2024) reported improving faculty-librarian cooperation in electronic resource selection but noted barriers such as faculty time constraints and unclear policies. Nigerian studies show variable awareness of CDPs among academic librarians, and Ghanaian case studies emphasize the role of the CDP in negotiating vendor contracts and managing digital collections. These regional studies

offer transferable lessons for Pakistan: the importance of policy documents that explicitly cover e-resources, the need for liaison programmes, and the utility of usage statistics for evaluation.

2.10 POLICY CONTENT: RECOMMENDED ELEMENTS AND MODERN CONCERNS

Recent policy analyses and handbooks propose that a comprehensive CDP should include: mission alignment, selection criteria (including e-resources), budget and allocation rules, faculty-librarian roles and procedures for solicitation of input, licensing and access policies, weeding criteria and schedule, emergency/continuity plans for digital access, and a review cycle for the policy itself. Newer concerns such as open access, digital preservation, and equity of access are increasingly folded into model policies. Scholars emphasize that policies should be living documents revised at regular intervals.

2.11 SYNTHESIS: HOW THIS LITERATURE INFORMS THE NUST STUDY

The literature shows recurring patterns relevant to NUST: (1) formal CDPs promote consistency and transparency, but they must be implementable within local procurement and budgetary realities; (2) faculty involvement is critical, yet engagement practices vary and often require institutional incentives; (3) hybrid collections create new licensing and evaluation workloads requiring staff skills and analytics; (4) deselection remains weak in many contexts, requiring both policy clarity and managerial backing; and (5) staff competencies and continuing professional development are central to successful policy implementation. These themes frame the present study's focus on policy presence/use, librarian and faculty roles, and the challenges that undermine

effective collection development at NUST. Johnson's theoretical framing, that collection development is strategic, continuous and institution-oriented, finds strong empirical backing across the reviewed studies.

2.12 GAPS IN THE LITERATURE AND JUSTIFICATION FOR THE PRESENT STUDY

Although there is robust international literature, important gaps remain:

2.12.1 Contextual Studies of Science & Technology Universities in Pakistan

Much of the Pakistan literature focuses on general university libraries or public libraries; fewer studies examine resource-intensive, multi-campus technical universities like NUST. This is significant because resource needs and e-resource dependency differ in STEM contexts.

2.12.2 Empirical Evidence of Policy Implementation (Not Just Presence)

Many studies report on whether policies exist; fewer empirically evaluate how these policies operate in procurement cycles, faculty consultation, or electronic license management. The present study will address implementation as practiced across NUST campuses.

2.12.3 Mixed-Methods Triangulation Combining Faculty and Librarian Perspectives

Several works call for triangulated studies that use both surveys and interviews; this study's mixed-methods approach follows that recommendation to produce richer, actionable findings.

2.12.4 Detailed Attention to Deselection/Weeding and Green Audits in Pakistan

Contemporary international work recommends green audits and sustainability in collections, but there is limited adoption research in Pakistan; this is another gap the current research can help fill.

Addressing these gaps will not only help NUST optimize its collections but will also contribute transferable insights for similar institutions in Pakistan and the broader region. The existing literature provides a general framework of challenges but lacks the granularity needed to understand the specific operational realities, policy frameworks, and nature of librarian-faculty collaboration at NUST. The problem is not a lack of awareness of potential issues but a “lack of concrete, evidence-based data”, specific to this institution. This study, therefore, is not redundant but essential. It aims to move from the general (the known challenges in Pakistan) to the specific (how these challenges manifest and are navigated within the complex environment of NUST). It seeks to provide the empirical evidence required to move beyond anecdote and assumption, enabling data-driven strategic planning and policy formulation specifically for NUST libraries. Critical analysis of the literature reviewed shows that the collection development practice has gradually transformed into an evidence-based and user-centred approach in the developed world, where structured policies, selection based on data, and systematic evaluation systems are widely applied. Conversely, research carried out in developing settings, such as Pakistan, points to such chronic problems as insufficient finances, erratic policy execution, and inadequate faculty-librarian coordination. Moreover, a lot of past research has been done on isolated factors about collection development, including policy or problems, instead of taking a holistic approach. This

suggests that there is a literature gap that the current study fills by incorporating various dimensions and stakeholder views using a mixed methods approach.

2.13 SUMMARY OF THE CHAPTER

This literature review has conducted a review of major debates and findings regarding collection development. It supports Johnson in his argument that collection development is an institutionally aligned cycle that involves policy as a fundamental organizing tool. Empirical research conducted in Pakistan, Africa and other countries demonstrates shared issues (small budget, poor weeding habits, inconsistent faculty involvement, and employee training requirements) and proposes solutions (policy statements, liaison programmes, application of usage analytics, and employee training). The review also pinpoints some notable empirical gaps, especially the necessity to implement studies on this topic in the context of the science and technology multi-campus universities such as NUST, and therefore, the current focus of the present study on policy appraisal and the challenges to successful collection development are highly justified. The review confirms, as well, that whereas the issues of policy lack, budgetary constraints, and poor collaboration have been well-documented at the national level in Pakistan (Ameen, 2006; Khan & Bhatti, 2016), the specific effects of these problems on a top-tier, multi-campus institution such as NUST have to be equally lacking. The available literature preconditions but do not present empirical information that would help to comprehend and enhance CDP in NUST. This research is intended to fill this gap. Through the mixed-methods approach to the investigation of the policies, practices, collaboration dynamics, and issues in the context of NUST libraries, the proposed research will yield evidence-based results that can be used to make strategic decisions at

NUST and add a valuable and well-detailed case study to the global discussion of academic library management in problematic settings.

CHAPTER THREE

METHODOLOGY

3.1 OVERVIEW

This chapter aims to present and justify the methodological choices made for this study of collection development practices in the libraries of the National University of Sciences & Technology (NUST), Pakistan. The chapter addresses research design, population and sampling strategies, data collection tools and procedures, data analysis techniques, and ethical considerations. It also discusses the measures taken to ensure the reliability and validity of the results and outlines the limitations associated with the research methodology.

3.2 RESEARCH PARADIGM

There are numerous different research paradigms, and one of these is also called positivism. A research paradigm is a philosophical framework that guides how research is conducted, based on the researcher's beliefs about the nature of reality (ontology) and knowledge (epistemology). The pragmatist paradigm was adopted in this study. Pragmatism is a deconstructive paradigm that is different from the forced-choice paradigm of positivism (associated with quantitative methods) or interpretivism (associated with qualitative methods) (Creswell & Plano Clark, 2018). In this context, a pragmatic approach is justified because the research problem of the current study can best be described as an appraisal of collection development practices and challenges faced by NUST libraries using both qualitative and quantitative data. By adopting such research methods, if you get inside two stacks of information, that way readers will be most

fascinated. A single-method approach would only indicate partial understanding of the problem. For example, a survey via numbers might let us know about the extent to which professors have become involved, but it would fail to analyze the full use of this advantage and use the data. Conversely, qualitative interviews with librarians could provide rich details about their experiences, but those insights might not be generalizable to the entire NUST system. Through the pragmatic paradigm, this research will be able to legitimately incorporate both qualitative data (the librarian interviews) and quantitative data (the faculty survey) in order to come up with a more concise and stronger image of the issues. This enables the research to go beyond mere description and provides a more complex and multifaceted insight that can be based on the actual experience and perception of the participants.

3.3 RESEARCH DESIGN

The research design used in this study is mixed-methods research (MMR). MMR entails gathering, examining, and combining (or mixing) quantitative and qualitative data in one study to gain a superior comprehension of a research question (Creswell & Plano Clark, 2018). The investigation synthesizes a quantitative survey of the faculty teaching of the faculty with qualitative and semi-structured interviews of head librarians on the NUST campuses. A convergent parallel approach is used, where both strands are practiced within the same period and then analyzed apart and integrated to be interpreted. In particular, the research employs a Convergent Parallel Mixed-Methods Design (or a triangulation design). In such a design, quantitative and qualitative data are gathered during the same research phase, analyzed independently, and subsequently, the findings are combined or integrated to make all-inclusive conclusions. The main point of this

design is to achieve different yet complementary data on the same, thus having the complete picture and being able to triangulate, or use more than one perspective to confirm and cross-check results (Creswell & Plano Clark, 2018). This design is explained by three reasons:

3.3.1 Comprehensiveness

The phenomena investigated, i.e., policies, practices, roles, and challenges in collection development are multifaceted and will be adequately served by both strands. The quantitative strand (faculty survey) will be used to obtain generalized data on trends, frequencies, and perceptions in a large sample. The qualitative strand (librarian interviews) will offer detailed, in-depth, and contextual information about the processes, reasons, and challenges that underlie the numbers.

3.3.2 Triangulation

Triangulation of independent strands enhances the validity of inferences. As the study will compare the data obtained with the faculty (quantitative) and the head librarians (qualitative), it will be possible to validate and corroborate the findings obtained. As an example, when faculty members are not satisfied with the relevance of collections (quantitative), interviews will help investigate the causes of low results through the eyes of librarians (qualitative), which will reinforce the validity of the conclusion.

3.3.3 Complementarity

The mixed methodology is consistent with the practicalities of academic library decision-making when numerical variables of usage (e.g., satisfaction) are supplemented with narratives (e.g., collaboration processes, constraints, and strategies). The two strands may expound on various issues of the problem. The survey will be able to tell what the issues are (e.g., budget is a big challenge), and the interviewers will be able to tell why and how it is a challenge (e.g., the process of budget allocation and its constraints).

3.4 RESEARCH SETTING AND CONTEXT

NUST is a research-based multi-campus university consisting of various schools and colleges. The libraries collaboratively contribute to a diverse range of academic activities and research agendas. Institutional heterogeneity and disciplinary heterogeneity require a policy-based, user-focused, and responsive collection development model. In this environment, the roles of librarians and faculty members are complementary; librarians are chief policy makers, acquirers, evaluators, and deselectionists, but faculty members hold subject expertise and advise on resources to be used according to the curriculum and research directions.

3.5 RESEARCH QUESTIONS AND OBJECTIVES (OPERATIONAL ALIGNMENT)

The two general research questions that will be operationalized within the methodology include: (1) what are the current collection development policies and practices in NUST libraries, and what are the roles of librarians and teaching staff? (2) What are the major issues that affect successful collection development in NUST

libraries? To answer these questions, the study aims at achieving two goals: (i) to determine the existing policies, practices, and roles; and (ii) to examine significant limitations and determining factors. The quantitative tool measures perceived practices, satisfaction, involvement, and challenges among faculty, whereas the qualitative protocol draws extensive descriptions of head librarians regarding policies, processes, collaboration, allocation of resources, evaluation, and improvement avenues. The research design has a visual representation as shown in the following table:

Table 3.1: Representation of Research Design

Quantitative Strand	Qualitative Strand
Data Collection: Faculty Survey	Data Collection: Librarian Interviews
Quantitative Data Analysis (SPSS)	Qualitative Data Analysis (Thematic Analysis in NVivo)

3.6 POPULATION, SAMPLING, AND SAMPLE SIZE DETERMINATION

The research findings can only be credible when there are a clear definition of the study population and a strict sampling strategy. Both strands of the study are different in terms of population and sampling.

3.6.1 Population

3.6.1.1 Quantitative Strand

The target population for the quantitative component comprises all teaching faculty members across the twenty-one (21) campuses/departments of NUST. As per the data records, the total population size (N) is 846 faculty members. This population is

heterogeneous, representing diverse academic disciplines from engineering and natural sciences to business and social sciences.

3.6.1.2 Qualitative Strand

The target population for the qualitative component consists of the department's head or the senior-most librarians responsible for the libraries within each of the twenty-one (21) NUST campuses/departments. This population was chosen because head librarians are the key informants who possess the most comprehensive knowledge and oversight of collection development policies, practices, and challenges within their respective libraries. Some of the departmental libraries have been merged into the central library, and some schools, due to their similarity in disciplines and fields, have combined libraries. The total population size is, therefore, 16.

3.6.2 Sampling Techniques and Sample Size

Given the distinct nature of the two strands, different sampling techniques were employed.

3.6.2.1 Quantitative Sampling: Proportionate Stratified Random Sampling

To ensure a representative sample of the faculty population that reflects the different academic disciplines (strata) within NUST, a proportionate stratified random sampling technique was used. This method involves dividing the population into homogeneous subgroups (strata) and then selecting a random sample from each stratum in proportion to its size in the total population (Etikan, Musa, & Alkassim, 2016). The steps were as follows:

3.6.2.1.1 Strata Identification

The 21 departments/campuses of NUST were considered as different strata.

3.6.2.1.2 Strata Proportion Calculation

Strata proportion was calculated as the number of people in each stratum divided by the number of people in the entire population (e.g., SEECs: $109/846=13\%$).

3.6.2.1.3 Computation of total Sample Size

The overall sample size involved in the entire population was computed with Raosoft Sample Size Calculator (Raosoft, Inc.), which is a popular survey research tool. The sample size (n) needed is 265, that is, a population size (N) of 846, margin of error (5%), confidence level (95%) and conservative response distribution (50%).

3.6.2.1.4 Proportionate Allocation

The standard formula was used to calculate the sample size in each stratum (n_h) proportionately.

Table 3.2: Formula for Proportionate Sample

Items	Descriptions
$nh = (Nh / N) \times n$	Formula
nh	The sample size for stratum h
Nh	The population size of stratum h
N	The total population size
n	The actual sample size

The detailed breakdown of the sample size calculation for each department is provided in table 3.3 below:

Table 3.3: Detailed Sample Size Calculation – (School-wise)

S. No.	School / Department Name	Abbreviation	Population	
1.	School of Civil & Environmental Engineering (SCEE)	NUST Institute of Civil Engineering	NICE	13
		Institute of Environmental Engineering and Sciences	IESE	6
		Institute of Geographical Information Systems	IGIS	3
2.	School of Chemical & Materials Engineering	SCME		13
3.	School of Electrical Engineering & Computer Science	SEECS		34
4.	School of Mechanical and Manufacturing Engineering	SMME		18
5.	NUST Business School	NBS		20
6.	School of Art, Design & Architecture	SADA		3
7.	Centre for International Peace & Stability	CIPS		3
8.	School of Social Sciences & Humanities	S3H		20
9.	Atta-Ur-Rahman School of Applied Bio Sciences	ASAB		11
10.	School of Natural Sciences	SNS		11
11.	U.S-Pakistan Center for Advanced Studies in Energy	USPCAS-E		6
12.	School of Interdisciplinary Engineering & Sciences	SINES		7
13.	NUST School of Health Sciences	NSHS		10
14.	NUST Institute of Peace & Conflict Studies	NIPCONS		4
15.	College of Electrical & Mechanical Engineering	CEME		30
16.	Military College of Engineering	MCE		8
17.	Military College of Signals	MCS		18

18.	National Institute of Transportation	NIT	3
19.	College of Aeronautical Engineering	CAE	4
20.	Pakistan Navy Engineering College	PNEC	12
21.	NUST Baluchistan Campus	NBC	9

3.6.2.2 Qualitative Sampling

To select participants, a purposive sampling technique was used. The selection criteria were the head librarians who have significant involvement and experience in the collection development decision-making and implementation processes at their respective departmental libraries. This method was selected to select knowledgeable and experienced individuals who can provide detailed and relevant information (Etikan, Musa & Alkassim, 2016). A 10-15% rule was applied for sample selection of librarians, which comes to 3, still, a sample of 15 head librarians was targeted for in-depth interviews, to achieve data saturation, the point where further interviews yield little or no new information or themes relevant to the study's objectives.

3.6.3 Unit of Analysis

The unit of analysis for both the strands is as follows:

- The unit of analysis for the quantitative strand is the individual teaching faculty member.
- The unit of analysis for the qualitative strand is organization (the library), as represented by the head librarian.

3.6.4 Data Collection Methods and Instruments

Two instruments developed for data collection were: a structured questionnaire for the quantitative strand and a semi-structured interview guide for the qualitative strand.

3.6.4.1 Validity and Reliability of the Instrument.

An extensive literature review and analysis by senior Library and Information Science professionals ensured content validity, and evaluated the instruments to be clear, relevant, and aligned with research objectives. To ensure content validity, the questionnaire was checked with knowledgeable people in the sphere of Library and Information Science, such as academic supervisors and skilled librarians. Their commentary was used to improve the clarity, relevance of the research questions, and alignment. Construct validity was maintained through the development of questionnaire items on major constructs found in the literature, like policy awareness, faculty involvement, and collection development challenges. Cronbach's alpha was used to assess the internal consistency of the instrument. While some subscales achieved acceptable reliability levels ($\alpha \geq 0.70$), others showed marginal reliability. Given the exploratory and practice-oriented nature of the study, these values were considered acceptable for preliminary research, as also acknowledged in similar social science studies. These steps affirm that the tool was valid and reliable in this study.

3.6.4.2 Quantitative Instrument: Faculty Questionnaire.

A questionnaire was developed in a structured way to collect data on the teaching faculty. Content validity was achieved by creating the questionnaire after reviewing the

literature (e.g., Khan & Bhatti, 2020; Singh & Mahajan, 2021). It was subdivided into the following parts:

3.6.4.2.1 Section A: Demographic Information

Records the data on the department, academic rank, and years of experience of the respondent at NUST.

3.6.4.2.2 Section B: Library Usage Patterns

Studies the frequency, purpose and mode (physical vs. digital) of library usage.

3.6.4.2.3 Section C: Perception of Collection Adequacy

It uses a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree) to gauge their satisfaction with the collection in terms of relevance, currency, depth, and breadth in their subject area.

3.6.4.2.4 Section D: Collection Development Involvement

Measures the degree of familiarity of the faculty with CDP, frequency of recommendation, and their view of the effectiveness of the recommendation process.

3.6.4.2.5 Section E: Perceived Challenges

Responds on a 5-point Likert scale to the perceived importance of the different challenges facing the collection of the library (e.g., budget, lack of policy, slow acquisition, etc.).

3.6.4.3 Pilot Testing and Reliability

A pilot test was conducted on a sample of 15 faculty members working in different departments of NUST who were not included in the final sample. The pilot test determined the readability, wording, and time taken to fill in the survey. The pilot feedback resulted in small changes to make it clearer. Cronbach's Alpha was used to determine the internal consistency reliability of the Likert scales on the final instrument, and a 0.7 or higher value was deemed acceptable (Taber, 2018).

3.6.4.4 Qualitative Instrument: Semi-Structured Interview Guide

The in-depth interviews with the head librarians were done using a semi-structured interview guide. This form was used to achieve uniformity across the interviews (covering all the essential areas of inquiry) and, at the same time, to be flexible to explore fascinating answers and introduce new themes that emerge (Kallio et al., 2016). The guide contained open-ended questions that were structured in connection with the objectives of the research:

3.6.4.4.1 Topic 1: Collection Development Policies.

These issues surrounded the presence, content, and implementation of a written collection development policy.

3.6.4.4.2 Topic 2: Collection Development Practices

Inquiries touching on the procedures of choice, acquisition, assessment, and removal of resources.

3.6.4.4.3 Topic 3: Collaboration with Faculty

Concerns regarding the nature, frequency, and effectiveness of interaction with teaching faculty on the topic of resource selection.

3.6.4.4.4 Topic 4: Factors Influence

Issues regarding the influence of budget, user demands, institutional goals, and technological change on the formation of collection decision criteria.

3.6.4.4.5 Topic 5: Challenges and Suggestions

The questions that require librarians to elaborate on the biggest challenges they encounter and how they wish they could be improved.

3.6.5 Data Analysis Techniques

Quantitative and qualitative data were analyzed individually and then integrated with the help of the relevant statistical and thematic analyses.

3.6.5.1 Quantitative Data Analysis

The questionnaire data were analyzed with the Statistical Package of the Social Sciences (SPSS version 25). The analysis was conducted in the following way:

3.6.5.1.1 Data Cleaning and Screening

The data was screened against errors, missing values, and normality.

3.6.5.1.2 Descriptive Statistics

Frequencies, percentages, means, and standard deviations were calculated to describe the demographic attributes, and the usage trends and reaction to the Likert-scale items of the library. This gave a profile of the respondents and the general perceptions.

3.6.5.1.3 Inferential Statistics

Cross-tabulations with Chi-square tests were conducted to test the relationships between categorical variables (i.e., to determine whether there is a significant difference in levels of satisfaction based on academic department). In the case of scaled variables, the comparison of means between various groups (e.g., the perceived challenge of budget between junior and senior faculty) was conducted with the help of Independent Samples t-tests or Analysis of Variance (ANOVA).

3.6.5.1.4 Reliability Analysis

The multi-item Likert scales (e.g., satisfaction scale, challenges scale) were determined to be internally consistent in terms of their Cronbach's Alpha.

3.6.5.2 Qualitative Data Analysis

Thematic analysis was used to analyze the transcribed data of the interviews, which is a systematic six-phase method described by Braun and Clarke (2006, 2019):

3.6.5.2.1 Getting to know the Data

The researcher read and listened to the recordings of the transcripts several times to get into the data.

3.6.5.2.2 Creating First Codes

Interesting characteristics of the data that were relevant to the research questions were then identified and coded systematically (e.g., Policy as symbolic, Budget frustration, Faculty liaison success).

3.6.5.2.3 Thematic Searching

The codes were summarized and categorized into the potential overall themes that had outstanding patterns in the data (e.g., The Policy-Practice Gap, Navigating Financial Constraints, The Spectrum of Collaboration).

3.6.5.2.4 Themes Review

The themes were reviewed against coded data and the total data to ensure they developed a coherent pattern and were representative of the meanings described in the transcripts.

3.6.5.2.5 Defining and Naming Themes

The themes were defined, and their names were brief but informative, summarizing their contents.

3.6.5.2.6 Preparation of the Report

The analysis was prepared by writing it up, combining the thematic narrative and interesting extracts of the interviews to explain and support each theme. To be able to handle this process, the transcript data were stored, organized, coded, and queried with the assistance of the qualitative data analysis software NVivo 10.

3.6.6 Data Integration

After the independent analysis, the quantitative and qualitative results were incorporated according to the convergent parallel design. This was done by providing a side-by-side comparison of these results in the results chapter (Chapter 4), whereby the

themes under the qualitative analysis were utilized to expound, elaborate, and triangulate the statistical tendencies that are presented in the quantitative data. As an illustration, assuming the survey has shown low faculty engagement (quantitative outcome), the interview themes that describe the impediments to cooperation (qualitative outcome) would be introduced along with the former to have a complete picture regarding the area.

3.7 ETHICAL CONSIDERATIONS

In this study, the highest ethical standards were observed during the study. It was carried out as follows:

3.7.1 Informed Consent

Informed consent was given to all the participants (faculty and librarians) in an elaborate information sheet that included the purpose of the study, procedures and risks, benefits, and their rights. Participation was done with written or oral consent.

3.7.2 Confidentiality and Anonymity

This preserved the confidentiality of participants. Data had all its identifying information taken off. The participants received several codes and potential ID information in the interview quotes, which were randomly transformed into anonymity in the final report.

3.7.3 Voluntary Participation

The participants were told that participating in the study was voluntary and they could exit at any given time with no adverse effects.

3.7.4 Data Security

All electronic data (respondents' surveys, recordings, transcripts) were stored in a password-protected laptop, the hard copy was stored in a locked cabinet. The destruction of the data shall occur five years (if found necessary) after the study is completed.

3.8 LIMITATIONS OF THE METHODOLOGY

Although the selected methodology is strong, some limitations are also identified:

3.8.1 Generalizability of Qualitative Results

Purposive sample of head librarians, interesting as they were, cannot be statistically applied to the entire population of librarians in Pakistan.

3.8.2 Self-Reported Data

Both the survey and interview data are based on self-reported perceptions and experiences of the participants, which are prone to several biases, such as social desirability and recall bias.

3.8.3 Cross-Sectional Character

The research gives a picture of CDP at NUST at a certain moment in time. It fails to capture the changes in these practices and the challenges with time.

3.8.4 Researcher Role

In the case of qualitative research, the researcher is the major tool. Though reflexivity was in practice (consciously taking into consideration how my own

background and role may affect the interaction and interpretation), there is a certain amount of subjectivity.

Table 3.4: RQs, Tools, & Analysis

Research Question	Data Source	Instrument / Measures	Primary Analyses
RQ1: Current policies, practices, and roles of librarians & teaching staff	Faculty; Head Librarians	Faculty Survey (policy clarity, practices, collaboration indices); Librarian Interviews (policy implementation, workflows, roles)	Descriptives; cross-tabs; t/ANOVA where relevant; reliability (alpha); thematic analysis (codes → themes)
RQ2: Key challenges influencing effective collection development	Faculty; Head Librarians	Faculty Survey (budget, infrastructure, licensing, responsiveness, gaps); Librarian Interviews (constraints; strategies)	Descriptives; chi-square tests; thematic patterning; integration via joint displays

3.9 SUMMARY OF THE CHAPTER

The chapter has outlined the entire methodology in this research. The study has a convergent parallel mixed-methods design, based on a pragmatist paradigm. The quantitative strand is a proportionate stratified random sample of 265 surveyed faculty members through a structured questionnaire, and SPSS was used to analyze the data. The qualitative strand entails a purposive sample of 15 head librarians interviewed using a semi-structured guide, with the data being analyzed through thematic analysis using NVivo. These two and their findings will be combined to offer a first-hand insight into the collection development practices at NUST. The chapter also outlined the rigorous

ethical protocols followed and acknowledged the inherent limitations of the chosen methods. The subsequent chapter will present the results of this detailed analysis.

CHAPTER FOUR

DATA ANALYSIS

4.1 OVERVIEW

In this chapter, the results of the quantitative (faculty questionnaire) and qualitative (librarian interviews) segments of the mixed-method inquiry are outlined and combined and reconciled through triangulation. The quantitative part gives the answers of 233 members of the teaching faculty, and the qualitative one involves ten semi-structured interviews with librarians of the profession, subjected to thematic analysis with NVivo 10. The research aims to determine how the policies of collection development are implemented, how the faculty and the librarians interact in this process, and what variables are affecting the efficacy across the campuses of the National University of Sciences and Technology (NUST).

4.2 QUANTITATIVE DATA

The survey instrument contained 46 questions, with questions 7-46 measuring faculty perceptions using five-point Likert scales. A proportionate stratified sampling technique was used to ensure fair representation of faculty across all academic departments of the university. Each department represented one stratum, and the sample size from each stratum was allocated according to its actual faculty population. This approach was chosen to minimize sampling bias and prevent larger departments from dominating the overall responses. The final sample therefore, reflects the proportional distribution of faculty across all departments included in the study. A detailed distribution of the faculty members across departments is given below:

Table 4.1: Faculty Distribution Across Campuses

School/ Department	Professor	Assoc. Professor	Asst. Professor	Lecturer	Total
SCME	6	10	20	0	36
	2.264150943	3.773584906	7.547169811	0	13.58
SEECs	14	23	60	8	105
	5.283018868	8.679245283	22.64150943	3.018867925	39.62
SMME	13	14	31	5	63
	4.905660377	5.283018868	11.69811321	1.886792453	23.77
USPCAS		10	6		16
	0	3.773584906	2.264150943	0	6.03
NBC		2	15	7	24
	0	0.754716981	5.660377358	2.641509434	9.05
CAE		3	5	4	12
	0	1.132075472	1.886792453	1.509433962	4.52
CEME	11	21	57	9	98
	4.150943396	7.924528302	21.50943396	3.396226415	36.98
MCE		3	9	6	18
	0	1.132075472	3.396226415	2.264150943	6.79
MCS	5	14	25	7	51
	1.886792453	5.283018868	9.433962264	2.641509434	19.24
PNEC	3	6	22	4	35
	1.132075472	2.264150943	8.301886792	1.509433962	13.20
NIT	0	2	4	0	6
	0	0.754716981	1.509433962	0	2.26
IESE	4	2	6	2	14
	1.509433962	0.754716981	2.264150943	0.754716981	5.28
NICE	5	10	16	6	37
	1.886792453	3.773584906	6.037735849	2.264150943	13.96
IGIS	1	2	4	6	13
	0.377358491	0.754716981	1.509433962	2.264150943	4.90
NBS	6	16	41	1	64
	2.264150943	6.037735849	15.47169811	0.377358491	24.15
SADA	2	5	17	4	28
	0.754716981	1.886792453	6.41509434	1.509433962	10.56
CIPS	2	5	5	0	12
	0.754716981	1.886792453	1.886792453	0	4.52
NIPCONS	0	0	1	10	11

School/ Department	Professor	Assoc. Professor	Asst. Professor	Lecturer	Total
	0	0	0.377358491	3.773584906	4.15
S3H	7	14	26	22	69
	2.641509434	5.283018868	9.811320755	8.301886792	20.75
ASAB	11	14	9	0	34
	4.150943396	5.283018868	3.396226415	0	12.83
SNS	14	10	12	0	36
	5.283018868	3.773584906	4.528301887	0	13.58
NSHS	13	8	11	1	33
	4.905660377	3.018867925	4.150943396	0.377358491	12.45
SINES	4	8	18	1	31
	1.509433962	3.018867925	6.79245283	0.377358491	11.69

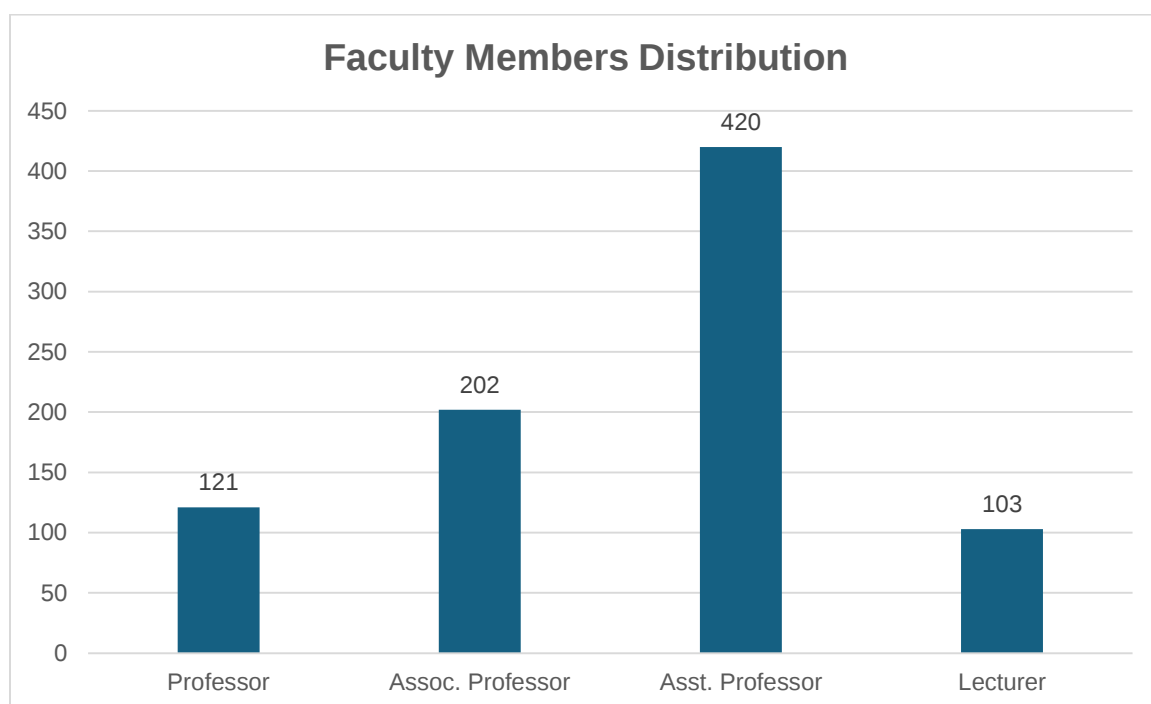


Figure 4.1: Faculty Distribution (Designation)

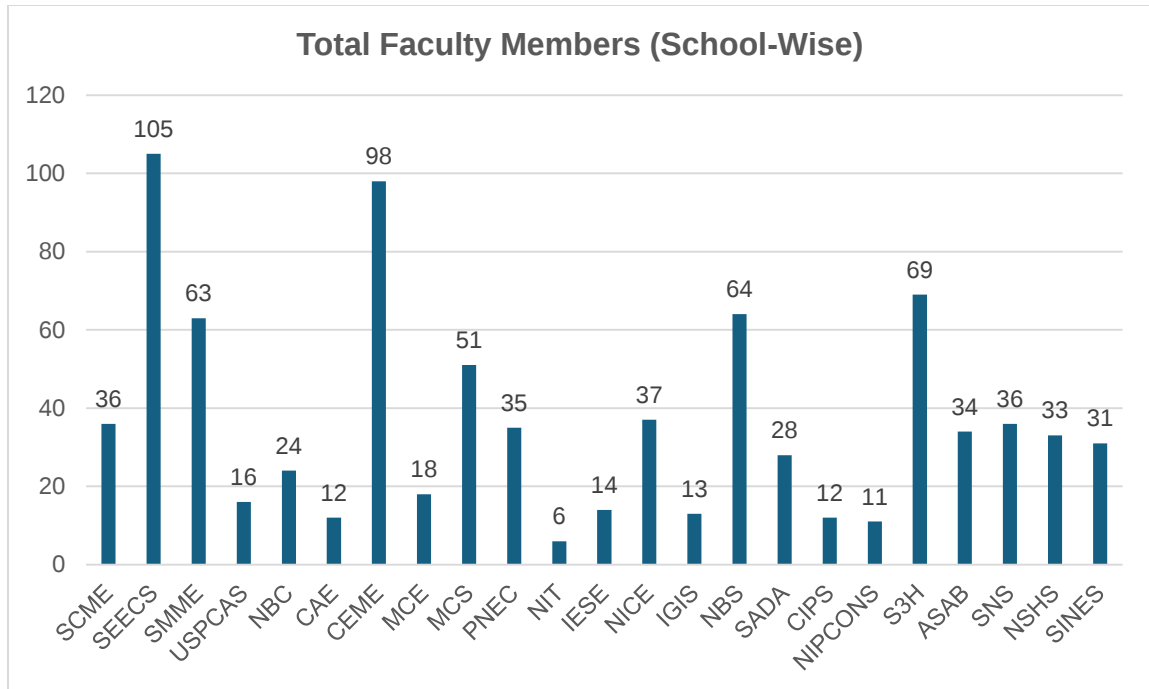


Figure 4.2: Faculty Distribution (School-Wise)

4.2.1 Data Cleaning and Response Rate

The initial survey sample comprised 265 invitations; 233 valid questionnaires were returned and included in the analysis (final valid N = 233). Response Rate = $233 / 265 \times 100 = 87.92\%$. Responses were screened for completeness; questionnaires missing more than 20% of the key perception items (Q7–Q46) were excluded. For retained cases, missing item values (where present) were handled using mean imputation of that respondent's subscale mean. Outliers were inspected through boxplots and z-scores; cases with extreme outliers were examined for data-entry errors and corrected or excluded where appropriate.

Reliability analysis was performed for the full set of perception items and for four thematic subscales (Policy awareness, Practices, Involvement, Challenges). Cronbach's alpha for the full set of 40 perception items was $\alpha = 0.621$, indicating marginal internal

consistency; subscale alphas were: Policy awareness ($\alpha = 0.706$), Practices ($\alpha = 0.698$), Involvement ($\alpha = 0.548$), and Challenges ($\alpha = 0.692$). Given that some subscales (notably Involvement) fall below commonly accepted thresholds ($\alpha \geq 0.70$), the reader should interpret subscale scores cautiously.

Table 4.2: Reliability Analysis of Questionnaire

Scale	No. of Items	Cronbach's α
Full instrument	40	0.621
Policy awareness (7–16)	10	0.706
Practices (17–26)	10	0.698
Involvement (27–36)	10	0.548
Challenges (37–46)	10	0.692

In this study, the overall Cronbach's alpha for the 40-item perception scale was $\alpha = 0.621$, indicating marginal but acceptable reliability for the exploratory nature of preliminary research in social sciences. The subscale of Involvement had low reliability (0.548), which implies that there is an elevated level of internal inconsistency within the items of the subscale. Since the given research is descriptive and practice-based, all the items were included to protect the conceptual purity of the constructs. These items should be improved in prospective studies, and factor analytic methods should be used to check the scale organization. The proportionate stratified sample of the departments is calculated using the following formula:

Table 4.3: Proportionate Stratified Sampling Formula

Items	Descriptions
$nh = (Nh / N) \times n$	Formula
nh	Sample size for stratum h
Nh	Population size of stratum h
N	Total population size
n	Actual sample size

This ensures that each department contributed to the sample in proportion to its actual share of faculty.

4.2.2 Distribution by Gender, Age Group, Designation, and Experience

The demographic breakdown confirms a predominantly male faculty, which is typical of specialized technical institutions, with a strong representation from highly experienced, older age groups.

4.2.2.1 Gender

The gender distribution is given in the following table 4.4.

Table 4.4: Faculty Distribution (Gender-Wise)

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	194	83.3	83.3	83.3
Valid Female	39	16.7	16.7	100.0
Total	233	100.0	100.0	

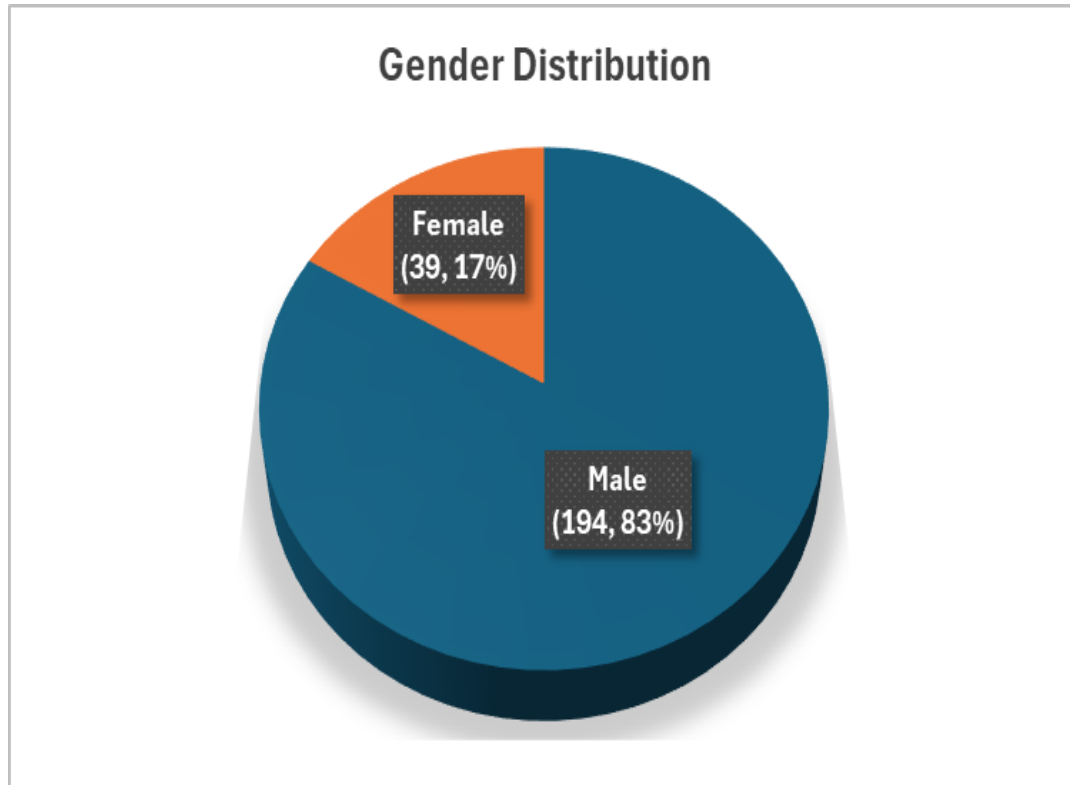


Figure 4.3: Faculty Distribution (Gender)

4.2.2.2 Distribution by Professional Designation and Experience

The professional breakdown validates the proportionate stratified sampling strategy, showing significant weight assigned to the experienced faculty ranks. Initial group comparisons revealed minor variances in the mean policy awareness and perceived access by designation. Older members of staff (Associate Professors and Professors) tended to have more experience of having access to policy documents and perceived more that policy supports research, whereas Lecturers and Assistant Professors had reduced awareness. The differences were minor; when statistically significant, they were indicative of the necessity to enhance policy spreading at various stages of career rather than to demonstrate that the differences in opinions on the policy content were significant.

Table 4.5: Distribution by Faculty Designation

		Frequency	Percent	Valid Percent	Cumulative Percent
	Assistant Professor	117	50.2	50.2	50.2
	Associate Professor	52	22.3	22.3	72.5
	Associate professor of practice	1	.4	.4	73.0
Valid	Director DHA Quetta	1	.4	.4	73.4
	Lecturer	33	14.2	14.2	87.6
	Professor	28	12.0	12.0	99.6
	Senior Lecturer	1	.4	.4	100.0
	Total	233	100.0	100.0	

Table 4.6: Distribution by Faculty Teaching Experience

		Teaching Experience			
		Frequency	Percent	Valid Percent	Cumulative Percent
	1-5 years	44	18.9	18.9	18.9
	6-10 years	79	33.9	33.9	52.8
	Less than 1 year	15	6.4	6.4	59.2
Valid	More than 10 years	95	40.8	40.8	100.0
	Total	233	100.0	100.0	

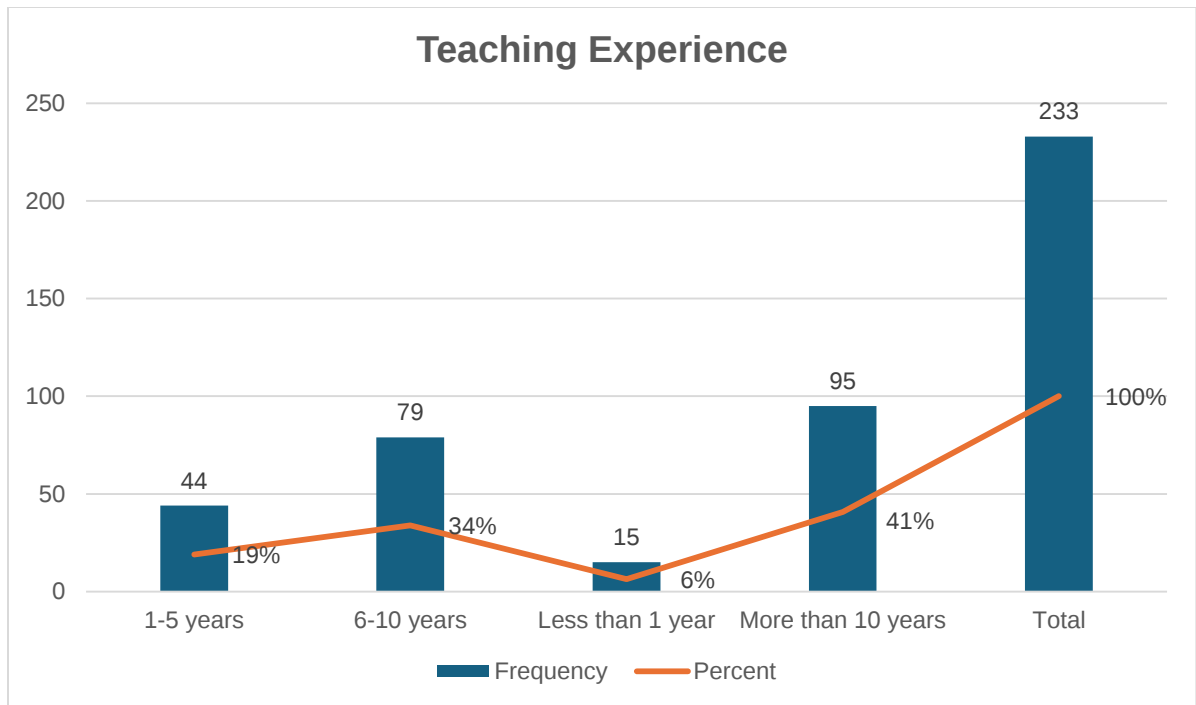


Figure 4.4: Distribution by Faculty Teaching Experience

This proportional distribution reflects NUST's staffing structure and ensures sufficient representation for comparative analysis.

4.3 QUANTITATIVE RESULTS: FACULTY PERCEPTIONS OF COLLECTION DEVELOPMENT

This section presents the descriptive statistics (mean and standard deviation) for the 40 Likert-scale statements (Q7–Q46), grouped into the four thematic areas of the research. The 5-point scale is interpreted as: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. The study employed descriptive statistics. Inferential analysis was not done as the study was exploratory and was to understand practices and not to test hypotheses. Also, the distribution of the items was not within the assumptions necessary to use parametric tests, and the research questions did not need

comparisons of demographic groups. Thus, the means, frequencies, and percentages were deemed to be enough to respond to the quantitative part of the study.

4.3.1 Awareness and Accessibility of Policy

The analysis reveals that the faculty members admit that, despite the theoretical alignment of the policy, they feel a lack of confidence regarding its accessibility and formal consultation process. Faculty moderately indicated to have a written policy of collection development ($M = 3.45$, $SD = 0.99$), although they were less aware of what it entails and whether it is easily accessible ($M = 3.10$, $SD = 1.08$). There was more support of the perception that the policy supports academic goals ($M = 3.92$, $SD = 0.72$). These findings are of moderate awareness, yet there is a communication gap (access and consultation). The policy is there, but it is not uniformly communicated. This problem is reflected through interviews when librarians said that the policy is not very explicit and is not widely publicized.

Table 4.7: Descriptive Statistics for Collection Development Policy (CDP) Awareness

Question	Mean	Std. Error of Mean	Std. Deviation
7. I am aware that the NUST library has a written collection development policy.	3.45	.065	.995
8. The library's collection development policy supports academic programs and research needs.	3.92	.047	.721
9. The policy is shared with academic departments when updated or revised.	2.94	.065	.991
10. The collection development policy includes both	3.68	.055	.837

Question	Mean	Std. Error of Mean	Std. Deviation
print and electronic resources.			
11. The policy reflects the changing needs of the teaching and research environment.	3.80	.054	.828
12. I have access to the collection development policy.	3.10	.071	1.076
13. Faculty input is considered during the policy review process.	3.17	.069	1.060
14. The policy supports the development of subject-specific collections.	3.52	.059	.896
15. The library clearly communicates the objectives of its collection development policy.	3.36	.064	.969
16. The policy promotes diversity and academic freedom in selecting materials.	3.61	.057	.869

4.3.2 Collection Practices and Effectiveness (Q17-Q26)

Faculty were very satisfied with the desirable results of the collection process (i.e., acceptance of recommendations) but cited a significant problem of delays in operations. Faculty were moderately positive in collection practices (aggregate M = 3.74). Individual items demonstrate that there is a tendency to take recommendations by the faculty (Q19 M = 3.83) and that there is a system of suggestions (Q20 M = 3.79). They are less involved in policy revision activities (see Q30 below).

Table 4.8: Descriptive Statistics for Collection Practices and Effectiveness

Question	Mean	Std. Error of Mean	Std. Deviation
17. The library regularly consults faculty members before acquiring new materials.	3.79	.070	1.075
18. My recommendations for library resources are usually accepted.	3.73	.058	.881
19. The library responds effectively to academic needs through new acquisitions.	3.83	.057	.877
20. There is a proper system in place for suggesting new titles to the library.	3.79	.052	.795
21. The library updates its collection in line with changes in the curriculum.	3.80	.053	.813
22. The process of selecting and acquiring materials is efficient and timely.	3.57	.057	.864
23. The library maintains a balance between core readings and research-level resources.	3.58	.058	.892
24. The existing collection sufficiently supports my teaching requirements.	3.76	.057	.866
25. I have been informed about how to request materials for the library collection.	3.76	.065	.996
26. The library considers students' academic needs while acquiring resources.	3.80	.058	.883

4.3.3 Faculty Involvement and Collaboration (Q27-Q36)

This theme highlights a significant unmet demand for a greater strategic role for teaching staff, indicating a lack of formal institutional mechanisms for collaboration. Actual regular recommendation behavior is lower (Q27 M = 3.44), and formal departmental review mechanisms are less common (Q34 M = 3.28). These items support

the interpretation that faculty desire greater strategic involvement, although formal mechanisms are inconsistent.

Table 4.9: Descriptive Statistics for Faculty Involvement and Collaboration

Question	Mean	Std. Error of Mean	Std. Deviation
27. I regularly recommend books, journals, or digital resources for the library.	3.44	.063	.959
28. I feel that my role in collection development is important and valued.	3.78	.050	.771
29. I collaborate with library staff to ensure relevant materials are acquired.	3.66	.060	.911
30. I have participated in departmental or university-level decisions about library acquisitions.	3.15	.069	1.048
31. I am satisfied with the level of input I am allowed in developing the library collection.	3.61	.063	.960
32. I am familiar with the procedure for submitting acquisition requests to the library.	3.64	.064	.973
33. The library encourages faculty participation in collection development activities.	3.65	.060	.922
34. My department has a formal mechanism for reviewing the adequacy of library resources.	3.28	.063	.954
35. I would be willing to participate more actively in library planning if invited.	3.97	.054	.820
36. Teaching staff should play a stronger role in collection development at NUST libraries.	4.18	.044	.675

Key items show strong willingness for more involvement (Q35 M = 3.97; Q36 M = 4.18).

4.3.4 Perceived Challenges and Constraints (Q37-Q46)

This theme measures the perceived severity of constraints. High mean scores indicate strong agreement that the constraint is a problem. Faculty rated the positive results of the collection process (i.e., acceptance of recommendations) but indicated a significant problem of operational delays. Faculty had moderately positive collection practices (aggregate M = 3.74). The personal items indicate that faculty recommendations tend to be considered (Q19 M = 3.83) and that there is a system for how suggestions can be made (Q20 M = 3.79). The involvement in the policy revision activities is less (see Q30 below).

Table 4.10: Descriptive Statistics for Perceived Challenges and Constraints

Question	Mean	Std. Error of Mean	Std. Deviation
37. The library's collection development policy does not adequately support our teaching needs.	2.46	.063	.965
38. Budget constraints limit the inclusion of essential teaching and research materials.	3.52	.067	1.017
39. Teaching faculty are not sufficiently involved in the material selection process.	2.77	.066	1.006
40. Communication gaps between librarians and faculty affect collection development effectiveness.	3.34	.075	1.142
41. The process of recommending and acquiring materials is too slow or bureaucratic.	2.80	.073	1.121
42. Faculty input in updating or revising the collection development policy is not actively sought.	2.80	.072	1.094
43. There is a lack of up-to-date electronic resources relevant to my academic discipline.	2.96	.074	1.129
44. Teaching faculty are not informed about the existing collection development guidelines.	2.92	.070	1.076
45. The current system for evaluating and weeding materials does not align with academic needs.	2.72	.066	1.007
46. There is limited transparency in how collection development decisions are made.	2.94	.063	.956

Table 4.11: Descriptive Statistics for Overall Questionnaire

Overall Statistics						
Question	Mean	Std. Error of Mean	Median	Mode	Std. Deviation	Sum
7. I am aware that the NUST library has a written collection development policy.	3.45	.065	4.00	4	.995	803
8. The library's collection development policy supports academic programs and research needs.	3.92	.047	4.00	4	.721	914
9. The policy is shared with academic departments when updated or revised.	2.94	.065	3.00	3	.991	684
10. The collection development policy includes both print and electronic resources.	3.68	.055	4.00	4	.837	858
11. The policy reflects the changing needs of the teaching and research environment.	3.80	.054	4.00	4	.828	886
12. I have access to the collection development policy.	3.10	.071	3.00	3	1.076	722
13. Faculty input is considered during the policy review process.	3.17	.069	3.00	3	1.060	738
14. The policy supports the development of subject-specific collections.	3.52	.059	3.00	3	.896	821
15. The library clearly communicates the objectives of its collection development policy.	3.36	.064	3.00	3	.969	784
16. The policy promotes diversity and academic freedom in selecting materials.	3.61	.057	4.00	4	.869	842
17. The library regularly consults faculty members before acquiring new	3.79	.070	4.00	4	1.075	884

Overall Statistics						
Question	Mean	Std. Error of Mean	Median	Mode	Std. Deviation	Sum
materials.						
18. My recommendations for library resources are usually accepted.	3.73	.058	4.00	4	.881	869
19. The library responds effectively to academic needs through new acquisitions.	3.83	.057	4.00	4	.877	893
20. There is a proper system in place for suggesting new titles to the library.	3.79	.052	4.00	4	.795	883
21. The library updates its collection in line with changes in the curriculum.	3.80	.053	4.00	4	.813	885
22. The process of selecting and acquiring materials is efficient and timely.	3.57	.057	4.00	4	.864	832
23. The library maintains a balance between core readings and research-level resources.	3.58	.058	4.00	4	.892	835
24. The existing collection sufficiently supports my teaching requirements.	3.76	.057	4.00	4	.866	877
25. I have been informed about how to request materials for the library collection.	3.76	.065	4.00	4	.996	877
26. The library considers students' academic needs while acquiring resources.	3.80	.058	4.00	4	.883	886
27. I regularly recommend books, journals, or digital resources for the library.	3.44	.063	4.00	4	.959	801
28. I feel that my role in collection development is important and valued.	3.78	.050	4.00	4	.771	881
29. I collaborate with library staff to ensure relevant materials are acquired.	3.66	.060	4.00	4	.911	852
30. I have participated in departmental or university-	3.15	.069	3.00	4	1.048	733

Overall Statistics						
Question	Mean	Std. Error of Mean	Median	Mode	Std. Deviation	Sum
level decisions about library acquisitions.						
31. I am satisfied with the level of input I am allowed in developing the library collection.	3.61	.063	4.00	4	.960	840
32. I am familiar with the procedure for submitting acquisition requests to the library.	3.64	.064	4.00	4	.973	848
33. The library encourages faculty participation in collection development activities.	3.65	.060	4.00	4	.922	850
34. My department has a formal mechanism for reviewing the adequacy of library resources.	3.28	.063	3.00	3	.954	765
35. I would be willing to participate more actively in library planning if invited.	3.97	.054	4.00	4	.820	926
36. Teaching staff should play a stronger role in collection development at NUST libraries.	4.18	.044	4.00	4	.675	973
37. The library's collection development policy does not adequately support our teaching needs.	2.46	.063	2.00	2	.965	574
38. Budget constraints limit the inclusion of essential teaching and research materials.	3.52	.067	4.00	4	1.017	821
39. Teaching faculty are not sufficiently involved in the material selection process.	2.77	.066	3.00	2	1.006	646
40. Communication gaps between librarians and faculty affect collection development effectiveness.	3.34	.075	3.00	4	1.142	779
41. The process of	2.80	.073	3.00	2	1.121	652

Overall Statistics						
Question	Mean	Std. Error of Mean	Median	Mode	Std. Deviation	Sum
recommending and acquiring materials is too slow or bureaucratic.						
42. Faculty input in updating or revising the collection development policy is not actively sought.	2.80	.072	3.00	2	1.094	652
43. There is a lack of up-to-date electronic resources relevant to my academic discipline.	2.96	.074	3.00	3	1.129	689
44. Teaching faculty are not informed about the existing collection development guidelines.	2.92	.070	3.00	3	1.076	681
45. The current system for evaluating and weeding materials does not align with academic needs.	2.72	.066	3.00	2	1.007	633
46. There is limited transparency in how collection development decisions are made.	2.94	.063	3.00	3	.956	684

4.4 QUALITATIVE ANALYSIS: THEMES FROM HEAD LIBRARIAN INTERVIEWS

NVivo recorded and imported eleven semi-structured interviews with librarians. Each objective was assigned a node, namely: (a) Collection Development Policy, (b) Collection Development Practice, (c) Role of Librarians, and (d) Challenges Faced. NVivo created coverage of coding and counts of references. Exported node reports and Matrix Coding Query show that the coding is internally consistent with a coverage between 2.3 percent and 9.9 percent per transcript, which represents a balanced coding effect.

Table 4.12: Main Nodes & Sub-Nodes of NVIVO

Main Theme (Node)	Sub-Theme (Child Node)
Theme 1-Existence, Scope, and Awareness of Collection-Development Policy	Alignment with the Academic Goals of NUST
	Budget Allocation and Priority System
	Outdated Policy and does not reflect the Current Academic Needs of NUST
	Policy Existence & Documentation
	Review & Update Frequency
	Transparency & Accessibility
Theme 2-Operational Practices and Workflow	Acquisition Procedure
Theme 3-Selection Criteria and Evidence-Based Practice	Selection Criteria
Theme 4-Faculty-Librarian Collaboration	Collaborate with Faculty for Resource Selection
	Faculty Consultation in Policy
	How often Interact with Academic Departments Regarding Library Resources
	Involvement of Faculty in Ongoing Collection Development
	Lack of Collaboration Between Librarians and Teaching Faculty
	No Faculty Participation
Theme 5-Authority and Professional Empowerment of Librarians	Biggest Challenges in Role in Collection Development
	Committees Related to Library Acquisitions or Resource Planning
	How Evaluate Your Contributions to Collection Development
	Involvement In CDP
	Librarians Limited Authority in Decision-Making
	Responsible for Selecting Materials for Specific Subject Areas
	Role in the Collection Development Process
Theme 6-Budgetary and Procurement Challenges	Budget Limitations
	Delays In Procurement and Administrative Processes
Theme 7-E-Resource Management	Coverage Of Digital & E-Resources
Theme 8-Weeding and Evaluation	Guidelines For Weeding, Deselection
	How Handle Duplicate or Outdated Materials
	Unclear Guidelines on Weeding and Deselection of Materials
Theme 9-User Needs and Service Orientation	Ensuring Collection Relevance
	Handling User Requests
	Insufficient Collection Assessment Tools and Techniques
	Monitor Usage Statistics for Making Collection Decisions

Main Theme (Node)	Sub-Theme (Child Node)
	Tools For Collection Assessment

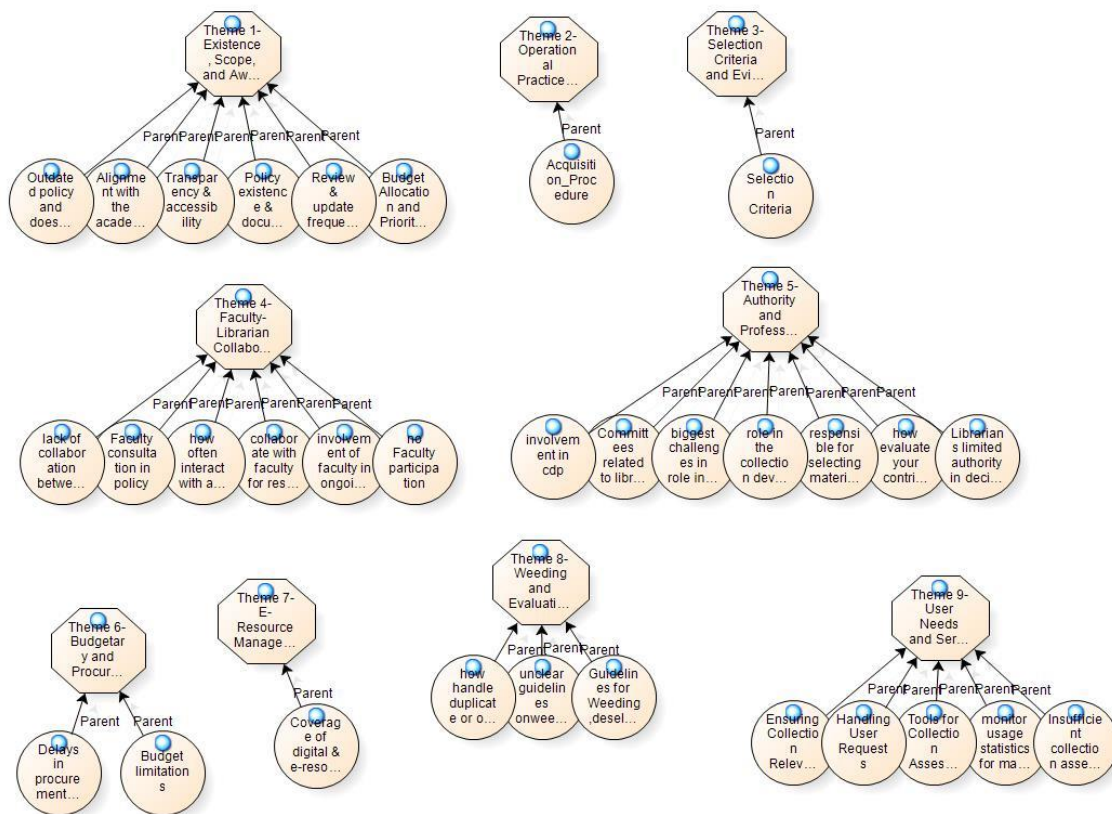


Figure 4.5: Themes & Sub-Themes from NVIVO

All interviews were transcribed word-for-word and coded in NVivo. The primary nodes were developed based on the research goals and were subsequently consolidated on a larger theme on the basis of similarities, overlap, and context of the research. In the process of theme development, different sub-nodes that had similar connotations were merged to prevent fragmentation. The resulting coding tree was based on parent themes and child nodes that reflected the various dimensions of collection development practices.

Table 4.13: Matrix Coding (Cross-Tabulation) of Themes and Interviews References

Theme	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11
Theme 1-Existence, Scope, and Awareness of Collection-Development Policy	6	6	5	6	6	6	6	6	6	6	6
Theme 2-Operational Practices and Workflow	1	1	1	1	1	1	1	1	1	1	1
Theme 3-Selection Criteria and Evidence-Based Practice	1	1	1	1	1	1	1	1	1	1	1
Theme 4-Faculty-Librarian Collaboration	6	6	6	6	6	6	6	6	6	6	6
Theme 5-Authority and Professional Empowerment of Librarians	7	8	7	7	7	7	7	7	7	7	7
Theme 6-Budgetary and Procurement Challenges	2	2	1	2	2	2	2	2	2	2	2
Theme 7-E-Resource Management	1	1	1	1	1	1	1	1	1	1	1
Theme 8-Weeding and Evaluation	3	3	3	3	3	3	3	3	3	3	3
Theme 9-User Needs and Service Orientation	5	5	4	5	5	5	5	5	5	5	5

Note. I1, I2... represents Interviewee1, Interviewee2

A reflexive thematic approach was used to code the data. All the coding was carried out by one researcher, which is appropriate in line with the recommendations of Braun and Clarke, who suggest that in reflexive thematic analysis, the subjective process of interpretation is part of the analytic process. To improve reliability, the coding exercise was done on two occasions with varying time breaks, and all the themes were also

checked concerning internal consistency. Even though there was no second coder, analytic decisions were well documented in order to be transparent. The six phases of reflexive thematic analysis (Braun & Clarke, 2019) were followed:

- Familiarization with Transcripts,
- Systematic Initial Coding,
- Pointing out Potential Themes,
- Go through again and Collapsing Themes,
- Describing and Naming of Themes,
- Creating the Final Report.

These steps ensured transparency and analytical rigour. All transcripts were anonymized before analysis, and identifying details were removed. NVivo project files were stored securely on password-protected systems. The demographic details of interviewees are given below for reference:

Table 4.14: Schools of Participated Respondents

S. No.	School	Respondents
1.	CIPS	1
2.	CL	1
3.	MCE	1
4.	NSHS	1
5.	SCEE	1
6.	SMME	1
7.	S3H	1
8.	SNS	1
9.	EME	1
10.	MCS	1
11.	Unassigned	1

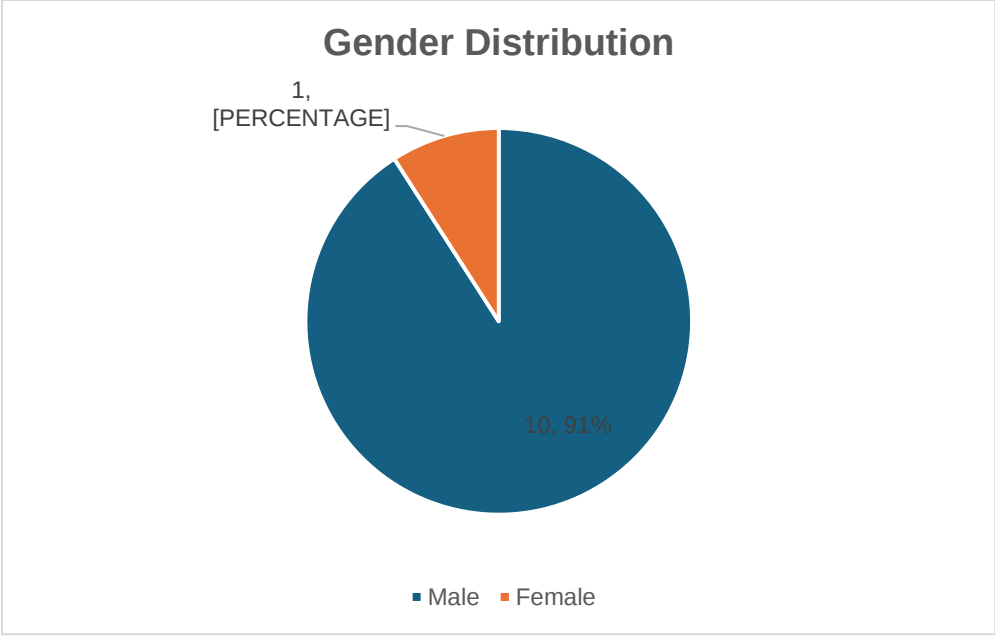


Figure 4.6: Distribution of Librarians by Gender

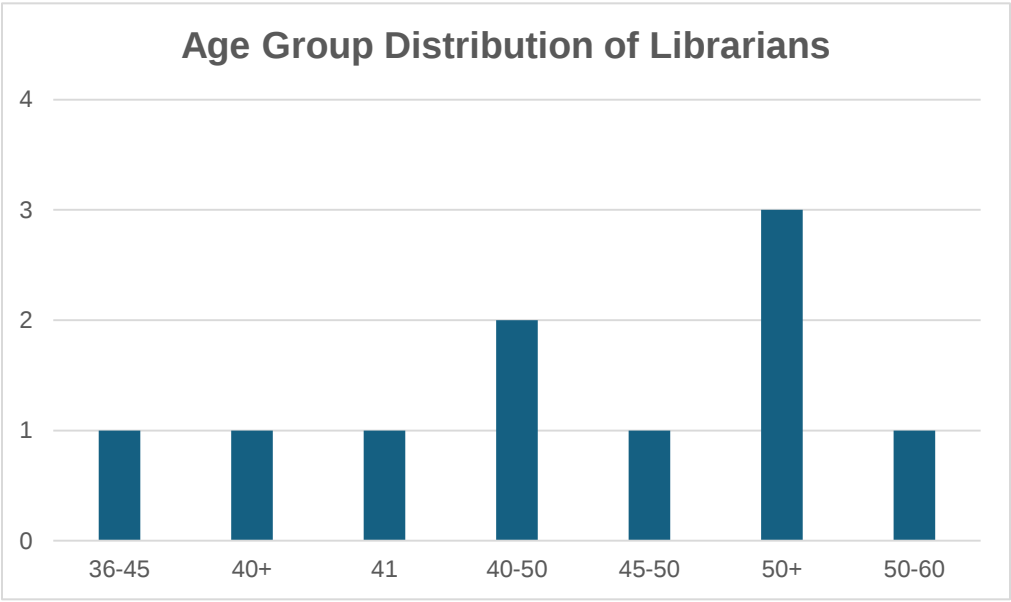


Figure 4.7: Distribution of Librarians by Age

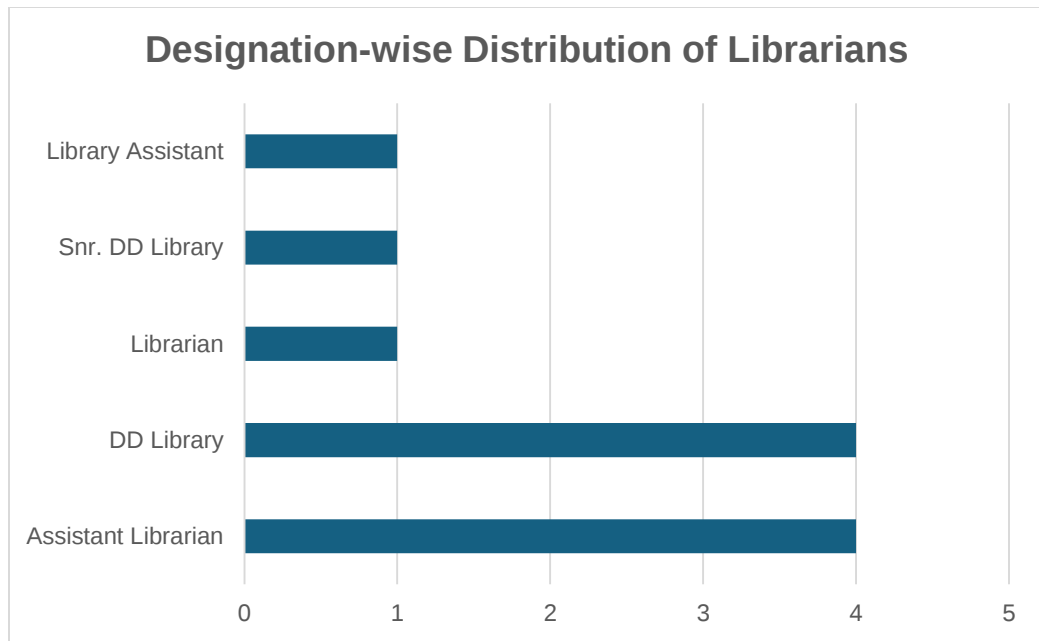


Figure 4.8: Distribution of Librarians by Designation

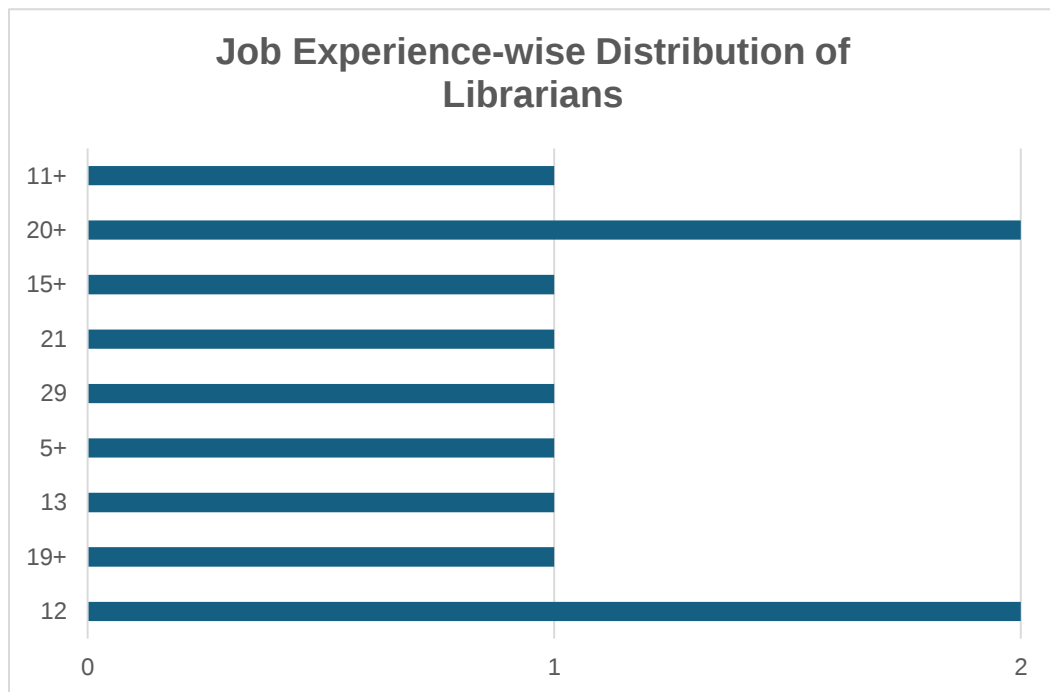


Figure 4.9: Distribution of Librarians by Experience

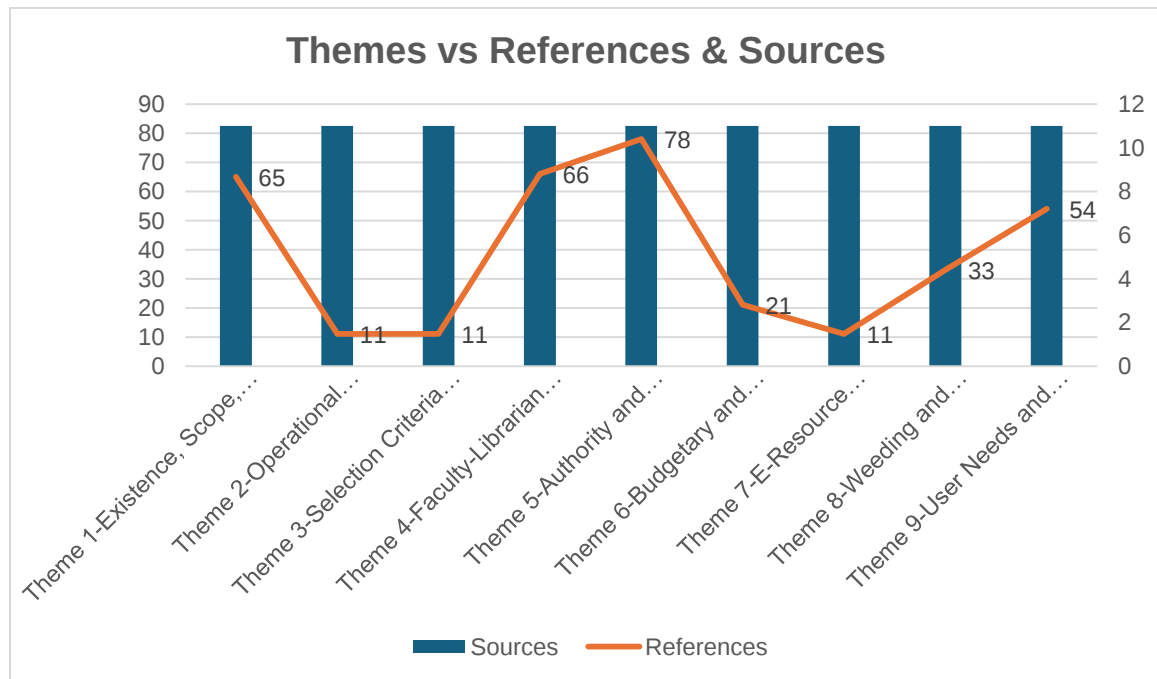
4.5 QUALITATIVE RESULTS FROM NVIVO

The quotations in this section are cited with the help of an interview code (e.g., Interview 03 = I3), which denotes the transcript where the answers were taken.

The output of the NVivo analysis was four top-level nodes and 41 sub-nodes. To abide by the qualitative analysis practices, closely related sub-nodes were combined to become broader analytic themes whilst preserving the node-based traceability. The restructuring was based on what Braun and Clarke (2019) stated as a guiding principle, that themes are patterned meaning formed throughout data, not specific aims. The NVivo outputs were sorted out into three broad node documents that were presented by the researcher as Collection Development Practice, Role of Librarians in Collection Development, and Challenges Faced during Collection Development. These node exports contain coverage percentages and coded references for each interview which have both frequency data and verbatim text to aid in interpretation. Below the qualitative findings summarize these exports of nodes and include key themes along with sub-themes, frequency and coverage levels, and sample quotes.

Table 4.15: Total Themes with Source, References

Theme	Sources	References
Theme 1-Existence, Scope, and Awareness of Collection-Development Policy	11	65
Theme 2-Operational Practices and Workflow	11	11
Theme 3-Selection Criteria and Evidence-Based Practice	11	11
Theme 4-Faculty-Librarian Collaboration	11	66
Theme 5-Authority and Professional Empowerment of Librarians	11	78
Theme 6-Budgetary and Procurement Challenges	11	21
Theme 7-E-Resource Management	11	11
Theme 8-Weeding and Evaluation	11	33
Theme 9-User Needs and Service Orientation	11	54

**Figure 4.10: Total Themes with Source, References**

4.5.1 Theme 1: Existence, Scope, and Awareness of Collection Development Policy

This theme captures the general level of awareness faculty have regarding the existence and purpose of the Collection Development Policy (CDP). Now and again, interviews reveal that most of the librarians themselves think there is a policy, but most of them feel that it is not generally distributed, not frequently revised, and is often not formally conveyed to the faculty. Failure to be clear on approvers of updates, and documentation of decisions was also realized.

Table 4.16: Sub-Themes with Source, References (Theme-1)

Sub-Theme	Sources	References
Alignment with the academic goals of NUST	11	11
Budget Allocation and Priority System	11	11
Outdated policy, and does not reflect the current academic needs of NUST	11	11
Policy existence & documentation	11	11
Review & update frequency	11	11
Transparency & accessibility	10	10

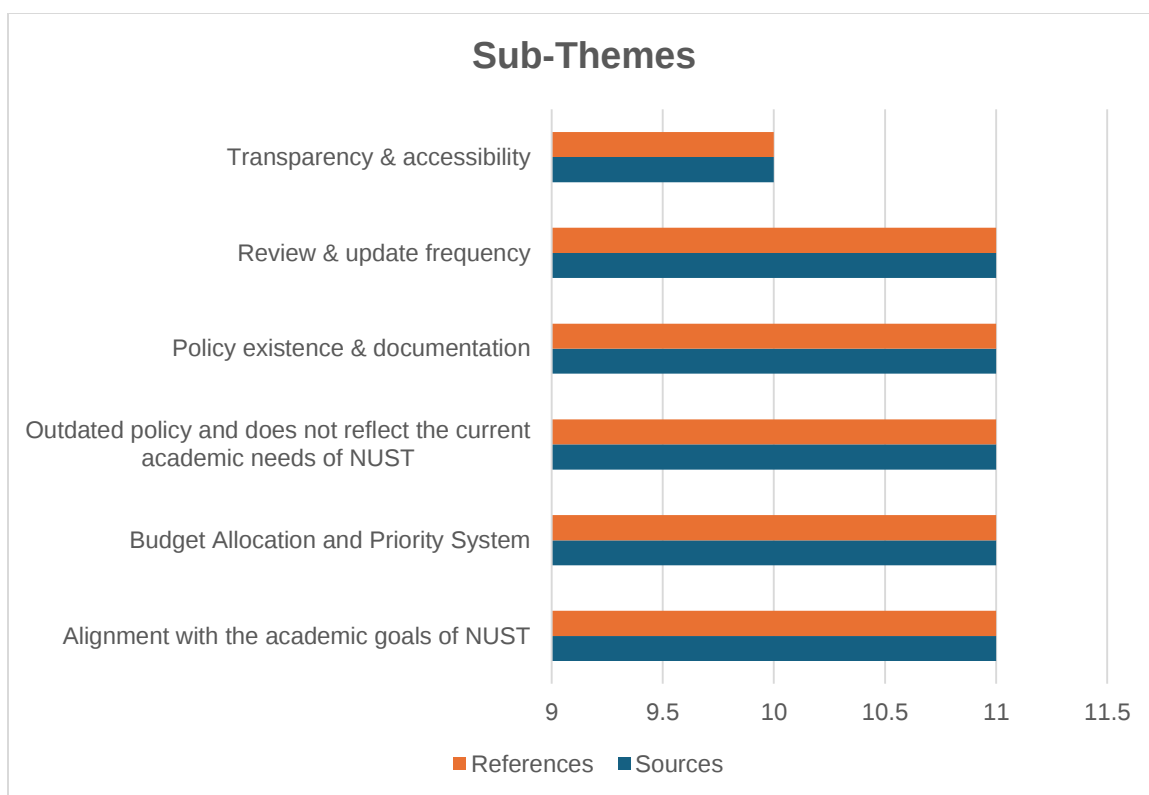


Figure 4.11: Sub-Themes with Source, References (Theme-1)

Interview coverage varied between 0.3 percent and 3.5 percent on individual transcripts, with the cumulative coverage of all transcripts approximately 9 percent. It means that it is moderately represented in the dataset. Respondents confirmed that there is the existence of policy documents but described them as only partially implemented, rarely revised, and limited in scope for digital resources.

“Yes, but not very detailed and not widely circulated.”

“Policy aligns with academic goals but excludes acquisition of e-resources.”

Main Results: Policy Exists but Not Shared, Unawareness of Contents, No

Periodic Review Cycle

There are policies, but these are non-dynamic and non-inclusive, which is in line with quantitative neutrality in terms of access and awareness.

4.5.1.1 Triangulation with Quantitative Data.

Q7 mean = 3.45 (moderate awareness)

Q12 mean = 3.10 (limited access)

The qualitative evidence explains the gap: a policy may be present in the library's files but not actively disseminated to departments.

4.5.2 Theme 2: Operational Practices and Workflow

4.5.2.1 Analytic Summary

This theme illustrates the practicality of the acquisition process on the campuses of NUST. Librarians refer to the workflow as slow and standardized, which has multiple levels of approval. Delays are very much involved in the process, depending on the procurement departments. Also, a lack of automation and real-time tracking is mentioned by librarians.

Table 4.17: Sub-Themes with Source, References (Theme-2)

Sub-Theme	Sources	References
Acquisition Procedure	11	11

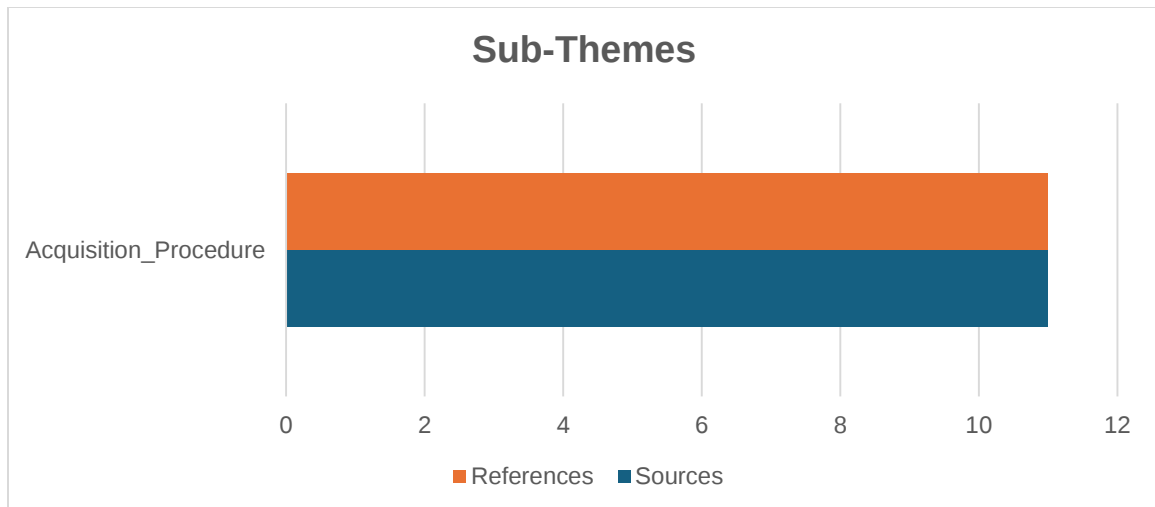


Figure 4.12: Sub-Themes with Source, References (Theme-2)

In interviews, librarians talked about a very delineated selection and acquisition process that involved user recommendations (mainly faculty) into the demand register or acquisition form, quotation requests, committee approval, procurement and processing (ordering, receiving, invoicing), cataloging, and shelving. The process itself can be outlined uniformly on numerous campuses, and the process seems to have been established as a routine bureaucratic process. NVivo node Collection Development Practice demonstrates that significantly large coding is covered in the steps of demand, quotation, approval, ordering, and processing.

From node 2 (coverage = 8.8%). Librarians described a standardized workflow:

Faculty recommendation → quotation → approval → purchase → cataloging → shelving.

“Faculty recommend, librarians review, library committee approves, librarian purchases through headquarters.”

“Duly signed by HOD and Dean; after that, all the following steps are taken as mentioned: calling for quotations, approval, ordering, receiving and assessment, billing and RVS, processing.”

4.5.2.2 Main Results

Standardized but Bureaucratic Workflow, Delays Due to Procurement, Lack of Automation

The workflow demonstrates formalization but also bureaucratic rigidity, causing procurement delays: explaining survey means above 3.8 on related items.

4.5.2.3 Triangulation with quantitative data.

Q22 (Material acquisition is timely): $M = 3.57$ (moderate)

Q41 (Procurement delays): $M = 2.80$

Quantitative items Q17–Q26 (collection practices) have aggregate $M = 3.74$ (moderately positive). Qualitative data clarifies that positive scores reflect the presence of practices, but those practices are often person-dependent and not systematically data-driven.

4.5.2.4 Interpretation

The presence of formalized steps provides institutional control and accountability but also introduces potential delays (see Theme 4 below). The procedure ensures faculty involvement at the item recommendation stage but centralizes fiscal approval and contracting.

4.5.3 Theme 3: Selection Criteria and Evidence-Based Practice

4.5.3.1 Analytic Summary

Faculty recommendations, circulation statistics, and curriculum needs are cited by librarians as their principal criteria. Nevertheless, systematic analysis is poor, particularly in terms of weeding, usage analytics, and serials evaluation.

Table 4.18: Sub-Themes with Source, References (Theme-3)

Name	Sources	References
Selection Criteria	11	11

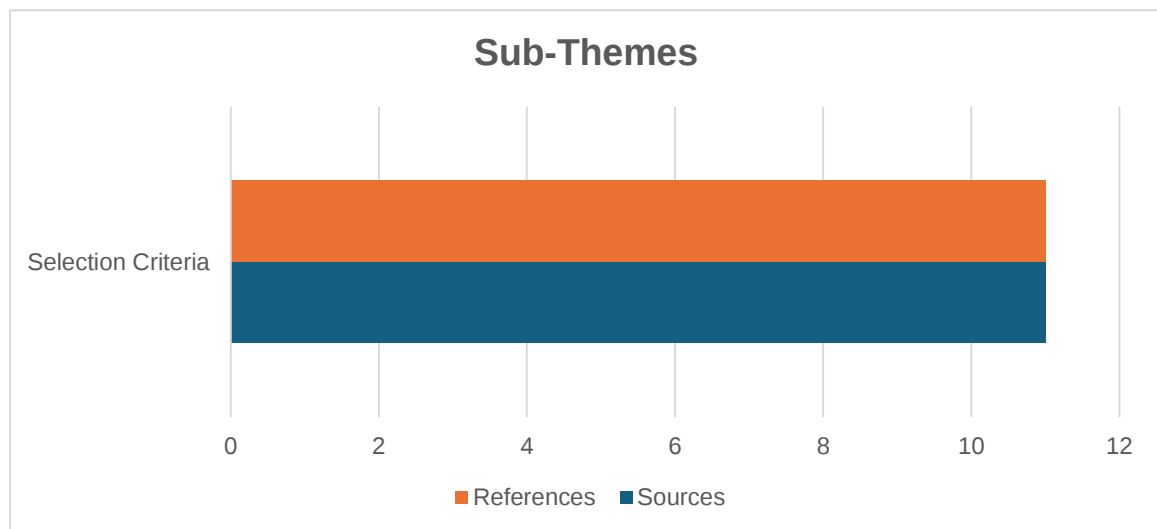


Figure 4.13: Sub-Themes with Source, References (Theme-3)

Interviewees consistently mentioned criteria for selection: relevance to curriculum, reputation of publisher or author, currency of editions, availability in electronic form, usage statistics, and faculty recommendations. Some of the sources utilized are publisher catalogs, vendor lists, book fairs, and Koha circulation statistics.

Coded references emphasized relevance to curriculum, authority of publishers, currency, and demand analysis using circulation data.

“Relevance to curriculum, reputation of publisher/author, cost, currency, demand, availability in digital form.”

“We review borrowing records, database usage, and user requests.”

Curriculum Alignment

Faculty Recommendations as Primary Source

Weak Usage Analytics

Absence of Regular Weeding

4.5.3.2 Interpretation

The criteria are in line with the Johnson Collection Development Theory, which focuses on institutional alignment and user needs. Nevertheless, other participants also mentioned that evidence-based instruments, including systematic analysis of e-resource COUNTER data, are not adequately used in practice.

According to the recommendations of international evidence-based librarianship (Koufogiannakis & Brettle, 2016), systematic utilization of COUNTER reports, SUSHI harvesting, and decision matrices should be used; nonetheless, librarians complained that these tools are not always implemented at NUST.

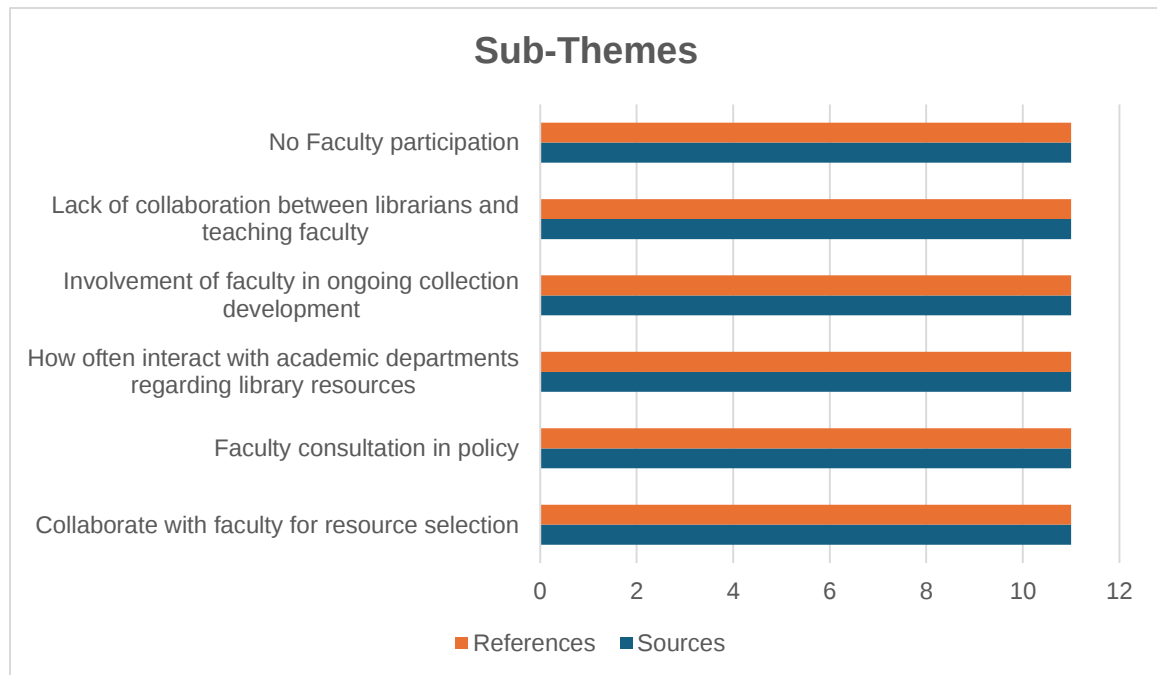
4.5.4 Theme 4: Faculty-Librarian Collaboration

4.5.4.1 Analytic Summary

Faculty involvement is perceived as a reactionary and not a systematic process by librarians. Books are actively promoted in other departments, but not all, and cooperation is not based on the policy but on personal relations.

Table 4.19: Sub-Themes with Source, References (Theme-4)

Sub-Theme	Sources	References
Collaborate with faculty for resource selection	11	11
Faculty consultation in policy	11	11
How often interact with academic departments regarding library resources	11	11
Involvement of faculty in ongoing collection development	11	11
Lack of collaboration between librarians and teaching faculty	11	11
No Faculty participation	11	11

**Figure 4.14: Sub-Themes with Source, References (Theme-4)**

Librarians reported regular interaction with faculty, especially at the start of the semester and when curricular changes occur. Collaboration includes receiving recommendation lists, convening acquisition committees, and informal liaison. Several librarians emphasized that faculty are the primary selectors for subject materials, with librarians facilitating purchases and advising on availability and budget.

“Faculty recommendation; faculty and student requirements; faculty suggestions about their respective selection.”

“I collaborate closely with faculty... providing guidance on availability, budget, and relevance.”

4.5.4.2 Main Results

Inconsistent Departmental Involvement, Personal Networks over Formal Processes, Desire for Structured Engagement

The qualitative evidence supports the survey finding that faculty recommend items and feel their recommendations are often accepted. However, the depth of faculty engagement varies while faculty propose items; they are less frequently involved in policy revision or detailed evaluation of electronic resource value.

The quantitative correlation between awareness and participation supports this theme: informed faculty engage more.

4.5.4.3 Triangulation with quantitative data.

Faculty involvement items (e.g., Q27–Q36) show high willingness to participate (Q35 M = 3.97; Q36 M = 4.18) but lower evidence of formal collaboration (e.g., Q34 M = 3.28). The interviews explain the mismatch: willingness exists but formal mechanisms are weak.

4.5.5 Theme 5: Authority and Professional Empowerment of Librarians

4.5.5.1 Analytic Summary

Librarians repeatedly expressed that they are implementers, not decision-makers. They follow directions from Deans, Directors, or Procurement but lack the authority to make choices independently.

Table 4.20: Sub-Themes with Source, References (Theme-5)

Name	Sources	References
Biggest challenges in role in collection development	11	11
Committees related to library acquisitions or resource planning	11	11
How evaluate your contributions to collection development	11	11
Involvement in CDP	11	11
Librarians limited authority in decision-making	11	11
Responsible for selecting materials for specific subject areas	11	11
Role in the collection development process	11	12

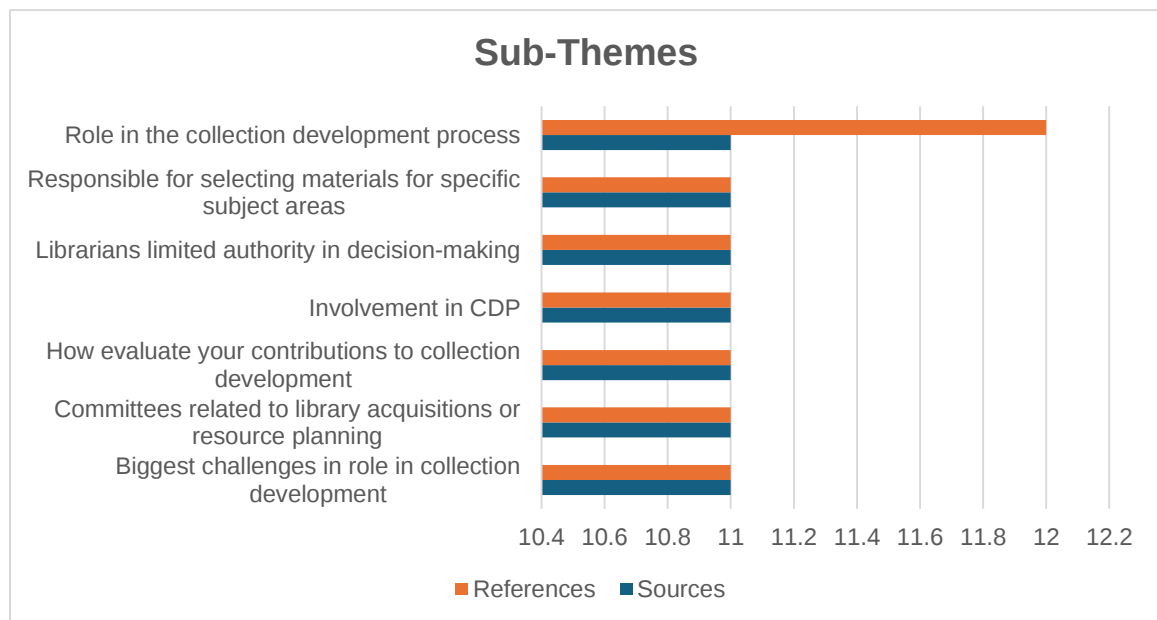


Figure 4.15: Sub-Themes with Source, References (Theme-5)

Interviewees repeatedly described librarians' roles as facilitators, coordinators, and technical experts. While librarians undertake selection of tasks within assigned subject areas, many felt they lacked full authority or recognition in academic decision-making and desired stronger involvement in strategic planning and budgeting. Training and professional development were widely requested.

Several references highlighted the limited decision-making power of librarians.

"Librarians should be given necessary authority in evaluation and selection."

"As a librarian, my role is to assess user needs, select and recommend resources, evaluate existing collections, and manage acquisitions within the allocated budget."

"They must be given sufficient authority and value, especially in academics, to be involved and up to date with curriculum changes."

4.5.5.2 Main Results

Structure Limits Autonomy, Dependence on Administrative Approval,
Responsibility without Authority

This aligns with studies by Khan et al. (2022) showing South Asian academic librarians are often confined to operational roles. Professional development needs in e-resource licensing and budgeting were common sub-nodes.

4.5.5.3 Interpretation

Librarians are keen to play a more strategic role but identify limits due to institutional structures. This helps explain survey responses where faculty report

moderate librarian collaboration but some uncertainty about librarians' influence on policy.

4.5.5.4 Triangulation with quantitative data.

Quantitative items on participation in policy revision (Q30 M = 3.15) and perceived decision influence show moderate to low scores; the interviews show why.

4.5.6 Theme 6: Budgetary and Procurement Challenges

4.5.6.1 Analytic Summary

All librarians consistently mention the annual budget as a major limitation. Budgets are often fixed, delayed, or insufficient, forcing libraries to prioritize.

Table 4.21: Sub-Themes with Source, References (Theme-6)

Name	Sources	References
Budget limitations	11	11
Delays in procurement and administrative processes	10	10

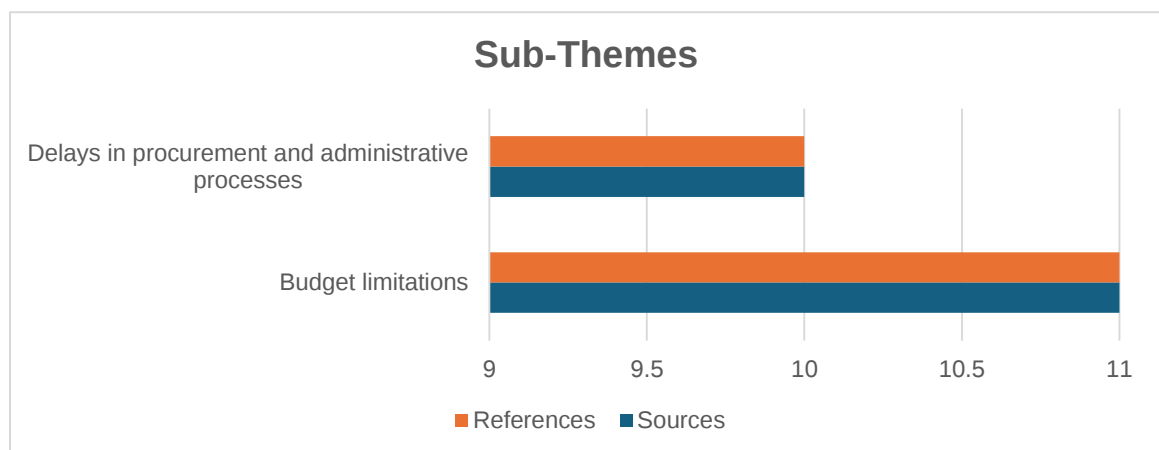


Figure 4.16: Sub-Themes with Source, References (Theme-6)

The Challenges Faced node (coverage = 9.9%) contained the densest references. Librarians unanimously cited budget ceilings, multi-vendor quotation requirements, and delayed approvals.

Budget limitations were widely identified as a principal constraint on collection development. Interviewees outlined school-wide allocation of budget, the base of prioritization according to the curriculum requirements and number of students and the necessity to find the balance between the monographs purchases and the expensive e-resource subscriptions.

“Budget is allocated for all subjects; funds are distributed based on curriculum needs, student enrollment, research priorities, and usage statistics.”

“Limited budget restricts purchasing power; access issues with costly e-resources and licensing restrictions.”

“Quotation takes a lot of time... even for a single book, multiple quotations are required.”

“Budget constraints, space limitations, diverse user needs.”

4.5.6.2 Main Results

Insufficient Budget, Delayed Allocation, Impact on E-Resource Renewals

Co-occurrences of Challenges and Policy Revision nodes in the Matrix Coding Query were strong and indicated the importance of administrative inflexibility in limiting flexibility.

4.5.6.3 Interpretation

The qualitative stress on the budget confirms that budget allocation is critical to the realization of the feasibility of collection development; policy cannot surpass the quantitative budget limits alone.

One more similarity in the interviews was the procedural burden of procurement: the necessity to request multiple quotations, a long approval process, and central procurement, which sometimes causes delays. Some of the interviewees observed that such restrictions in operation have an impact on the speed of attending to urgent academic issues, and it is difficult to obtain time-sensitive materials in time.

4.5.6.4 Representative excerpts

“Quotation from at least three vendors is required... too much correspondence is involved.”

“Most delays are because of procurement and approval processes; it takes a long time.”

4.5.6.5 Interpretation

Procurement rules aim to ensure accountability but create trade-offs between transparency and agility. This theme helps explain faculty survey responses that identify procurement and process speed as problem areas.

4.5.6.6 Triangulation with quantitative data

Q38 (budget constraint) has $M = 3.52$.

4.5.7 Theme 7: E-Resource Management

4.5.7.1 Analytic Summary

Librarians also showed worries about the importance of modern technology, the tools of analytics, and the ability to have constant access to e-resources. Lots of campuses do not have proper usage reports and trackers.

Table 4.22: Sub-Themes with Source, References (Theme-7)

Name	Sources	References
Coverage of digital & e-resources	11	11

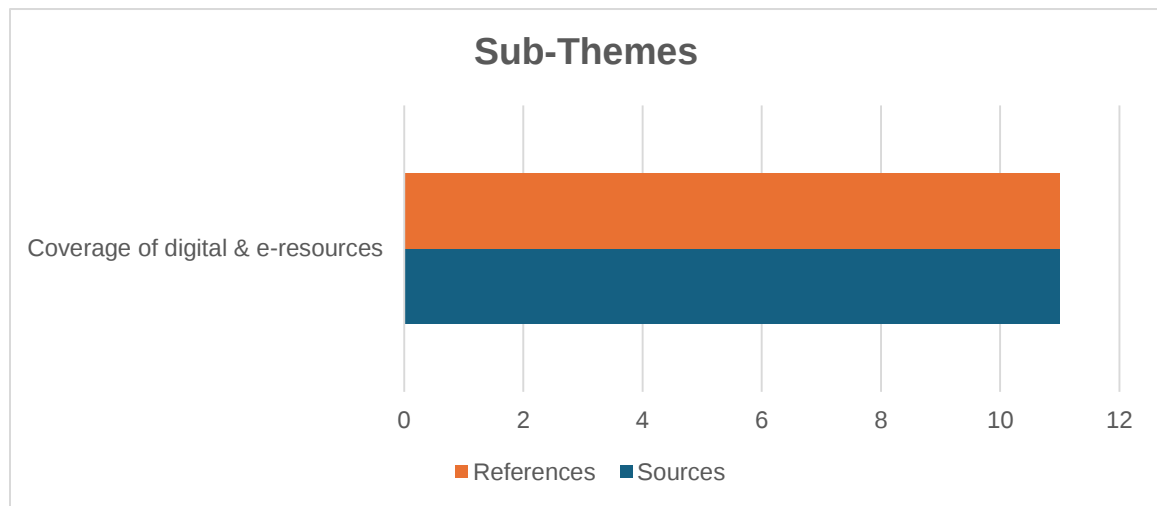


Figure 4.17: Sub-Themes with Source, References (Theme-7)

Several librarians noted that e-resources are increasingly important but require specialized negotiation and monitoring. Some campuses manage e-resources centrally, and there is a call for better tools and training to assess e-resource value (e.g., COUNTER usage analytics). Librarians emphasized insufficient training and the absence of analytic tools for e-resource assessment.

“No such tool is available [for electronic usage analysis] ... usage statistics are maintained by Koha, but digital usage is less analyzed.”

“Electronic resources are now centrally managed through a dedicated team.”

“Digital resources are yet not acquired... usage statistics are less analyzed.”

4.5.7.2 Main Results

Lack of Discovery Tools, Poor Usage Statistics, and Technical Access Issues

4.5.7.3 Interpretation

E-resource management is a growing part of the workload and a policy area requiring explicit guidelines. Quantitative items about the policy covering both print and electronic resources returned mean values above neutral, but interviews show practical gaps in monitoring and license evaluation.

Quantitative Q43 (e-resource relevance) showed a mean of 2.96, supporting the qualitative view that up-to-date electronic resources are a concern.

4.5.8 Theme 8: Weeding and Evaluation

4.5.8.1 Analytic Summary

Communication between libraries, faculty, and administration is inconsistent. Librarians express that departments often do not respond to selection requests, and the library receives feedback mostly when something is missing.

Several participants described procedures for evaluating and withdrawing outdated materials, often using circulation data and periodic review. However, practices varied; some libraries keep older editions for a time before formal weeding, and an explicit, consistently applied weeding schedule is not universally in place.

Interviewees described irregular or ad hoc weeding.

Table 4.23: Sub-Themes with Source, References (Theme-8)

Name	Sources	References
Guidelines for weeding, deselection	11	12
How handle duplicate or outdated materials	10	10
Unclear guidelines on weeding and deselection of materials	11	11

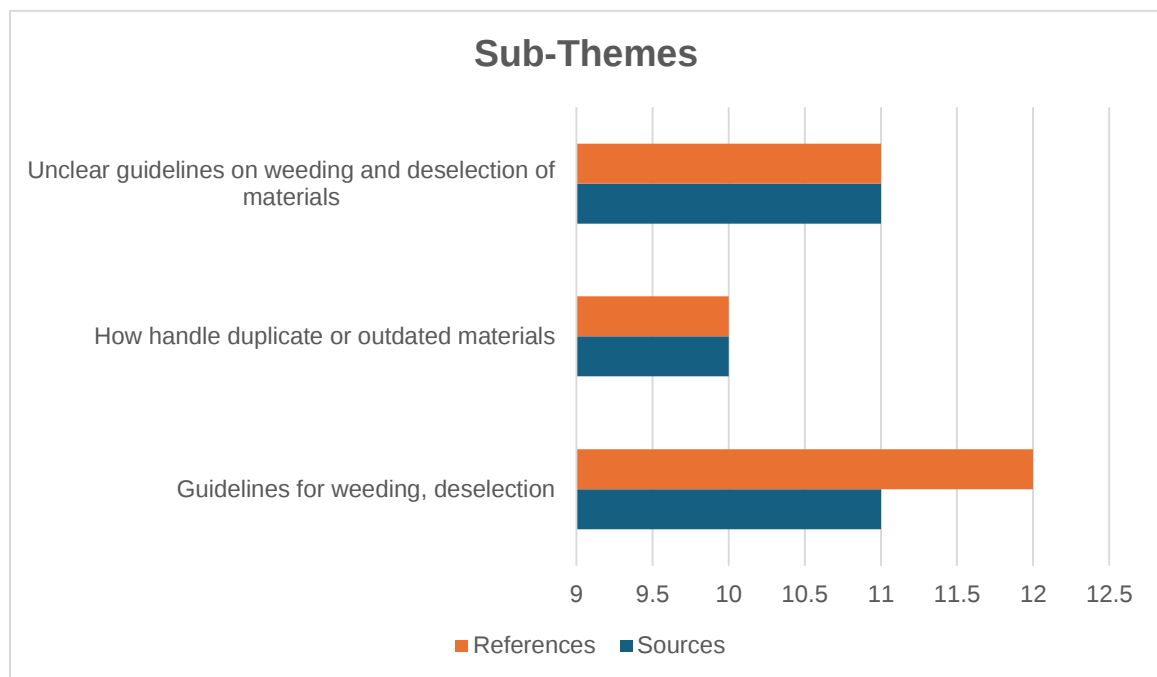


Figure 4.18: Sub-Themes with Source, References (Theme-8)

“Duplicates are purchased if required in bulk, and outdated items are kept for some years; if after many years they are not issued, they are weeded with approval.”

“We keep track of demands and circulation stats; weeding is performed.”

“Weeding is rare and mostly ad-hoc.”

4.5.8.2 Interpretation

Evaluation and deselection are present in practice but implemented unevenly across campuses. This unevenness appears to reflect resource and staff time constraints and is consistent with middling quantitative responses on the item about evaluation/weeding alignment with academic needs.

International benchmarks recommend continuous assessment cycles (IFLA, 2017); thus, this remains a developmental area.

4.5.9 Theme 9: User Needs and Service Orientation

4.5.9.1 Analytic Summary

Theme 9 emphasized the strong relationship between collection development, the needs of the users, and quality service. Faculty expectations, especially regarding access to updated materials, were reported to have risen, especially by librarians. Nonetheless, there are only systematic feedback mechanisms from users. The library receives most of the feedback when the issue arises, not via established methods of feedback like periodic surveys or liaison meetings. The participants had an agreement that the collection development process would be more reactive and relevant to the user needs when the working process would be supplemented with the regularly performed user needs assessment and satisfaction reviews. The theme is a continuation of previous studies on collaboration and procurement issues, which proved that user requirements could be

solved only when there was alignment between communication, budgeting, and workflow processes. Several librarians highlight those hierarchical structures slow processes, and libraries are not included in higher-level planning.

Although not explicitly coded as a separate objective, several overlapping references indicate librarians' concern for aligning collections with dynamic user needs; evidence of a shift toward a user-centered philosophy consistent with Johnson (2018).

Table 4.24: Sub-Themes with Source, References (Theme-9)

Name	Sources	References
Ensuring Collection Relevance	11	11
Handling User Requests	11	11
Insufficient collection assessment tools and techniques	10	10
Monitor usage statistics for making collection decisions	11	11
Tools for Collection Assessment	11	11

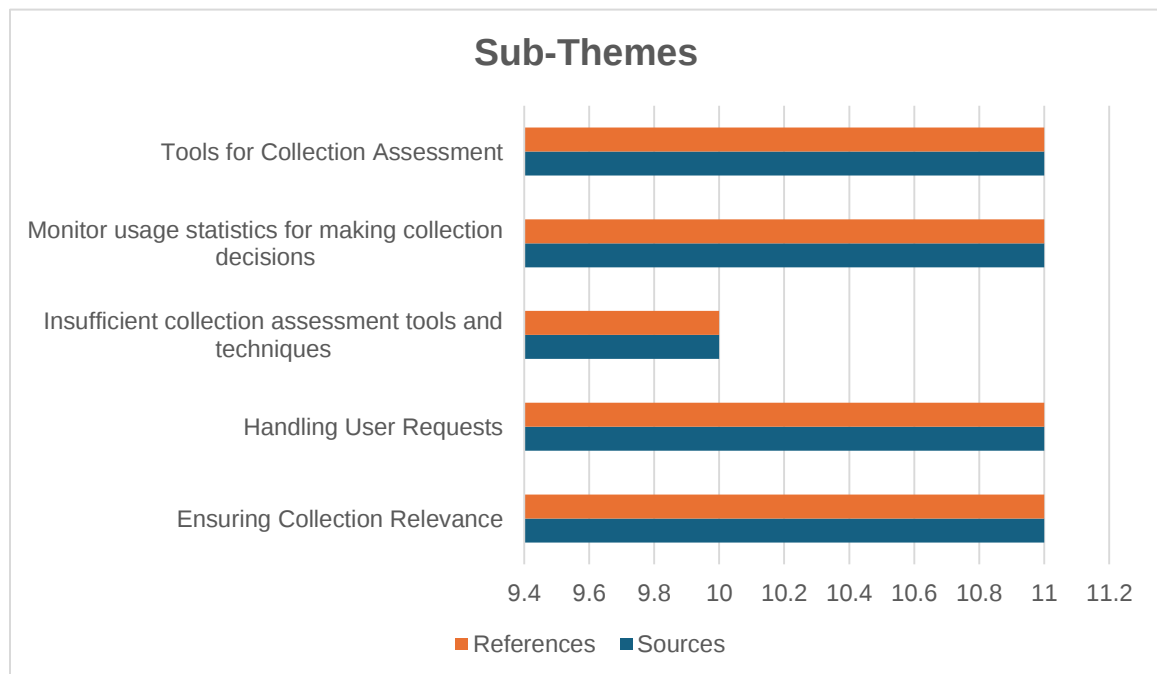


Figure 4.19: Sub-Themes with Source, References (Theme-9)

The qualitative results are consistent with the theoretical framework of Johnson, who considers collection development a cyclic and ongoing process that includes policy formulation, selection, evaluation, and feedback. The findings, however, show that although there are operational practices, there is a weak feedback mechanism between evaluation and policy improvement. This implies that the practice of collection development at NUST is somewhat representative of theoretical concepts, but institutional and administrative constraints limit the practice.

4.6 INTEGRATION AND TRIANGULATION

To enhance the triangulation process, the qualitative themes were compared with corresponding quantitative indicators. Concordance was achieved when the two data sets reported a similar pattern, e.g., lack of policy awareness or slowness in the procurement process. There was partial confirmation of the results because quantitative data showed moderation in satisfaction, whereas qualitative stories showed more troublesome operational issues. It was found that divergence occurred in these areas in which faculty rated processes positively, but where the interview data indicated disparities in the practical implementation. The systematic comparison will make sure that the synthesis of findings is clear and is evidenced by both sources of data. The Matrix Coding Query (NVIVO) and quantitative indicators were used to create a convergence codification Matrix.

Table 4.25: Triangulation & Matrix Coding

Quantitative Finding	Corresponding NVivo Themes	Relationship	Interpretation
Moderate policy awareness (M = 3.45)	Theme 1: Policy awareness	Agreement	Both faculty and librarians recognize existence but limited circulation
Faculty participation (M = 3.74)	Theme 4: Collaboration	Agreement	Faculty recommendations actively sought; librarians facilitate
Low participation in policy revision (M = 3.15)	Theme 5: Empowerment	Agreement	Faculty excluded from revision; librarians desire greater authority
Challenge scores (M = 2.92)	Theme 6: Procurement & Budget	Strong convergence	Operational bureaucracy primary constraint
Mixed responses on e-resources	Theme 7: E-Resources	Partial agreement	Policy mentions e-resources; practice lags
Neutral responses on evaluation	Theme 8: Weeding/Evaluation	Agreement	Ad-hoc evaluation confirmed qualitatively

Divergence was also found in the area of collection practices: faculty rated the effectiveness of the acquisition processes as moderately positive (e.g., Q22 M = 3.57), whereas librarians noted that they experienced delays in the procurement processes constantly because of procurement regulations. This will imply that faculty may feel that the system is working well, but librarians are facing some practical bottlenecks that are not visible to the faculty.

Quantitative breadth and qualitative depth together explain policy-practice gaps, as shown by the triangulation (Denzin, 2017): quantitative breadth and qualitative depth complement each other.

4.7 SUMMARY ANSWERS TO RESEARCH QUESTIONS

4.7.1 RQ1 & RQ2

NUST libraries have a formal collection development policy and established acquisition workflows, but have inconsistent dissemination and periodic review, and partial policy coverage (e-resource management, analytic monitoring).

The major limiting factors include budget constraints, the complexity of procurement, and the lack of institutional authority over the librarians, which were confirmed by quantitative answers as well as NVivo coding.

4.7.2 RQ3

Triangulated evidence shows that there is congruency between faculty recommendations and librarian facilitation on an operational level, but that institutional bottlenecks (procurement, limited analytics capacity) make responsive collection development difficult. These findings are dampened by the marginal reliability of certain subscales of the survey and the sample based on one institution.

Altogether, a combination of quantitative trends and qualitative knowledge allows for the gaining of a complete picture of the practices of collection development within the institution. The eleventh interview reached data saturation since no new ideas were developed. The research was conducted in a strict mixed-method format, where the quantitative trends were explained and detailed by qualitative data. Even though the paper employed single researcher coding and descriptive statistics, the choices were aligned with the process of exploration of the research design. Results in this chapter

directly respond to all the research purposes and are the foundation of the suggestions in the following chapter.

4.8 LIMITATIONS

- Quantitative findings are based on 233 valid cases; small sub-samples (e.g., professors) limit inferential power.
- NVivo results depend on coder interpretation; although coding reliability was maintained through iterative checking, some subjectivity is inherent.
- The study focused on a single university system, limiting generalizability beyond comparable contexts.

4.9 SUMMARY OF CHAPTER

This chapter integrated quantitative and qualitative evidence to depict the real-world functioning of collection development practices at NUST. Key insights include:

- Existence but limited communication of collection development policies.
- High faculty involvement in selection but minimal involvement in policy revision.
- Librarians serve as central facilitators but are constrained by bureaucracy and budgets.
- There is a need for enhanced digital collection analytics and continuous evaluation cycles.

The following chapter will explain these results as per past literature, offer strategic suggestions, and present policy suggestions as to how the collection development structures in the NUST libraries can be enhanced.

CHAPTER FIVE

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.1 OVERVIEW

The chapter gives an extensive presentation of the most prominent findings of Chapter 4 in relation to the study objectives, the theoretical framework, and the previous literature. It provides a summary of the research, the key findings, and the conclusions made under the impact of the research findings. The chapter outlines the practical and theoretical implications of the research, gives recommendations as to how the collection development practices in NUST libraries should be enhanced, and provides potential future research directions. The general aim is to issue the interpretation of what the results will imply to collection development policy, practice, and professional roles in an academic library setting.

This chapter then presents:

- A comprehensive triangulation of results,
- A conceptual model illustrating the relationships between policy, practice, and challenges,
- Conclusions drawn from the findings,
- Implications for institutional practice, theory, and policy,
- and detailed short-term and long-term recommendations for improving collection development at NUST.

The chapter concludes with suggestions for future research.

5.2 SUMMARY OF THE STUDY

The research study has addressed the question of the planning, implementation, and experience of collection development in the NUST library system. A mixed-method approach was used to gather data by employing a designed questionnaire to interview 233 faculty members and a semi-structured interview with eleven librarians processed using NVivo. A survey questionnaire was used in the study, where 233 faculty members were given a structured questionnaire based on the different schools, different disciplines and different ranks in academia. The questionnaire was able to gauge awareness and access to the collection development policy, the faculty participation in resource recommendation, perception of the librarian's role, satisfaction with communication, and challenges that could be perceived, including delays in procurement and budget constraints. NVivo was used to analyze the semi-structured interview with eleven librarians. The creation of nodes was purpose-oriented and was aimed at achieving the objectives of the study: Collection Development Policy, Collection Development Practice, Role of Librarians, Challenges in Collection Development. NVivo coding generated node summaries, coverage statistics, thematic patterns, and a matrix-coding query displaying co-occurrence between challenges and policy issues. Johnson Collection Development Theory informed the study since it highlights the strategic aspect of policy, assessment of user needs, collaboration, evaluation, and allocation of resources in the development of balanced and relevant academic library collections. By integrating the two sets of data, the research was able to unveil more than the formal designs of collection development at NUST, but also the realities and challenges of everyday realities of professionalism of the

librarians and the teaching staff. In general, the findings revealed that there is a well-established system with substantial faculty participation in resource recommendation, and that the librarians are significant in facilitating their roles. Nevertheless, issues like low budgets, delays in procurement, disproportionate policy distribution, and inadequate management of digital resources are the main concerns that impact performance.

5.3 MAJOR FINDINGS AND DISCUSSION OF THE STUDY

In this section, the study findings have been discussed in detail in relation to the research objectives, theoretical framework, and the existing literature. It goes beyond description to make sense of the results in a wider academic and institutional perspective. The main findings from the combined quantitative and qualitative results are as follows:

5.3.1 Awareness and Communication of Policy

The analysis revealed that despite NUST having a collection development policy, it has little circulation and accessibility. A lot of members of the faculty knew little to nothing about the specifics of the policy, and some librarians indicated that the policy is not widely distributed and not actively revised. This had a direct impact on faculty involvement in policy change.

5.3.2 Faculty Participation in Collection Development

The faculty also actively prescribes books and library resources, and the librarians usually accept their prescriptions. Nonetheless, the level of faculty engagement in policy development and amendment is low. This demonstrates that participation is operational but not strategic.

5.3.3 Operational Procedures and Procurement

The collection development process in NUST has a systematic workflow with the faculty recommendations on the one hand and the cataloging and shelving on the other. Although this structure guarantees accountability, it is usually characterized as slow and excessively bureaucratic, primarily because of the need to do multi-vendor quotation. This contributes highly to delays in the acquisition of new materials. Librarians continually cited the need to have multi-vendor quotes, extended approval timelines, administrative bottlenecks, and inflexible procurement policies. The factors lead to time wastage on teaching and research.

5.3.4 Role and Empowerment of Librarians

Librarians indicated that they worked more as facilitators when it came to the process of collection development. A large number of them possess subject knowledge and professional training; they have limited decision-making authority. The complaints raised by many concerned the lack of input in budgetary allocation, inadequate influence in policy formulation, and being given a weak identity as academic professionals.

These matters influence motivation and lower the efficiency of the institution in making decisions.

5.3.5 Challenges Faced by Libraries

The strongest challenge that was observed on all campuses was budget constraints. The slowness of the procurement procedures, the scarcity of e-resource licenses, and the

lack of tools to measure the usage are the factors that also do not contribute to the timely growth of collections and digitalization.

5.3.6 E-Resource Management

Although the policy addresses both print and digital resources, e-resource acquisition and evaluation practices vary across campuses. The librarians reported on the unavailability of tools, the ability to staff, and uniform standards of handling digital collections.

5.3.7 Weeding and Collection Evaluation

It was also discovered that weeding is not done systematically and is normally done when there is space or when the items are obviously old. No official weeding schedule is established, even though the international standards assert the importance of weeding to ensure relevance.

5.4 ANALYSIS OF THE FIRST RESEARCH OBJECTIVE

To examine existing collection development policies and practices, as well as the roles of librarians and faculty members, consistent with Peggy Johnson's emphasis on policy-driven collection development.

5.4.1 Policy Existence vs Policy Engagement

NUST has an organized acquisition process and a formal collection-development policy, according to the findings. Johnson's theoretical focus on the necessity of precise rules to aid in budgeting and selection is in line with this. Nonetheless, the faculty's lack

of knowledge about the policy points to a gap between the formulation and dissemination of policies. According to past research, a policy is only successful if it is well explained, updated frequently, and comprehended by all parties involved.

5.4.2 Collaborative Selection Practices

At the item-selection level, faculty participation is high, which is consistent with standards where faculty members, who are subject matter experts, are essential in finding pertinent items. They, however, participate little in broader collection-development planning. As a result, there are fewer chances for cooperative policy improvement, and the alignment between changing academic programs and library resources is weakened.

5.4.3 Librarian Roles and Professional Identity

When it comes to handling acquisitions, evaluating requests, and organizing the process, the role of librarians is essential. However, librarians stated lack of decision-making authority suggests an unbalanced approach to empowerment and accountability. Librarians must have enough power to direct collection development decisions based on user demands, financial constraints, and professional judgment, according to professional literature. According to the findings, librarians at NUST need to be more involved in strategic-level decisions like budget discussions, policy revisions, and digital resource planning.

5.4.4 Evidence-Based Practice vs. Traditional Practices.

NUST librarians use recommendations by faculty members, simple circulation figures, and user requests. Nevertheless, the more sophisticated evidence-based tools,

including COUNTER usage reports, citation analysis, e-resource analytics, and patron-driven acquisition data, are not fully utilized. These were the boundaries that informed decision-making.

5.5 RESEARCH OBJECTIVE TWO'S DISCUSSION

To determine the key issues that influence the effective collection-development processes in NUST, with alignment to the Peggy Johnson's theory.

5.5.1 Budget Limitations

These core findings of the study, restricted funding, procurement obstacles and lack of access to e-resource management systems are consistent with those of other developing country academic libraries. Almost every librarian highlighted budgetary limitations, which were also reflected in faculty survey statements. This is an example of structural problem, which affects all the collection development cycle, such as the purchasing power or ability to update or diversify the materials.

5.5.2 Procurement Complexity

The other major hindrance was the procurement limitations, such as multi-vendor quotation and long approval processes. Such processes fail to keep a check on resource acquisition despite ensuring accountability. These delays may affect teaching and research activities, especially when there is a need to access urgent resources or publications.

5.5.3 E-Resource Limitations

Digital collections are associated with extra challenges. The lack of staff training and the lack of access to usage metrics were listed several times. Investment usefulness and worth might be minimal in a time when digital information is gaining more significance, when no frequent review of e-resources is done.

5.5.4 Weak Weeding and Evaluation Practices.

Librarians noticed the absence of formal norms and schedules, which resulted in problems with weeding and assessment. This can be a challenge because continuous assessment is required to maintain relevance, control space, and ensure that it remains consistent with scholarly advancement.

5.6 CONCEPTUAL MODEL DERIVED FROM FINDINGS

The following conceptual model describes how collection development functions at NUST:

5.6.1 Components

- Policy Foundation

Written, but limited dissemination.

- Collaborative Selection

Faculty recommend; librarians coordinate.

- Operational Workflow

Formalized but rigid, procurement challenges.

- Resource Constraints

Budgets, digital tools, staff capacity.

- Outcomes

Partial alignment with academic needs, slow acquisition speed, uneven digital development.

5.7 STUDY CONCLUSION

Even though NUST has a working model of collection development, the study concludes that policy and practice are widely disconnected: policy is present but not appropriately disseminated; faculty perform an essential role in policy recommendations but cannot be fully involved in policy formulation; librarians perform important operational tasks but have no strategic powers, and are constrained in resources. The budgeting, procurement protocols, and the restriction of digital resources that are created and enforced by the system are more influential on the effectiveness of collection development than the incompetencies or the absence of skills or efforts. The quality, relevance, and timeliness of collection development would be significantly improved through modernization of procurement practices, empowerment of librarians, communication, and the inclusion of evidence-based approaches to improve the quality, relevance, and timeliness of collection development.

5.8 ACHIEVEMENT OF RESEARCH OBJECTIVES

The study achieved its first objective by systematically examining existing collection development policies, practices, and roles of librarians and teaching staff at NUST through surveys and librarian interviews.

The second objective was achieved by identifying key challenges such as budget constraints, procurement complexities, limited policy dissemination, and digital resources management limitations through triangulation of quantitative and qualitative data.

Together, these provided an empirical foundation for understanding both operational realities and strategic gaps in collection practices at NUST libraries.

5.9 IMPLICATIONS OF THE STUDY

5.9.1 Practical Implications

5.9.1.1 Enhanced Policy Communication

Policies are to be publicly posted, revised frequently, and made available to all stakeholders.

5.9.1.2 Greater Librarian Empowerment

Librarians must be allowed greater power when it comes to making selections, budget planning, and management of digital resources.

5.9.1.3 Evidence-Based Choice

It must have systematic usage statistics, circulation, and digital analytics.

5.9.1.4 More Productive Procurement

Effective procurement procedures that are accountable would reduce delays.

5.9.1.5 Staff Development

The current library services need staff to be educated in the areas of e-resource assessment, licensing, and data analytics.

5.9.2 Theoretical Implications

- The research supports the thesis proposed by Johnson, according to which collection development is a living process that involves users and must be evaluated and planned regularly.
- It emphasizes the significance of policy effectiveness that is not limited to content but also communication, accessibility, and the situation within the organization.
- The results support the significance of role definition and mutual decision-making between academic personnel and librarians.

5.9.3 Institutional Implications

- Libraries should have more say in the budget decisions.
- Enhanced efficiency can be achieved through reforming procurement.
- A systematic and transparent communication of policies should take place.

5.9.4 Managerial Implications

Managers should introduce performance indicators such as:

- Time-to-acquisition,
- Usage ratios,
- Weeding frequency.

5.10 RECOMMENDATIONS OF THE STUDY

The recommendations provided below are based on the empirical results of the research, in particular, the gaps in policy awareness, efficiency in procurement, the management of digital resources, and the cooperation of faculty and librarians identified. Based on the triangulated findings of this study, the following recommendations are proposed:

5.10.1 Strengthen Policy Communication and Review

- The collection development policy should be easily accessible to all faculty members through digital platforms (or any other means).
- Regular policy reviews and updates should be carried out involving faculty, to ensure alignment with academic needs, along with librarians and administrators.
- The policy must have straightforward guidelines that the faculty can use, understand, access, and contribute to easily.

5.10.2 Enhance Librarian Autonomy and Professional Roles

- Engage librarians in the budget-making and strategic planning committees, thus giving greater professional autonomy in the collection development process.
- Enlarge their jurisdiction in terms of resource choice and criteria, particularly of e-resources.
- Train library employees in terms of leadership.

5.10.3 Improve Procurement and Acquisition Efficiency

- Explore procurement models that maintain transparency but reduce delays, such as framework agreements with approved vendors.
- Digitize the requisition and approval workflow to shorten processing time.

5.10.4 Technological / Digital Collection Development

- Implement devices & tools for digital resource analysis, to strengthen the evaluation mechanism for electronic resources.
- Train the staff on licensing, negotiation, and preservation/conservation.
- Extension of subscriptions through curriculum requirement and usage information.

5.10.5 Establish a Structured Weeding and Evaluation Plan

- Develop guidelines aligned with international standards (e.g., CREW method).
- Implement periodic evaluation cycles for both print and electronic materials.

5.10.6 Strengthen Faculty-Librarian Collaboration

- A structured communication mechanism between librarians and faculty should be developed.
- Organize regular meetings and orientation sessions to promote a shared understanding of resource needs.
- Faculty feedback should be incorporated into the selection process.

5.11 SUGGESTIONS FOR FUTURE RESEARCH

The future research directions emerging from this study are intricately linked to its identified limitations, particularly its focus on a single institution, reliance on self-reported data, and cross-sectional design. Addressing these limitations can enhance the depth, validity, and generalizability of future investigations in the field of collection development.

The research presents several possibilities for further investigations:

- To address the limitation of a single-institution scope, future research may conduct comparative studies across multiple public and private universities in Pakistan or South Asia to enhance generalizability.
- Given the cross-sectional nature of the present study, longitudinal research may be undertaken to examine the long-term impact of collection development policy reforms.
- To overcome reliance on self-reported results, future studies may integrate objective usage analytics and cost-benefit analyses of electronic resource subscriptions.
- Future research may explore user experience by examining students' perceptions of library collections and digital resources to provide a more comprehensive user-centered perspective.
- A study on the procurement models, contrasting between the centralized and decentralized procurement approaches at academic libraries to identify more efficient practices.

Future research can address the limitations of this study, which uses self-reported information by adding usage analytics and document analysis. The limitations of this study, especially the use of self-reported data and a single institution, indicate potential directions of future research. Generalizability could be improved through comparative studies in several universities, and longitudinal research could be conducted to investigate the long-term effects of policy changes. Future research can also integrate administrative views and objective usage data to offer a more in-depth view of collection development practices.

These directions will help extend the findings of the present study and contribute to a more comprehensive understanding of collection development practices in academic libraries.

5.12 SUMMARY OF THE CHAPTER

This chapter has analyzed and interpreted the study findings with respect to the objectives and theoretical framework of the research. It was found that NUST has collection development operating processes but has challenges in communication, resourcing, digital transformation, and institutional processes. Recommendations for what the policy should be like include that the policy be widespread, empower the librarians, they should handle the digital transformation in a better way, and simplify the procurement process. The chapter also described the implications and the future research directions.

REFERENCES

- Aguiñaga, J., & McKennon, E. (2025). Leveraging diverse knowledge to support collection development: Maximizing student engagement and community resource value in varied community college settings. In *The Community College Library: Collections and Technical Services*: Association of College and Research Libraries (ACRL). Retrieved from <https://alastore.ala.org/community-college-library-collections-and-technical-services>
- Ameen, K., & Haider, S. J. (2007). Evolving paradigm and challenges of collection management (CM) in university libraries of Pakistan. *Collection Building*, 26(2), 54-58. <http://doi.org/10.1108/01604950710742086>
- Ameen, K. (2006). University libraries in Pakistan and status of collection management policy: Views of library managers. *Library Collections, Acquisitions, and Technical Services*, 30(3), 154-161. <https://doi.org/10.1016/j.lcats.2006.12.003>
- Ameen, K. (2008). Barriers in collection sharing among libraries of Pakistan: University library managers' viewpoint. *LIBRES*, 18(1), 1-11. <https://doi.org/10.32655/LIBRES.2008.1.1>
- Ameen, K., & Jalal Haider, S. (2007). Book selection strategies in university libraries of Pakistan: An analysis. *Library Collections, Acquisitions, and Technical Services*, 31(3), 208-219. <https://doi.org/10.1016/j.lcats.2007.11.002>
- Arda, A., Marni, M., & Ramadayanti, R. (2024). Case study of the role of librarians in collection development at the public library service building of Gowa regency. *Inkunabula: Journal of Library Science and Islamic Information*, 3(1), 16-25. <https://doi.org/10.24239/inkunabula.v3i1.2959>
- Ameen, K. (2009). Needed competencies for collection managers and their development: Perceptions of university librarians. *Library Management*, 30(4-5), 266-275. <https://doi.org/10.1108/01435120910957922>

- Arshad, A., Ameen, K., & Arshad, S. (2021). Collection development practices and use of print books in academic libraries of Pakistan. *Qualitative and Quantitative Methods in Libraries*, 10(1).
- Ashilungu, M., & Onyancha, O. B. (2024). Faculty–librarian cooperation in collection development at the University of Namibia library, with special reference to electronic resources. *Collection and Curation*, 43(1), 8-18. <https://doi.org/10.1108/CC-11-2022-0041>
- Baswapuram, R. G. (2020). Collection development methods and policies in academic libraries. *Anveshana's International Journal of Research in Education, Literature, Psychology and Library Sciences*, 5(6).
- Heisserer-Miller, R. (2023). A community curated collection in an academic library: Empowering students through collection development. *NASIG Proceedings*, 37. <https://doi.org/10.3998/nasig.4031>
- Jahnke, L., Tanaka, K., & Palazzolo, C. K. (2022). Ideology, policy, and practice: Structural barriers to collections diversity in research and college libraries. *College & Research Libraries*, 83(2). <https://doi.org/10.5860/crl.83.2.166>
- Jamison, A., & McNamara, E. (2025). Let's talk about diversity: A content analysis of school library collection development policies. *Children & Libraries*, 23(1). <https://doi.org/10.5860/cal.23.1.17>
- Johnson, P. (2018). *Fundamentals of Collection Development and Management* (4th ed.). Chicago: American Library Association.
- Kate, A., Keghtor, G., & Terkimbi, D. (2022). Effect of poor implementation of collection development policy in federal polytechnic library, Nasarawa state. *International Journal of Engineering Business and Social Science*, 1, 64-70. <https://doi.org/10.58451/ijebss.v1i02.25>

- Khan, A., Zareef, M., & Ahmed, P. K. (2023). Issues and perspectives of public libraries in Pakistan: A review. *LIBRI*, 73(2), 111–123. <https://doi.org/10.1515/libri-2021-0112>
- Khan, G., & Bhatti, R. (2024). Selection of library materials in the university libraries of Pakistan: A survey of Khyber Pakhtunkhwa. *Collection Management*, 49(1-2), 82-102. <https://doi.org/10.1080/01462679.2024.2335385>
- Khan, G., & Bhatti, R. (2016). An analysis of collection development in the university libraries of Pakistan. *Collection Building*, 35(1), 22-34. <https://doi.org/10.1108/CB-07-2015-0012>
- Khan, G., & Bhatti, R. (2021). Collection development and management in the university libraries of Pakistan: A survey of users' satisfaction. *The International Information & Library Review*, 53(3), 239–253. <https://doi.org/10.1080/10572317.2020.1830739>
- Laure, R. A. (2024). Practices and challenges in selection and acquisition of collections among academic libraries. *International Journal of Research and Innovation in Social Science*, VIII(VIII), 2550–2562. <https://doi.org/10.47772/ijriss.2024.8080194>
- McCord, D., Cassady, S., Roman, P., Cato, J., & Mantz, E. (2025). Sustainability in library collection development: introducing a green audit template. *Canadian Journal of Academic Librarianship*, II, 1-18. <https://doi.org/10.33137/cjal-rcbu.v11.43852>
- Mojapelo, M., & Mains, L. (2025). Digitising museum collections: Balancing freedom of information and copyright requirements at a South African Museum. *South African Journal of Libraries and Information Science (SAJLIS)*, 91(2), 1-9. <https://doi.org/10.7553/91-2-2351>

- Moustapha, A. A., & Abubakar, J. B. (2023). Develop collections as a panacea to promote effective use of library resources in academic libraries. *American Journal of Information Science and Technology*, 7(1), 9-19. <https://doi.org/10.11648/j.ajist.20230701.12>
- Mushtaq, M., & Shah, M. A. (2023). Collection development policies and practices: A survey of public libraries in Punjab, Pakistan. *Journal of Social Sciences Review*, 3(1), 519–532. <https://doi.org/10.54183/jssr.v3i1.201>
- Mwilongo, K. J., Luambano, I., & Lwehabura, M. J. F. (2020). Collection development practices in academic libraries in Tanzania. *Journal of Librarianship and Information Science*, 52(4), 1152-1168. <https://doi.org/10.1177/0961000620907961>
- Oguntuase, M. O., Okhakhu, D. O., & Fasae, J. K. (2025). Leadership styles and collection development practices of librarians in academic libraries: A case of Ekiti state, Nigeria. *Collection and Curation*, 44(2), 37-44. <https://doi.org/10.1108/CC-01-2024-0001>
- Okolo, S., Ejovwokoghene, E., Ugboh, P., & Ngbo, D. (2019). Collections and collection development exercise in libraries: A perspective in view. *Library Philosophy and Practice*, 2019. <https://digitalcommons.unl.edu/libphilprac/2244/>
- Olubiyo, P. O. (2023). Collection development in academic libraries: Challenges and way forward. *International Journal of Library and Information Science Studies*, 9(3), 1-9. <https://doi.org/10.37745/ijliss.15/vol9n319>
- Oza, N. D., & Patel, P. Y. (2020). Strategies for collection development in academic libraries. *Indian Journal of Information Sources and Services*, 10(2), 35–39. <https://doi.org/10.51983/ijiss.2020.10.2.489>

- Ratkanthiwar, M. S., & Prakashe, D. V. (2023). A comprehensive review of collection development policies in libraries. *Journal of Namibian Studies: History Politics Culture*, 34(1), 2576-2586. <https://doi.org/10.59670/nsbhby57>
- Rutherford, E. (2022). A content analysis of collection development policies in American art museum libraries. *Art documentation: Journal of the Art Libraries Society of North America*, 41, 97-119. <https://doi.org/10.1086/719379>
- Singh, H., & Mahajan, P. (2022). Research scholars and faculty members perception and participation in collection development of university libraries of Northern India – A comparative study. *Global Knowledge, Memory and Communication*, 71(6/7), 619-647. <https://doi.org/10.1108/GKMC-01-2021-0001>
- Smith, Andrew J. M. (2024). Collection policies and requests for reconsideration in academic libraries – A Kansas Perspective. *Kansas Library Association College and University Libraries Section Proceedings*: 14(1). <https://doi.org/10.4148/2160-942X.1099>
- Uwandu, L., & Okere, C. (2022). Collection development in libraries. In *Basic Concepts of Library Practice* (pp. 74-89): Supreme Publishers.
- Vandana. (2020). Collection development in libraries: Especially academic library. *IP Indian Journal of Library Science and Information Technology*, 5(2), 83-85. <https://doi.org/10.18231/j.ijlsit.2020.018>
- Warraich, N. F., Malik, A., & Ameen, K. (2018). Gauging the collection and services of public libraries in Pakistan. *Global Knowledge, Memory and Communication*, 67(4/5), 244-258. <https://doi.org/10.1108/GKMC-11-2017-0089>
- Yakubu, B. (2023). Collection development policy: A panacea for collection development challenges in university libraries in Africa. *Ghana Library Journal*. 28(1), 15-25. <https://doi.org/10.4314/glj.v28i1.2>

- Yakubu, B., Mohd Khalid, Y. I. A., & Samsuddin, S. F. (2022). Assessing academic librarians' awareness on the importance and knowledge of collection development policy in Nigeria. *Malaysian Journal of Library and Information Science*, 27(1), 15–34. <https://doi.org/10.22452/mjlis.vol27no1.2>
- Zabala, J. T., & Natividad, K. V. (2024). Revisiting access patterns and COUNTER statistics in evaluating “Big Deals”: Future directions on the collection development of electronic resources in DLSU libraries. *PAARL Research Journal*, 10(1), 1-18. Retrieved from <https://ejournals.ph/article.php?id=25407>

Appendix A

QUESTIONNAIRE

Section A: Demographic Information

1. Gender: 1. Male ☐ 2. Female ☐
3. Prefer not to say ☐
-
2. Age Group: 1. under 30 years ☐ 2. 30–39 years ☐
3. 40–49 years ☐ 4. 50 and above ☐
-
3. Designation: 1. Lecturer ☐ 2. Assistant Professor ☐
3. Associate Professor ☐ 4. Professor ☐
5. Other (Please Specify): _____
-
4. Department/School/Institute: _____
-
5. Discipline/Field: _____
-
6. Teaching Experience: 1. Less than 1 year ☐ 2. 1–5 years ☐
3. 6–10 years ☐ 4. More than 10 years ☐

Measurement Scale:

1	2	3	4	5
Strongly disagree	Disagree	Neutral	Agree	Strongly Agree

Section B: Collection Development Policy

No	Statements	Scale				
7.	I am aware that the NUST library has a written collection development policy.	1	2	3	4	5
8.	The library's collection development policy supports academic programs and research needs.	1	2	3	4	5
9.	The policy is shared with academic departments when updated or revised.	1	2	3	4	5
10.	The collection development policy includes both print and electronic resources.	1	2	3	4	5
11.	The policy reflects the changing needs of the teaching and research environment.	1	2	3	4	5
12.	I have access to the collection development policy.	1	2	3	4	5
13.	Faculty input is considered during the policy review process.	1	2	3	4	5
14.	The policy supports the development of subject-specific collections.	1	2	3	4	5
15.	The library clearly communicates the objectives of its collection development policy.	1	2	3	4	5
16.	The policy promotes diversity and academic freedom in selecting materials.	1	2	3	4	5

Section C: Collection Development Practice

No	Statements	Scale				
17.	The library regularly consults faculty members before acquiring new materials.	1	2	3	4	5
18.	My recommendations for library resources are usually accepted.	1	2	3	4	5
19.	The library responds effectively to academic needs through new acquisitions.	1	2	3	4	5
20.	There is a proper system in place for suggesting new titles to the library.	1	2	3	4	5
21.	The library updates its collection in line with changes in the curriculum.	1	2	3	4	5

22.	The process of selecting and acquiring materials is efficient and timely.	1	2	3	4	5
23.	The library maintains a balance between core readings and research-level resources.	1	2	3	4	5
24.	The existing collection sufficiently supports my teaching requirements.	1	2	3	4	5
25.	I have been informed about how to request materials for the library collection.	1	2	3	4	5
26.	The library considers students' academic needs while acquiring resources.	1	2	3	4	5

Section D: Roles of Teaching Faculty in Collection Development

No	Statements	Scale				
27.	I regularly recommend books, journals, or digital resources for the library.	1	2	3	4	5
28.	I feel that my role in collection development is important and valued.	1	2	3	4	5
29.	I collaborate with library staff to ensure relevant materials are acquired.	1	2	3	4	5
30.	I have participated in departmental or university-level decisions about library acquisitions.	1	2	3	4	5
31.	I am satisfied with the level of input I am allowed in developing the library collection.	1	2	3	4	5
32.	I am familiar with the procedure for submitting acquisition requests to the library.	1	2	3	4	5
33.	The library encourages faculty participation in collection development activities.	1	2	3	4	5
34.	My department has a formal mechanism for reviewing the adequacy of library resources.	1	2	3	4	5
35.	I would be willing to participate more actively in library planning if invited.	1	2	3	4	5
36.	Teaching staff should play a stronger role in collection development at NUST libraries.	1	2	3	4	5

Section E: Challenges Faced during Collection Development

No.	Statements	Scale				
		1	2	3	4	5
37.	The library's collection development policy does not adequately support our teaching needs.	1	2	3	4	5
38.	Budget constraints limit the inclusion of essential teaching and research materials.	1	2	3	4	5
39.	Teaching faculty are not sufficiently involved in the material selection process.	1	2	3	4	5
40.	Communication gaps between librarians and faculty affect collection development effectiveness.	1	2	3	4	5
41.	The process of recommending and acquiring materials is too slow or bureaucratic.	1	2	3	4	5
42.	Faculty input in updating or revising the collection development policy is not actively sought.	1	2	3	4	5
43.	There is a lack of up-to-date electronic resources relevant to my academic discipline.	1	2	3	4	5
44.	Teaching faculty are not informed about the existing collection development guidelines.	1	2	3	4	5
45.	The current system for evaluating and weeding materials does not align with academic needs.	1	2	3	4	5
46.	There is limited transparency in how collection development decisions are made.	1	2	3	4	5

Appendix B

INTERVIEW GUIDE FOR LIBRARIANS

Section 1: Introduction & Consent

Greet the participant and thank them for their time.

Briefly introduce the purpose of the research:

"The purpose of this study is to explore the experiences and perspectives of librarians regarding collection development practices, policies, the role of library staff in supporting academic programs, and the challenges incurred in the process"

Request verbal or written consent to conduct and, if applicable, record the interview.

Reassure the participant of confidentiality and voluntary participation.

Section 2: Demographic Information

1. Gender
2. Age Group
3. Designation (Library Assistant, Librarian, Chief Librarian, etc.)
4. Department/School assigned (if applicable)
5. Years of experience in NUST libraries
6. Involvement in collection development activities (Yes/No)

Section 3: Collection Development Policy

7. Does your library have a documented collection development policy?
8. Were you involved in the creation or revision of the current policy?
9. How well do you think the policy aligns with the academic goals of NUST?
10. Does the policy address digital and electronic resources adequately?
11. How frequently is the policy reviewed or updated?
12. Are teaching faculty consulted when revising the policy?
13. Does the policy include guidelines for weeding or replacing materials?
14. How transparent is the policy to library users and faculty?
15. What challenges do you face in implementing the collection development policy?
16. What suggestions would you make to improve the policy?

Section 4: Collection Development Practice

17. Can you describe the typical procedure for acquiring new library materials?
18. How are user (faculty or student) requests handled in the acquisition process?

19. What criteria do you use to select materials?
20. Do you follow a specific budget allocation or priority system for different subjects?
21. How do you ensure the collection remains updated and relevant?
22. What tools or systems do you use for collection assessment?
23. How involved are faculty in ongoing collection development?
24. Do you monitor usage statistics for making collection decisions?
25. How do you handle duplicate or outdated materials?
26. What are the main constraints you face in collection development (e.g., budget, access, policy)?

Section 5: Role of Librarians in Collection Development

27. What is your specific role in the collection development process?
28. Do you collaborate with faculty for resource selection?
29. Are you responsible for selecting materials for specific subject areas?
30. How often do you interact with academic departments regarding library resources?
31. Do you serve on any committees related to library acquisitions or resource planning?
32. What skills or knowledge do you consider essential for effective collection development?
33. Do you receive any training related to collection development practices?
34. What are the biggest challenges in fulfilling your role in collection development?
35. How do you evaluate the effectiveness of your contributions to collection development?
36. What recommendations would you offer to enhance the role of librarians in this area?

Section 6: Challenges Faced during Collection Development

37. The collection development policy is outdated and does not reflect the current academic needs of NUST.
38. Budget limitations significantly restrict the ability to acquire essential resources.
39. There is a lack of collaboration between librarians and teaching faculty in selecting materials.
40. The absence of regular training opportunities hinders my effectiveness in collection development.
41. Inadequate infrastructure and technology affect the acquisition and management of electronic resources.
42. Librarians have limited authority in decision-making related to collection development.
43. Faculty members do not actively participate in the collection development process.
44. The current collection assessment tools and techniques are insufficient or underutilized.

45. Delays in procurement and administrative processes slow down the acquisition of resources.
46. There is a lack of clear guidelines on the weeding and deselection of outdated or irrelevant materials.

Section 7: Closing

Invite the participant to share any final thoughts or insights.

Express gratitude for their time and valuable input.

Remind them about confidentiality and the follow-up process (if needed).

Appendix C

QEC PLAGIARISM REPORT



DIRECTORATE OF QUALITY ENHANCEMENT
UNIVERSITY OF PESHAWAR
Khyber Pakhtunkhwa, Pakistan

F/No: 2(3)/2025/DQE APCR/29224

Peshawar, the January 27, 2026

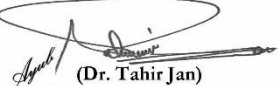
Anti-Plagiarism Test Certificate
for MS / M.Phil. / Ph.D. Thesis / Synopsis

Plagiarism Detection Software Used :	Turnitin.com	
Name of Scholar :	Mr. Tanveer Ahmad	
Certificate Title :	M. Phil Thesis	
Department / Institute / Centre :	Department of Library and Information Science, University of Peshawar	
Research Title :	Collection Development Practices in Libraries: Appraisal of Policies, and Challenges	
Turnitin Paper ID & Date :	2864737632 (Report generated on January 27, 2026, Evidence attached)	
Matching (Similarity) Index Found :	7 % (Seven Percent only)	
Word Count :	27506	
Comments :		
(Plagiarized / Not Plagiarized) :	Not Plagiarized	
Name & signature of Supervisor :	Dr. Asad Khan	

Head of Department / Institute / Centre :

Office Seal

Note: Technical Errors and Omissions are subject to be rectified


(Dr. Tahir Jan)
Deputy Director