

DEVELOPMENT AND MANAGEMENT OF ENGINEERING COLLEGE LIBRARIES IN KERALA

*Thesis submitted to the
University of Calicut in partial fulfilment of the
requirements for the award of the Degree of*

DOCTOR OF PHILOSOPHY IN LIBRARY AND INFORMATION SCIENCE

by

MANCHU O.

Under the guidance of

Dr. VASUDEVAN T. M.

Professor

Department of Library and Information Science

University of Calicut



**DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
UNIVERSITY OF CALICUT
2022**

DECLARATION

I hereby declare that the thesis entitled **Development and Management of Engineering College Libraries in Kerala** is the authentic record of research work carried out by me, for my Doctoral Degree under the supervision and guidance of Dr. Vasudevan T. M., Professor, Department of Library and Information Science, University of Calicut. This has not been previously submitted for the award of any diploma, degree, title or recognition.

University of Calicut
31. 12. 2022

Manchu O

**DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
UNIVERSITY OF CALICUT**



Dr. VASUDEVAN. T. M
Professor

Mob: 9446418742
e-mail: vasudevantm@uoc. ac. in

CERTIFICATE

I, **Dr. Vasudevan T. M.**, do hereby certify that the thesis entitled **Development and Management of Engineering College Libraries in Kerala** submitted to the University of Calicut, is a record of the bonafide study and research carried out by Ms. Manchu O. under my supervision and guidance. The report has not previously formed the basis for the award of a Degree, Diploma, Title or recognition.

Calicut University Campus
31. 12. 2022

Dr. Vasudevan T. M.
(Supervising Teacher)

ACKNOWLEDGEMENTS

Research is a long journey of tough challenges and it is indeed a moment of joy finally when a researcher sees light at the end. A large number of people contributed, personally and professionally, in my venture during research — my thanks and appreciation to all of them for being part of this journey and making this thesis possible.

At this moment of accomplishment I am greatly indebted to my research guide, Dr. Vasudevan T. M., Professor, Department of Library and Information Science, University of Calicut, who accepted me as his Ph. D. student and offered me continuous and never ending support for my research. He gave me the freedom to explore on my own and at the same time the guidance to recover when my steps faltered.

My earnest thanks to Dr. Mohamed Haneefa K., Professor and Head of the Department of Library and Information Science, University of Calicut for his cooperation and valuable support during the research. I would like to acknowledge with thanks the encouragement I received from Dr. Jalaja V., former Head, Department of Library and Information Science, University of Calicut. I am also grateful to all former teachers and non-teaching staff of the department for their kind support.

I extend my sincere thanks to Dr. Abdul Azeez T. A., University Librarian, C. H. M. K Library, University of Calicut, for his valuable suggestions. I respectfully remember all the library professionals in the CHMK library, especially Dr. Vinod V. M. and Dr. Dineshan Koovakkai, Dr. Sasi P. K and librarians in the department libraries for their kind cooperation and support. It will be abysmally incomplete if I do not mention the assistance and encouragement I received from Mrs. Sangeeta and Mr. Prasanth M., librarians, Department of Library and Information Science, University of Calicut.

I would like to place on record my deepest gratitude to Dr. Vahida Beegum T., Assistant Professor, Department of Library and Information Science, Farook College, Kozhikode for her kind cooperation and whole-hearted support in innumerable ways during the course of my study. I wish to express my sincere thanks to Dr. Sajesh T. A., Assistant Professor, Department of Statistics, St. Thomas College, Thrissur for his kind support for the statistical analysis of the data. I would like to express my

thankfulness to Mrs. Bessie Jane Mathew, for her valuable assistance to grammar and usage of this work. I also extend my thanks to all the engineering college librarians who formed the sample of the study for their cooperation.

It's my fortune to gratefully acknowledge the support of Dr. Joy Elamon, The Director General, Mr. Mathew Andrew Andrews, Assistant Director and all my fellow colleagues and friends in Kerala Institute of Local Administration, Thrissur. It will be grossly incomplete if I do not mention the assistance and encouragement I received from the IT section of KILA.

I wish to thank Mrs. Dhanya T. K., Mrs. Aswathi P., Mrs. Ajitha A., Mrs. Divya P., Mrs. Sreelatha K., Ms. Sajna K. P. and all other research scholars in the Department of Library and Information Science for their continuous support and cooperation. I would also like to express my sincere thanks to all other colleagues and friends who have given me constant support and inspiration over the years for the completion of this thesis.

I would like to express my deep and sincere gratitude to my family for their continuous and unparalleled love, help and support. I am forever indebted to my parents for giving me the opportunities and experiences that have made me who I am. They selflessly encouraged me to explore new directions in life and seek my own destiny. My heartfelt regards go to my father-in-law, mother-in-law for their love and pray for the success of my work. Let me post my special loving thanks to my dear sisters, brothers-in-law and sisters-in-law for their constant moral and emotional support.

I owe thanks to a very special person, my husband, for his patience, understanding and belief in my efforts. He is always around at times I thought that it is impossible to continue, he helped me to keep things in perspective that made the completion of this thesis possible.

And finally, I thank the Almighty for giving me the strength and patience to work through all these years so that today I can stand proudly with my head held high.

Manchu O

CONTENTS

Sl. No.	Contents	Page No.
	Declaration	
	Certificate	
	Acknowledgements	
	List of Tables	
	List of Figures	
	List of Abbreviations/Acronyms	
	Abstract	
Chapter 1	INTRODUCTION	1-49
1.1	Technical Education	1
1.2	Engineering Education in India	2
1.3	Engineering Education in Kerala	4
1.4	All India Council for Technical Education (AICTE)	5
1.5	National Board of Accreditation	6
1.5.1	Objectives of NBA	7
1.5.2	Purpose of Accreditation	8
1.5.3	Benefits and Significance of Accreditation	9
1.5.3.1	Benefits to Institutions	9
1.5.3.2	Benefits to Parents and Students	10
1.5.3.4	Benefits to Staff	10
1.5.3.5	Benefits to Employers	10
1.5.3.6	Benefits to Country	11
1.5.4	The Impact of Accreditation	11
1.5.5	Imperatives of Accreditation	12
1.5.6	Process of Accreditation through NBA	12
1.5.7	General Policies of Accreditation by the NBA	12
1.5.8	NBA Accreditation Criteria and Parameters	13
1.5.8.1	Accreditation Criteria	13
1.6	Engineering College Libraries	15
1.7	Development and Management of Engineering College Libraries	16
1.7.1	Library Resources	17

1.7.1.1	Physical Resources	17
1.7.1.2	Information Resources	17
1.7.1.3	Human Resources	20
1.7.1.4	Financial Resources	20
1.7.2	Services of the Libraries	21
1.7.3	Information and Communication Technology	22
1.7.4	Collection Development of Information Resources	25
1.7.5	Organisation and Management of Information Resources	27
1.8	Importance of Libraries in Engineering Colleges	31
1.9	NBA requirement of Library data in the Self Assessment Report (SAR)	32
1.10	Need and Significance of the Study	36
1.11	Statement of the Problem	38
1.12	Definition of Keyterms	39
1.12.1	Development	39
1.12.2	Management	39
1.12.3	Engineering College Library	40
1.12.4	Kerala	40
1.13	Objectives of the Study	40
1.14	Hypotheses of the Study	41
1.15	Scope and Limitations of the study	42
1.16	Organisation of the Thesis	44
1.17	Conclusion	45
Chapter 2	REVIEW OF THE LITERATURE	51-93
2.1	Introduction	51
2.2	Accreditation and Libraries	52
2.3	Library Resources and Services	55
2.4	ICT Infrastructure and Facilities	62
2.5	Collection Development, Organisation and Management of Library Resources	69
2.6	Conclusion	80
Chapter 3	METHODOLOGY	95-107
3.1	Introduction	95
3.2	Variables Used for the Study	95
3.2.1	Independent Variables	95
3.2.1.1	Category of NBA Accredited Engineering Colleges	95

3.2.1.2	Accreditation Status of Engineering Colleges	96
3.2.2	Dependent Variable	96
3.2.2.1	Library Resources and Services	96
3.2.2.2	ICT Infrastructure and Facilities	97
3.2.2.3	Collection Development, Organisation and Management	97
3.2.2.4	Impact of NBA Accreditation	98
3.2.2.5	Librarians Views on NBA Accreditation	98
3.2.2.6	Problems and Challenges for Further Development	98
3.3	Sample Design	99
3.3.1	Sample	99
3.3.2	Distribution of the Engineering Colleges	100
3.4	Data Collection Tools	101
3.5	Data Collection Procedure	103
3.6	Data Analysis Technique	104
3.7	Conclusion	105
Chapter 4	DATA ANALYSIS AND INTERPRETATIONS	109-311
4.1	Introduction	109
4.2	Library Resources and Services	109
4.2.1	Library Physical Resources	109
4.2.1.1	Separate Library Building, Area and Seating Capacity of the Libraries	110
4.2.1.2	Library Working Hours	114
4.2.1.3	Average Number of Users of the Library per Day	116
4.2.1.4	Library Sections	119
4.2.1.5	Furniture Available in the Libraries	123
4.2.1.6	Equipments Available in the Libraries	127
4.2.2	Information Resources	130
4.2.2.1	Information of Printed Resources Available in the Libraries	130
4.2.2.2	Growth of Print Resources in EC Libraries	135
4.2.2.3	Type of E-resources in the Libraries	147
4.2.2.4	E-resource Packages in the Libraries	150
4.2.3	Human Resources	155
4.2.3.1	Qualification of the Librarian in EC Libraries	156
4.2.3.2	Experience of the Librarian of EC Libraries	157

4.2.3.3	Librarian organising workshops/seminars/conferences for library professional	160
4.2.3.4	EC Librarians Attending Programs	162
4.2.3.5	EC Librarians' Membership in Professional Bodies	165
4.2.3.6	Information of Library Staff and Users	168
4.2.3.7	Proportion Between Library Staff and Users	173
4.2.3.8	Growth of Library Users in EC Libraries	176
4.2.4	Financial Resources	184
4.2.4.1	Sources of Finance in the Libraries	184
4.2.4.2	Information on the Budget Allocated for the Libraries	186
4.2.4.3	Growth of Budget in the Libraries	190
4.2.5	Information Services	199
4.2.5.1	Web based Services provided by the Libraries	204
4.3	ICT and Network Infrastructure Facilities in Libraries	210
4.3.1	Availability of ICT Tools	211
4.3.2	Availability of ICT Facilities	216
4.3.3	Network Infrastructure of the Libraries	223
4.4	Collection Development of Library Resources	229
4.4.1	Status of Collection Development Policy	230
4.4.2	Authorities Responsible for Selecting Library Resources	232
4.4.3	Tools/Sources used for Selection of Library Resources in EC Libraries	235
4.4.3.1	Tools/Sources used for Selection of Print Resources in the Libraries	235
4.4.3.2	Tools used for Selection of E-Resources in the Libraries	239
4.4.4	Criteria followed to Select the Library Resources	243
4.4.4.1	Criteria Followed to Select the Print Resources in the Libraries	244
4.4.4.2	Criteria Followed to Select the E-Resources in the Libraries	248
4.4.5	Steps followed in the process of Acquisition of E-resources	252
4.4.6	Channels for Acquiring Library Resources	255
4.4.6.1	Channels for Acquiring Print Resources	255
4.4.6.2	Channels for Acquiring E-resources in the Libraries	257
4.4.7	Criteria Followed to Evaluate the Library Resources	259

4.4.7.1	Criteria Followed to Evaluate the Print Resources in the Libraries	259
4.4.7.2	Criteria Followed to Evaluate the E-Resources in the Libraries	263
4.4.8	Criteria Followed in De-selection of Resources in the Libraries	266
4.4.8.1	Criteria Followed to Deselect Print Resources in the Libraries	267
4.4.8.2	Criteria Followed to Deselect E-resources in the Libraries	270
4.5	Processing and Organising of Library Resources	274
4.5.1	Processing and Organising of Print Resources in the Libraries	274
4.5.2	Organising and Method of Access to E-resources in the Libraries	279
4.6	Management of Library Resources	284
4.6.1	Management of Print Resources in Libraries	284
4.6.2	Procedures Followed in the Libraries for Managing E-Resources	289
4.7	NBA Accreditation Status in EC Libraries in Kerala	296
4.7.1	Progress of NBA Accreditation Status in EC Libraries in Kerala	296
4.7.2	Librarians Views Regarding the Impact of NBA Accreditation on Library Resources, Services and Facilities	297
4.7.3	Opinion of EC Librarians Regarding the Impact of NBA Accreditation in the Resources, Services and Facilities of their Libraries	297
4.7.3.1	Increased Library Area	298
4.7.3.2	Increased Library Opening Hours	299
4.7.3.3	Increased Library Budget	299
4.7.3.4	Improved Library Infrastructure	299
4.7.3.5	Improved ICT Infrastructure	299
4.7.3.6	Improved Library Automation Status	299
4.7.3.7	Improved Digital Library Services	300
4.7.3.8	Improved in the Activities of Library Advisory Committee	300
4.7.3.9	Development in Library Human Resource	300
4.7.3.10	Development in Collection of Print Resources	300

4.7.3.11	Increased Subscription of E-resources	300
4.7.3.12	Increased the Number of Library Services Provided to Users	301
4.7.4	Librarian's Views with Regard to NBA Emphasis on Specific Criteria for Accreditation	301
4.7.4.1	Librarian's Views with Regard to the Criteria in Which NBA Emphasis in its Accreditation Process	302
4.8	Problems and Challenges Faced by EC Libraries for Further Library Improvements	303
4.9	Conclusion	306
Chapter 5	FINDINGS, SUGGESTIONS AND CONCLUSIONS	313-351
5.1	Introduction	313
5.2	Findings of the Study	313
5.2.1	Information Resources and Services	313
5.2.2	ICT Infrastructure and Facilities	323
5.2.3	Collection Development, Organisation and Management	326
5.2.4	Impact of NBA Accreditation on Information Resources and Services	335
5.2.5	Librarians Views on the Measures that NBA Could Emphasize with Respect to the Process of Accreditation in Engineering College Libraries	336
5.2.6	Problems and Challenges for Further Development of EC Libraries	337
5.3	Tenability of Hypotheses	338
5.4	Suggestions of the Study	343
5.5	Conclusion	346
5.6	Recommendations for Further Research	350
	Appendices	353-378
	Appendix A: Questionnaire	
	Appendix B: List of Engineering Colleges Selected for the Study	
	Bibliography	379-381
	List of Publications	

LIST OF TABLES

<i>Table No.</i>	<i>Title</i>	<i>Page No.</i>
1	Accreditation Criteria of NBA	14
2	Sub Criteria: Governance, Institutional Support and Financial Resources	15
3	NBA Requirement of Library Data in the Self-Assessment Report	33
4	Sample	100
5	Distribution of Engineering Colleges	100
6	Separate Library Building, Area and Seating Capacity of NBA Accredited ECs' Libraries (Category-Wise)	111
7	Separate Library Building, Area and Seating Capacity of EC Libraries (Accreditation-Wise)	113
8	Working Hours of the Library in NBA Accredited ECs (Category-Wise)	115
9	Working Hours of EC Libraries (Accreditation-Wise)	115
10	Average Number of Users per day in the Libraries of NBA Accredited ECs (Category-Wise)	117
11	Average Number of Users per day in EC Libraries (Accreditation-Wise)	118
12	Library Sections of NBA Accredited ECs (Category-Wise)	119
13	Availability of Library Sections in NBA Accredited ECs (Category-Wise)	120
14	Library Sections of EC Libraries (Accreditation-Wise)	121
15	Availability of Library Sections in EC Libraries (Accreditation-Wise)	122
16	Furniture in the Libraries of NBA accredited ECs (Category-Wise)	123
17	Availability of Furniture in the Libraries of NBA Accredited ECs (Category-Wise)	124
18	Furniture in the EC Libraries (Accreditation-Wise)	125

19	Availability of Furniture in EC Libraries (Accreditation-Wise)	126
20	Equipment in NBA Accredited ECs' Libraries (Category-Wise)	127
21	Availability of Equipment in NBA Accredited ECs' Libraries (Category-Wise)	128
22	Equipment in the EC Libraries (Accreditation-Wise)	129
23	Availability of Equipment in the EC Libraries in Kerala (Accreditation-Wise)	130
24	Printed Resources Available in NBA Accredited ECs' Libraries (Category-Wise)	131
25	Availability of Print Resources in the EC Libraries in Kerala (Accreditation-Wise)	133
26	Growth of Print Resources in NBA Accredited ECs' Libraries (Category-Wise)	135
27	Growth of Print Resources in the EC Libraries in Kerala (Accreditation-Wise)	141
28	Type of E-resources in NBA accredited ECs (Category-Wise)	147
29	Availability of Type of E-resources in NBA accredited ECs (Category-Wise)	148
30	Type of E-resources in EC Libraries in Kerala (Accreditation-Wise)	149
31	Availability of Type of E-resources in EC Libraries in Kerala (Accreditation-Wise)	150
32	E-resource Packages in the Libraries of NBA Accredited ECs (Category-Wise)	151
33	Availability of E-resource Packages in the Libraries of NBA Accredited ECs (Category-Wise)	152
34	E-resource Packages in the EC Libraries in Kerala (Accreditation-Wise)	153
35	Availability of E-resource Packages in EC Libraries in Kerala (Accreditation-Wise)	154
36	Qualification of the Librarians of NBA Accredited ECs (Category-Wise)	156
37	Qualifications of the EC Librarians in Kerala (Accreditation-Wise)	157

38	Experience of the Librarian in NBA Accredited ECs (Category-Wise)	158
39	Experience of the Librarian in the EC Libraries in Kerala (Accreditation-Wise)	159
40	Librarian Organising Workshops/Seminars/Conferences for Library Professional in NBA Accredited ECs (Category-Wise)	160
41	Librarian Organising Workshops/Seminars/Conferences for Library Professionals of EC Libraries in Kerala (Accreditation-Wise)	161
42	Programs Attended by the Librarians of NBA Accredited ECs (Category-Wise)	162
43	Number of Programs Attended by the Librarians of NBA Accredited ECs (Category-Wise)	163
44	Programs Attended by the EC Librarians in Kerala (Accreditation -Wise)	164
45	Number of Programs Attended by the EC Librarians in Kerala (Accreditation-Wise)	165
46	NBA Accredited ECs' Librarians Membership in Professional Bodies (Category-Wise)	166
47	EC Librarians' Membership in Professional Bodies (Accreditation-Wise)	167
48	Information of Library Staff in NBA Accredited ECs (Category-Wise)	168
49	Information of Library Staff in EC Libraries in Kerala (Accreditation-Wise)	170
50	Information of Users in the Libraries of NBA Accredited ECs (Category-Wise)	171
51	Information of Users in EC Libraries in Kerala (Accreditation-Wise)	172
52	Proportion Between Library Staff and Users in the Libraries of NBA Accredited ECs (Category-Wise)	173
53	Proportion Between Library Staff and Users in EC Libraries in Kerala (Accreditation-Wise)	175
54	Growth of Users in the Libraries of NBA Accredited ECs (Category-wise)	176

55	Growth of Library Users in EC Libraries in Kerala (Accreditation -Wise)	180
56	Sources of Finance of the Libraries of NBA Accredited ECs (Category-Wise)	184
57	Sources of Finance of EC Libraries in Kerala (Accreditation-Wise)	185
58	Availability of Budget in the Libraries of NBA Accredited ECs (Category-Wise)	187
59	Availability of Budget in EC Libraries in Kerala (Accreditation -Wise)	189
60	Growth of Budget in the Libraries of NBA Accredited ECs (Category-Wise)	191
61	Growth of Budget in the EC Libraries in Kerala (Accreditation -Wise)	195
62	Services Provided by the Libraries of NBA Accredited ECs (Category-Wise)	200
63	Availability of Services Provided by the Libraries of NBA Accredited ECs (Category-Wise)	201
64	Services Provided by EC Libraries in Kerala (Accreditation-Wise)	202
65	Availability of Services Provided by EC Libraries in Kerala (Accreditation-Wise)	204
66	Web based Services provided by the Libraries of NBA Accredited ECs (Category-Wise)	205
67	Availability of Web based Services Provided by the Libraries of NBA Accredited ECs (Category-Wise)	207
68	Web based Services Provided by the EC Libraries in Kerala (Accreditation-Wise)	208
69	Availability of Web based Services Provided by the EC Libraries in Kerala (Accreditation-Wise)	210
70	Availability of ICT Tools in the Libraries of NBA accredited ECs (Category-Wise)	212
71	Availability of ICT Tools in EC Libraries in Kerala (Accreditation-Wise)	214

72	Availability of ICT Facilities in the Libraries of NBA accredited ECs (Category-Wise)	217
73	Availability of ICT Facilities in EC Libraries in Kerala (Accreditation-Wise)	220
74	Network Infrastructure Facilities in the Libraries of NBA Accredited ECs (Category-Wise)	225
75	Network Infrastructure Facilities in EC Libraries in Kerala (Accreditation-Wise)	227
76	Status of Collection Development Policy in the Libraries of NBA Accredited ECs (Category-Wise)	230
77	Status of Collection Development Policy in the EC Libraries in Kerala (Accreditation-Wise)	231
78	Authorities Responsible for Selecting Resources in the Libraries of NBA Accredited ECs (Category-Wise)	233
79	Authorities Responsible for Selecting Resources in EC Libraries in Kerala (Accreditation-Wise)	234
80	Tools/Sources used for Selection of Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)	235
81	Usage of Tools/Sources for Selection of Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)	237
82	Tools/Sources used for Selection of Print Resources in EC Libraries in Kerala (Accreditation-Wise)	237
83	Usage of Tools/Sources for Selection of Print Resources in EC Libraries in Kerala (Accreditation-Wise)	239
84	Tools/Sources used for Selection of E-resources in the Libraries of NBA Accredited ECs (Category-Wise)	240
85	Usage of Tools/Sources for Selection of E-resources in the Libraries of NBA Accredited ECs (Category-Wise)	241
86	Tools/Sources used for Selection of E-Resources in EC Libraries in Kerala (Accreditation-Wise)	242
87	Usage of Tools/Sources for Selection of Library E-Resources in EC Libraries in Kerala (Accreditation-Wise)	243
88	Criteria Followed to Select the Print Resources in NBA Accredited ECs (Category-Wise)	244

89	Usage of Criteria to Select the Print Resources in NBA Accredited ECs (Category-Wise)	246
90	Criteria Followed to Select the Print Resources in EC Libraries in Kerala (Accreditation-Wise)	246
91	Usage of Criteria to Select the Print Resources in EC Libraries in Kerala (Accreditation-Wise)	247
92	Criteria Followed to Select the E-resources in the Libraries of NBA Accredited ECs (Category-Wise)	248
93	Usage of Criteria to Select the E-resources in the Libraries of NBA Accredited ECs (Category-Wise)	250
94	Criteria Followed to Select the E-resources in the Libraries of ECs in Kerala (Accreditation-Wise)	250
95	Usage of Criteria to Select the E-resources in the Libraries of ECs in Kerala (Accreditation-Wise)	252
96	Steps followed in the process of Acquisition of E-resources in the libraries of NBA Accredited ECs (Category-Wise)	253
97	Steps followed in the process of Acquisition of E-resources in EC libraries in Kerala (Accreditation-Wise)	254
98	Channels for Acquiring Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)	255
99	Channels for Acquiring Print Resources in EC Libraries in Kerala (Accreditation-Wise)	256
100	Channels for Acquiring E-resources in the Libraries of NBA Accredited ECs (Category-Wise)	257
101	Channels for Acquiring E-resources in EC Libraries in Kerala (Accreditation-Wise)	258
102	Criteria Followed to Evaluate the Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)	260
103	Usage of Criteria to Evaluate the Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)	261
104	Criteria Followed to Evaluate the Print Resources in the EC Libraries in Kerala (Accreditation-Wise)	261
105	Usage of Criteria Followed to Evaluate the Print Resources in the EC Libraries in Kerala (Accreditation-Wise)	262

106	Criteria Followed to Evaluate E-resources in the Libraries of NBA Accredited ECs (Category-Wise)	263
107	Usage of Criteria Followed to Evaluate the E- resources in the Libraries of NBA Accredited ECs (Category-Wise)	264
108	Criteria Followed to evaluate E-resources in EC Libraries in Kerala (Accreditation-Wise)	265
109	Usage of Criteria to Evaluate E-resources in EC Libraries in Kerala (Accreditation-Wise)	266
110	Criteria Followed to Deselect Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)	267
111	Usage of Criteria to Deselect Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)	268
112	Criteria Followed to Deselect Print Resources in EC Libraries in Kerala (Accreditation-Wise)	269
113	Usage of Criteria to Deselect Print Resources in EC Libraries in Kerala (Accreditation-Wise)	270
114	Criteria Followed to Deselect E-resources in the Libraries of NBA Accredited ECs (Category-Wise)	270
115	Usage of Criteria to Deselect E-resources in the Libraries of NBA Accredited ECs (Category-Wise)	272
116	Criteria Followed to Deselect E-resources in EC Libraries (Accreditation-Wise)	272
117	Usage of Criteria to Deselect E-resources in EC Libraries (Accreditation-Wise)	273
118	Processing and Organising of Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)	275
119	Processing and Organising of Print Resources in the EC Libraries in Kerala (Accreditation-Wise)	277
120	Organising and Method of Access to E-resources in the Libraries of NBA Accredited ECs (Category-Wise)	280
121	Organising and Method of Access to E-resources in EC Libraries in Kerala (Accreditation-Wise)	282
122	Management of Print Resources in the Libraries of NBA accredited ECs (Category-Wise)	285

123	Management of Print Resources in EC libraries in Kerala (Accreditation-Wise)	287
124	Procedures Followed in the Libraries of NBA Accredited ECs for Managing E-resources (Category-Wise)	290
125	Number of Procedures Followed in the Libraries of NBA Accredited ECs for Managing E-resources (Category-Wise)	292
126	Procedures Followed in the Libraries of ECs for Managing E-resources (Accreditation-Wise)	293
127	Number of Procedures Followed in the Libraries of ECs for Managing E-resources (Accreditation-Wise)	295
128	Progress of NBA Accreditation Status in EC Libraries in Kerala	296
129	Librarians Views Regarding the Impact of NBA Accreditation on Library Resources, Services and Facilities	297
130	Opinion of EC Librarians Regarding the Impact of NBA Accreditation in the Resources, Services and Facilities of their Libraries	298
131	Librarian's Views with Regard to NBA Emphasis on Specific Criteria for Accreditation	301
132	Librarian's Views with Regard to the Criteria in Which NBA Emphasis in its Accreditation Process	302
133	Problems and Challenges Faced by EC Libraries for Further Library Improvements	304
134	Number of Problems and Challenges Faced by the EC Libraries for Further Improvement	306

LIST OF FIGURES

<i>Figure No.</i>	<i>Figure</i>	<i>Page No.</i>
1	Growth of Print Resources (Books) in NBA Accredited ECs' Libraries (Category-Wise)	138
2	Growth of Print Resources (Journals) in NBA Accredited ECs' Libraries (Category-Wise)	138
3	Growth of Print Resources (Journal Bound volume) in NBA Accredited ECs' Libraries (Category-Wise)	139
4	Growth of Print Resources (Theses/Dissertations/Projects) in NBA Accredited ECs' Libraries (Category-Wise)	139
5	Growth of Print Resources (Patents/Standards) in NBA Accredited ECs' Libraries (Category-Wise)	140
6	Growth of Print Resources (Newspapers) in NBA Accredited ECs' Libraries (Category-Wise)	140
7	Growth of Print Resources (Books) in EC Libraries (Accreditation-Wise)	144
8	Growth of Print Resources (Journals) in EC Libraries (Accreditation-Wise)	144
9	Growth of Print Resources (Journal Bound Volume) in EC Libraries (Accreditation-Wise)	145
10	Growth of Print Resources (Theses/Dissertations/Projects) in EC Libraries (Accreditation-Wise)	145
11	Growth of Print Resources (Patents/Standards) in EC Libraries (Accreditation-Wise)	146
12	Growth of Print Resources (Newspapers) in EC Libraries (Accreditation-Wise)	146
13	Growth of Library Users (Students) in Libraries of NBA Accredited ECs (Category-Wise)	178

14	Growth of Library Users (Teaching Staff) in Libraries of NBA Accredited ECs (Category-Wise)	178
15	Growth of Library Users (Non- teaching staff) in Libraries of NBA Accredited ECs (Category-Wise)	179
16	Growth of Total Users in Libraries of NBA Accredited ECs (Category-Wise)	179
17	Growth of Library Users (Students) in EC Libraries in Kerala (Accreditation-Wise)	182
18	Growth of Library Users (Teaching Staff) in EC Libraries in Kerala (Accreditation-Wise)	182
19	Growth of Library Users (Non-teaching Staff) in EC Libraries in Kerala (Accreditation-Wise)	183
20	Growth of Total Library Users in EC Libraries in Kerala (Accreditation-Wise)	183
21	Growth of Budget (Print Resources) in the Libraries of NBA Accredited ECs (Category-Wise)	193
22	Growth of Budget (E-resources) in the Libraries of NBA Accredited ECs (Category-Wise)	193
23	Growth of Budget (Furniture, Equipment and Maintenance) in the Libraries of NBA Accredited ECs (Category-Wise)	194
24	Growth of Total Budget in the Libraries of NBA Accredited ECs (Category-Wise)	194
25	Growth of Budget (Print Resource) in the EC Libraries in Kerala (Accreditation-Wise)	197
26	Growth of Budget (E-resource) in the EC Libraries in Kerala (Accreditation-Wise)	198
27	Growth of Budget (Furniture, Equipment and Maintenance)) in the EC Libraries in Kerala (Accreditation Wise)	198
28	Growth of Total Budget in the EC Libraries in Kerala (Accreditation-Wise)	199

LIST OF ABBREVIATIONS/ ACRONYMS

AACR	-	Anglo-American Cataloguing Rules
ABET	-	Accreditation Board for Engineering and Technology
AICTE	-	All India Council for Technical Education
ALA	-	Academic Library Association
APA	-	American Psychological Association
ASCE	-	American Society of Civil Engineers
ASME	-	American Society of Mechanical Engineers
ASTM	-	American Society for Testing and Materials
BE	-	Bachelor of Engineering
CAS	-	Current Awareness Service
CCTV	-	Closed Circuit Television
CD/DVD	-	Compact Disc/Digital Versatile Disk
CDP	-	Collection Development Policy
CD ROM	-	Compact Disc Read-only memory
DDC	-	Dewey Decimal Classification
DESIDOC	-	Defence Scientific Information & Documentation Centre
EC	-	Engineering College
ERMS	-	Electric Resource Management System
IASLIC	-	Indian Association of Special Libraries & Information Centres
ICT	-	Information and Communication Technology
IEEE	-	Institute of Electrical and Electronics Engineers
IEI	-	Institution of Engineers (India)
IET	-	Institution of Engineering and Technology
IETE	-	Institution of Electronics and Telecommunication Engineers
IIT	-	Indian Institute of Technology
ILA	-	Indian Library Association
ILL	-	InterLibrary Loan
INDEST	-	Indian National Digital Library in Engineering Sciences

		and Technology
INFLIBNET	-	Information and Library Network
INFONET	-	Information Network
IQAC	-	Internal Quality Assurance
IT	-	information Technology
JNTUK	-	Jawaharlal Nehru Technological University
LAN	-	Local Area Network
ME	-	Master of Engineering
NAAC	-	National Assessment and Accreditation Council
NBA	-	National Board of Accreditation
NDL	-	National Digital Library
NIT	-	National Institute of Technology
NKC	-	National Knowledge Commission
NPTEL	-	National Programme on Technology Enhanced Learning
ODLIS	-	Online Dictionary of Library and Information Science
OPAC	-	Online Public Access Catalog
RFID	-	Radio Frequency Identification
SAR	-	Self Assessment Report
SDI	-	selective dissemination of information
SMS	-	Short Message Service
SOUL	-	Software for University Libraries
TERM	-	Techniques for Electronic Resource Management
UGC	-	University Grants Commission
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
UPS	-	Uninterruptible Power Supply

ABSTRACT

Engineering practice and its related technologies have become global in scope and scale. To be effective, today's engineering graduates must not only be grounded in scientific and mathematical fundamentals, engineering principles, and design, but also have a global outlook and the broader skills to work in society in both their home country and internationally. Engineering education is thus challenged to prepare a technically competent graduate, as it has done traditionally, and to add several dimensions of broadening—all within a program of reasonable length. The NBA accreditation is playing an important role in improving the quality of programs provided in the engineering colleges (ECs). The overall objective of the study is to understand the development and management of engineering college libraries in Kerala. It is mainly aimed at analysing the resources and services, ICT infrastructure and facilities, collection development, and management of information resources in the engineering college libraries that have the accredited programs of the NBA, and also making a comparative study of these resources with the engineering colleges that do not have the accredited programs of the NBA.

Out of 158 engineering colleges, the researcher selected 120 as a sample. Only 36 of the 120 engineering colleges have NBA-accredited programs. The research method used to carry out the study was the survey method. In order to accomplish the objectives of the study, four methods were used: document review, questionnaire surveys, interviews with librarians, and observational visits in the libraries. The researcher adopted the questionnaire as the main tool for data collection. The librarians of engineering colleges are the respondents to the study. For collecting data from the engineering college libraries, the researcher converted the questionnaire into an online form using JotForm. The data received from the respondents was evaluated and analysed for the study results. SPSS version 21 was used to do the required statistical analysis. The researcher used statistical techniques like the simple percentage method, arithmetic mean, standard deviation, chi square, and fisher's exact test to draw the findings and conclusions.

The study found that most of the Government, under Government departments and Self-financing ECs which have the accredited programs of NBA show similarities in their library resources, services, facilities and other aspects. But when comparing these aspects with the engineering colleges that do not have the accredited programs of NBA, it is found that NBA accredited ECs show higher availability of print resources, E-resources, staff, users and budget allocation. While considering the ICT infrastructure and facilities, libraries of engineering colleges which have the accredited programs of NBA also show differences in the availability of ICT tools, digital library, institutional repositories, digitization process and their membership in any consortia.

The libraries of ECs which have the accredited programs of NBA shows an increase in the average annual growth of books, journals and bound volumes of journals with the ECs which do not have the accredited programs of NBA and they do not show much difference in the average annual growth of theses/dissertations/project reports, patents/standards and newspapers with the non-NBA accredited ECs' libraries. As both NBA accredited and non-accredited ECs in Kerala show low level average annual growth in the number of users in their libraries, compared to the libraries of NBA accredited ECs, non-accredited one shows very low level of average annual growth in number of library users. Engineering college libraries in Kerala show low level average annual growth in the budget allocated to them and the libraries of NBA accredited engineering colleges show a very low level of average annual growth when compared to the engineering colleges which do not have the accreditation of NBA.

A large majority of ECs which do not have the accredited programs of NBA are applied or in the process of applying for NBA accreditation for their engineering programs and the librarians of almost all of these libraries respond that the resources, services and facilities in their library are improved as an impact of NBA accreditation. A large majority of them also have the opinion that the NBA should emphasize some more criteria in its accreditation process. A large majority of librarians opine that the NBA should consider the feedback with regard to library collection and its usage and

the orientation and follow up programs which are conducted by the library for its faculty and students. More than 60 percent of EC librarians opine that the NBA should emphasize innovative measures in the library and the availability of services and products in the libraries.

The engineering college librarians mainly report inadequate fund provision as their main problem for further improvement of their services. A good number of them respond to the problems like lack of a proper security system to prevent loss of the books and increased cost of hardware and software. More than one fourth of EC libraries report lack of knowledge to use E-resource among library users and inadequate space facilities. More than 20 percent of EC libraries respond to inadequate staff structure, inadequate furniture and equipment, difficulties for the subscription of foreign periodicals.

Engineering benefits only when it is done for the right engineering college, which is highly reputed and imparts quality education. Technical Education can meet the escalating demands of a growing society and to meet its multiplying demands. With the conventional methods and stereo-typed general education, people acquire nothing to contribute to the progress and prosperity of human society. As the library plays a major role to satisfy the multidimensional information needs of the engineering professionals, a full fledged library is a necessity of any engineering college to attain its objectives well. In the study the engineering college libraries mainly raise the problem of inadequate fund provision. It is suggested that the authorities should give more importance in their budget allocation to their libraries and provide their support in other aspects also which will help the libraries to overcome their major problems and to improve their resources and services to make the engineering students education more qualitative and make them employable and more suitable for the job.

CHAPTER 1

INTRODUCTION

1.1 Technical Education

Everyone is aware of the importance of technical education. It assists students in developing both theoretical and practical knowledge. It raises the standard of living by creating skilled and experienced manpower. It provides all of the knowledge and skills needed to compete in this cutthroat environment. Science and technology have had such an impact on almost every aspect of society that people can't fathom their lives without them. To meet the needs of the present period, education should emphasise technical and practical knowledge.

Every aspect of human life is being influenced by technology. The use of technology in education will emphasise learner-centered education and creative thinking. Keeping in mind the obvious advantage of application of technology in education, the higher educational institutes are now keen on integrating technology and education. It has become today's buzzword.

Technical education should be prioritised since it helps aspirants realise their full potential. Every individual gains confidence and self-esteem as a result of it. If a country has sufficient skilled personnel, it will not rely on other countries or believe in partnering with developed countries.

Technical education contributes significantly to the overall education system and is crucial to our country's social and economic growth. Technical knowledge is becoming an essential component of our daily lives. Today, advances in science and engineering have made life more sophisticated and, more importantly, have increased the quality of life. These technological domains require the assistance of highly qualified experts. As a result, technical education strives to provide the best vocational education possible. Aspirants should prepare ahead of time to become a part of the rapidly changing and advancing world (Khayal, 2019).

Technical education is a basic and essential input for national development and for strengthening the industry, economy, and ultimately the quality of life of the people. It has made a significant contribution to India's economic development. The programmes that have advanced the country and diversified and augmented its production since independence are largely due to the manpower produced by the technical institutions of the country. Technical education makes a significant contribution to the socioeconomic growth of the country as a whole.

1.2 Engineering Education in India

The name of engineering education in India has a long tradition. The word "Engineering", taken from the word "Ingenerate", means to create or design. Also the New Oxford English Dictionary 1999 defines technology and science branch as Engineering concerned with the use of engines and design building. The use of the nomenclatures "Bachelor of Engineering" and "Master of Engineering" along with the "Bachelor of Technology" and "Master of Technology" has prompted technical education in India. The history of technical education began in 1847 with the founding of Thomason College of Civil Engineering at Roorkee, which became the first engineering university in India in 1949, that is Roorkee University. This was in 1854, establishment of the Engineering College in Pune, which is still in existence. The Civil Engineering College in Howrah was founded in 1856 to educate and direct the PWD's engineering workers. In Civil Engineering, the first degree examination was held in 1864, and in 1887, the Mumbai Victoria Jubilee Technological Institute was set up, which is now renamed as "Veer mata Jijabai Technological Institute". The Bengal Engineering College was designated as a deemed university in 1992. In the wake of the nationalist movement of 1905 and 1906, another attraction in the history of engineering education was established in 1908: the National Council of Education at Calcutta. In 1919, the College of Engineering and Technology was established for the purpose of forming the basis of an institution informing engineering education and technology. The Indian Institute of science was established in 1909 at Bangalore by the late J. N. Tata. In Jadavpur during 1955 a unitary University through a state act became consisting of faculties of Engineering and Technology with arts and science.

“In 1958, it was accorded the Deemed University status, and it offers postgraduate and research programmes such as separate colleges of engineering and technology like the College of Textile Technology at Serampore in West Bengal, the Govt. Central Textile Institute, and the Harcourt Butler Technological Institute at Kanpur. In 1934, the University Department of Chemical Technology at Bombay University which now has autonomous status, and the Laxminarayan Institute of Technology, also established in pre-independence days at Nagpur” (Belsare, 2013).

After achieving independence in 1947, the Indian government and planners immediately realised the importance of developing engineering education in the country to ultimately build its industry, roads, dams, communication system, power and drinking water facilities, and other infrastructure in general. This is the foundation for improving the overall quality of people’s lives and to raising the living standard of the nation. Engineers are the backbone and core of a nation, allowing it to become a world-leading country. The first three years until 1950 were the years of planning, and thereafter, the country entered an era of the establishment of national, state, or regional, and divisional-level engineering institutions mainly for graduate courses. Slowly over a decade, transformation for postgraduate engineering education set in.

The first four decades, until 1990, were a period of expansion for institutions that provided engineering education based on the pattern of British or American systems. During this period, more courses and disciplines were added in the fields of chemical, metallurgy, electronics, telecommunications, foundry, paper, sugar, textile and oil, in addition to aeronautical, mining, and agricultural engineering, to name a few main branches of teaching. Primarily, the country developed institutions for graduate-level education.

From 1990 onwards, with the development of computer technology in the USA, we started with the introduction of computer technology graduate level courses in Indian institutes, regional colleges, and graduate level courses in others, set up by industrial houses. Thus, during the last few years, the world has seen a large number of computer hardware and software engineers from India (Bhargava, 2001).

In the past 15 years, the number of top engineering colleges in India has grown faster than anywhere else in the world. Today, India has the second largest number of students, and a large number of students from abroad are also moving to India to take up engineering education in different disciplines (Alliance University, 2020).

Due to growing globalization, there is a lot of competition among students to succeed and contribute to the growth and development of the country. And India is one of the countries that provides the best engineering education for the students. These students select different fields in the areas of computer science, mechanical, electrical, information technology, electronics, civil engineering, and many more. Students gain knowledge and skills from these specializations and apply them in real-life situations. Applying engineering knowledge is the greatest way to address the expanding problems in the fields of health, development, energy, climate, technology, etc. Students are equipped with this knowledge to overcome obstacles in any circumstance (Anu, 2021).

As per a recent assessment made by the United Nations, India holds the 6th position in the world as far as the fastest-growing economies are concerned. The recent advancements in the technological, scientific, and industrial areas have contributed a lot to making India one of the fastest-emerging global powers. Under such a scenario, engineering education in the country has a great role to play (Alliance University, 2020).

1.3 Engineering Education in Kerala

Formal engineering education started in Kerala even before Indian independence. The first EC in Kerala was established in 1936 at Thiruvananthapuram by Sree Chithira Thirunal Balarama Varma, the then Maharaja of Travancore. Until 2001, the engineering education in the state was mainly public funded. There were 34 ECs in Kerala in 2000, which were established and run directly by the state government or autonomous bodies under the state government and aided managements. After 2000, the state government decided to permit private managements to establish self-financing ECs across the state, which in turn changed the technical education scenario of the state (Archana& Humayoon, 2012). For the

last 10 to 20 years, there has been an enormous increase in the growth of engineering colleges in the state. The different types of institute in Kerala could be categorized as: Government owned, Government Aided, Government owned Self Supporting, University owned Self Supporting, Minority Community owned Self supporting, Trust/ Individual owned Self Supporting (“Technical Education - Kerala,” 2014).

The engineering colleges in Kerala mainly provides programs like Civil Engineering, Electrical & Electronics Engineering, Electronics & Communication Engineering, Chemical Engineering, Computer Science Engineering, Food Engineering & Technology, Information Technology, Mechanical Engineering, Metallurgical & Material Engineering, Mechatronics, Robotics & Automation, Electrical & Computer Engineering, Safety & Fire Engineering, Artificial Intelligence, Electronics & Instrumentation Engineering, Computer Science & Artificial Intelligence, Automobile Engineering, Architecture Engineering, Electronics & Biomedical Engineering, Production Engineering, Instrumentation & Control Engineering, Industrial Engineering, Aeronautical Engineering etc.

The growth of engineering colleges in Kerala is quite significant and ahead of many states in India. To attract students to engineering courses and compete at a global level, the engineering colleges need to maintain standards. Therefore, in the recent past, considerable efforts have been put forth to develop acceptable and maintainable standards for engineering education. In this context, the role played by AICTE is laudable. The AICTE constituted a body at the national level known as the ‘National Board of Accreditation’ (NBA) to provide norms and guidelines for engineering colleges to maintain standards in engineering education (Rao, 2013).

1.4 All India Council for Technical Education (AICTE)

The aim of higher education in India is to provide access, equity, quality, with accountability at an affordable cost to all aspiring citizens with the utmost transparency to ensure the sustainable economic development of the nation. It is achieved through the creation, dissemination, and application of knowledge (AICTE, 2021).

The quality of engineering education was supervised by the Board of the All India Council for Technical Education (AICTE) which was set-up in November 1945 as a national level Apex Advisory Body to conduct a survey on the facilities for technical education and to promote development in the country in a coordinated and integrated manner by the Government of India. It prescribes standards to be maintained and acts as an authority for planning, formulation, and maintenance of norms and standards; quality assurance through accreditation; funding in priority areas; monitoring and evaluation; maintaining parity of certification and awards; and ensuring coordinated and integrated development and management of technical education in the country. It has the responsibility for the approval of courses and takes appropriate steps to promote engineering and management education.

The AICTE Bill was introduced in both Houses of Parliament and passed as the AICTE Act No. 52 of 1987. The Act came into force on March 28, 1988. The statutory All India Council for Technical Education was established on May 12, 1988, with a view to proper planning and coordinated development of the technical education system throughout the country, the promotion of qualitative improvement of such education in relation to planned quantitative growth, and regulation. Proper maintenance of norms and standards in the technical education system and for matters connected therewith. The purview of AICTE covers a program of technical education including training and research in Engineering, Technology, Architecture, Town Planning, Management, Pharmacy, Applied Arts and Crafts, Hotel Management and Catering Technology, etc. at different levels. It approves new courses and new institutions and regularly monitors their operations. To meet the objectives of engineering education, the AICTE formed a body known as the National Board of Accreditation (Rao, 2013).

1.5 National Board of Accreditation

The National Board of Accreditation (NBA), India, was initially established by the AICTE (All India Council of Technical Education) under section 10 (u) of the AICTE Act in 1994 in order to assess the qualitative competence of the programs offered by educational institutions from diploma level to post-graduate level in

engineering and technology, management, pharmacy, architecture, and related disciplines, which are approved by the AICTE. NBA came into existence as an independent autonomous body with effect from January 7, 2010, with the objectives of ensuring quality and relevance to technical education, especially the programs in professional and technical disciplines, i. e., Engineering and Technology, Management, Architecture, Pharmacy and Hotel Management and Catering Technology, through the mechanism of accreditation of programs offered by technical institutions. The Memorandum of Association and Rules of the NBA were amended in April 2013 to make it completely independent of the AICTE, administratively as well as financially. The NBA conducts evaluation of programs at technical institutes on the basis of laid down norms. This may include, but is not limited to, institutional missions and objectives, organization and governance, infrastructure facilities, quality of teaching and learning, curriculum design and review, support services (library, laboratory, instrumentation, computer facilities, etc.), and any other aspect as decided by the General Council and/or Executive Committee of the NBA, which will help the graduates produced by the institutions as per industry requirements. Over the period of its existence, the NBA has introduced new processes, parameters, and criteria for accreditation that are in line with the best international practices and oriented to assess the outcomes of the programme (NBA, 2020).

1.5.1 Objectives of NBA

The major objectives of the NBA are as follows

- To assess and accredit the technical education programs;
- To evolve standards and parameters for assessment and accreditation in line with the parameters laid down by the appropriate statutory regulatory authority for coordination, determination, and regulation of standards in the concerned field of technical education;
- To promote excellence through a benchmarking process, that is helpful in determining whether or not an institution is able to achieve its mission and

broad-based goals and in interpreting the results of the outcomes assessment process,

- To promote a quality-conscious system of technical education where excellence, relevance to market needs and participation by all stakeholders are prime and major determinants.
- To build a technical education system as a facilitator of human resources that will match the national goals of growth through competence, contribution to the economy through competitiveness, and compatibility with societal development;
- To set the quality benchmarks targeted at global and national stockpile of human capital in all fields of technical education;
- To conduct evaluation of self-assessment of technical institutions and/or programs offered by them on the basis of guidelines, norms and standards specified by it; and
- To contribute to the domain of knowledge in quality parameters, assessment and evaluation.

1.5.2 Purpose of Accreditation

The purpose of the accreditation by the NBA is to promote and recognize excellence in technical education in colleges and universities—at both the undergraduate and postgraduate levels—through accreditation. Institutions, students, employers, and the public at large all benefit from the external verification of quality provided through the NBA accreditation process. They also benefit from the process of continuous quality improvement that is encouraged by the NBA’s developmental approach to promoting excellence in technical education. Through accreditation, the following main purposes are served (NBA, 2019):

- support and advise technical institutions in the maintenance and enhancement of their quality;

- confidence and assurance on quality to various stakeholders, including students;
- assurance of the good standing of an institution to government departments and other interested bodies; and
- enabling an institution to state publicly that it has voluntarily accepted assessment of its systems and processes by the NBA and has satisfied all the requirements for operation and maintenance of quality in education.

1.5.3 Benefits and Significance of Accreditation

The process of accreditation helps in realizing a number of benefits, such as:

- helps the institution know its strengths, weaknesses, and opportunities.
- initiates institutions into innovative and modern methods of pedagogy
- gives Institutions a new sense of direction and identity.
- provides society with reliable information on the quality of education offered.
- promotes intra and inter-Institutional interactions.

Accreditation signifies different things to different stakeholders. These are:

1.5.3.1 Benefits to Institutions

- Accreditation is market-driven and has an international focus. It assesses the characteristics of an Institution and its programmes against a set of criteria established by the National Board of Accreditation.
- NBA's key objective is to contribute to the significant improvement of the Institutions involved in the accreditation process. The accreditation process quantifies the strengths and weaknesses in the processes adopted by the Institution and provides directions and opportunities for future growth.
- NBA accredited Institutions may be preferred by funding agencies for releasing grants for research as well as expansion, etc.

- It signifies that the Institutional performance is based on assessment carried out by a independent competent body of quality assessors, with strengths and weaknesses emanating as feedback for policy-making.
- NBA provides a quality seal or label that differentiates the Institutions from its peers at the national level. This leads to a widespread recognition and greater appreciation of the brand name of Institutions and motivates the Institutions to strive for more. (NBA Accreditation, 2015)

1.5.3.2 Benefits to Parents and Students

- Parents get assured with the NBA that their next generation is getting the best of teaching and learning process as it is one of the norms for the institute to get NBA Accreditation.
- Students are well assured about their future as most of the new enrolled students are well known with key features of NBA.
- Most of the NBA enabled colleges today are allowing for Campus Interviews from corporate companies; these interviews help a lot of students to increase their confidence.

1.5.3.4 Benefits to Staff

Accreditation gives confidence to employees in recent working as well as for their future also which results in giving better quality of the institute itself. As the NBA keeps a complete track record in case of the working and every year's performance of the institute; the employees also have to keep themselves updated. This results in good inter-relations between employees and also among management and employees.

1.5.3.5 Benefits to Employers

Prospective employers are reassured by accreditation that students come from programmes whose content and quality have been assessed and meet benchmarks.

Additionally, it shows that graduates have gained competency based on tried-and-true technological inputs. (Sontakke, 2015)

1.5.3.6 Benefits to Country

Due to accreditation from NBA, the Institution's systems and procedures get aligned with the Institution's mission and vision. All essential prerequisites for international accreditation are included in the accreditation process of NBA. Therefore, NBA acts as a catalyst for the Institutions planning to acquire International Accreditation. It helps in gaining the confidence of stakeholders and in giving a strong message that, as a country, our technical manpower is of international standards and can be very useful in enhancing the global mobility for our technical manpower (NBA Accreditation, 2015).

1.5.4 The Impact of Accreditation

The impact of accreditation goes far beyond quality assurance of an institution/ program. Major impacts of accreditation system are summarized below (NBA, 2019)

- Encourages quality improvement initiatives by institutions;
- Improves student enrollment both in terms of quality and quantity;
- Helps the institution secure necessary funds;
- Enhances employability of graduates;
- Facilitates transnational recognition of degrees and the mobility of graduates and professionals;
- Motivates faculty to participate actively in academic and related institutional/ departmental activities;
- Helps create a sound and challenging academic environment in the institution; and
- Contributes to the social and economic development of the country by producing high quality technical manpower.

1.5.5 Imperatives of Accreditation

Accreditation of educational institutions/programs is a global practice, and its need has been felt by various developing and developed countries for one or more of the following purposes:

- Funding decisions;
- State recognition of qualification/ certification of professionals;
- Accountability of institutions to stakeholders;
- Encouraging self-improvement initiatives by institutions; and
- Quality assurance of educational programs.

1.5.6 Process of Accreditation through NBA

The NBA has developed certain accreditation principles and policies on the basis of the important role that educational processes play in determining educational outcomes. The NBA has a two-tier system of accreditation for Technical Programmes. Tier - I is applicable to engineering programmes offered by autonomous institutions and by university departments and colleges, while Tier-II is pertinent to institutions affiliated to a university.

1.5.7 General Policies of Accreditation by the NBA

The following general policies are the guiding principles for accreditation through NBA (NBA, 2020)

- The institution and its individual programs should have the approval of the AICTE
- NBA accredits only individual programs and not the institution as a whole
- At-least two batches of students have to pass out before the institution considers going in for Accreditation

- The institution should voluntarily make a written request to the NBA for the same
- The requisite accreditation fees will have to be paid by the institution.
- The institution has to send the complete filled-in Self-Assessment Report (SAR) in the prescribed format to the NBA.
- The final decision that is made by the NBA will be conveyed to the institution, along with comments depicting strengths, weaknesses and scope for improvement.
- Accreditation is provided for a fixed duration of time generally 5 years
- If there is any uncertainty or weaknesses, then provisional accreditation may be granted for two academic years.
- If a programme is not accredited, reasons for the decision will also be given to the institution.
- After accreditation, the institutions are expected to submit their annual self-assessment report to e-NBA online.

1.5.8 NBA Accreditation Criteria and Parameters

The NBA has evolved a framework for quality assurance containing a robust process, thus certifying the highest degree of transparency and credibility with little scope for discretion or subjectivity (Janice, 2016).

1.5.8.1 Accreditation Criteria

The criteria that are considered by NBA during Accreditation of a programme are as follows (NBA, 2020)

Table 1
Accreditation Criteria of NBA

Criteria Number	Criteria	Weightage
Program Level Criteria		
1.	Institutional Vision, Mission and Program Educational Objectives	60
2.	Program curriculum and Teaching-Learning process	120
3.	Course outcomes and program outcomes	120
4.	Students' performance	150
5.	Faculty information and contributions	200
6.	Facilities and technical support	80
7.	Continuous improvement	50
Institute Level Criteria		
8.	First year academics	50
9.	Student support systems	50
10.	Governance, Institutional support and Financial resources	120
	Total	1000

From these criteria, the tenth one 'Governance, Institutional support and Financial resources' divided into subcriteria as follows

Table 2**Sub Criteria: Governance, Institutional Support and Financial Resources**

Sub criteria Number	Sub-Criteria	Weightage
1.	Organization, Governance and Transparency	40
2.	Budget Allocation, Utilization, and Public Accounting at Institute level	30
3.	Program Specific Budget Allocation, Utilization	30
4.	Library and Internet	20
	Total	120

1.6 Engineering College Libraries

A library is “an organized collection of books and other reading and audio-visual materials, and the services of a staff able to provide and interpret such materials as are required to meet the informational, research, educational, or recreational needs of its users. A library is often classified and designated from the point of view of needs, objectives and, the category of readers intended to be served. Whatever the types of libraries, collection, organization and dissemination are the primary purposes and functions of all libraries. ”

Shera has remarked that “Library of the future should be a true information centre.” He further advocates the importance and use of library as “Knowledge is the lifeblood of our civilization and the library of future may be regarded as an instrument by which its continuing circulation of knowledge is maintained”

The Kothari Education Commission has also made some recommendations for the successful functioning of a library. The library should be an important center of attraction in the college campus for the needs of staff, books, journals, space, etc. It helps to properly use books by students and teachers. Teachers “who teach with

books” and librarians who can cooperate with them in converting the library. Libraries provide the resources, facilities, and services. These services mainly depend on the computer. The development of computer applications and information technology has greatly aided the rapid advancement. Additionally, it significantly expands the library's collection of materials.

According to Ranganathan, a modern library is "a public institution or establishment charged with the care of a collection of books, the duty of making them accessible to those who require their use, and the task of converting every person in its neighbourhood into a habitual library goer and reader of books. "

Libraries with electronic resources and services are known as electronic libraries. All digital materials, as well as many analogue formats that use electricity, can be considered electronic. Digital resources and services are available in digital libraries. Materials that are stored, processed, and transported via digital (binary) devices and networks are referred to as "digital materials. " Some college libraries nowadays have made institutional repositories accessible through digital libraries.

Through an Internet site, a collection of computer-readable documents is made available. If a library only exists virtually, that is, if it does not actually exist in the form of soft copies, then both digital and electronic libraries can qualify as virtual libraries. For instance, a virtual library organises content from various independent libraries in a virtual setting using computers and computer networks (Karuppasamy, 2018).

The engineering college library, like any other library affiliated with an institution, contributes primarily to the teaching and learning process by providing various information and learning resources to the clientele for their successful persuasion of the course programs offered by the institution (Belsare, 2013).

1.7 Development and Management of Engineering College Libraries

The major role of the engineering college library is to gather information and arrange document information in engineering subjects together for the needs of users and students. The goal and purpose of an engineering college library are to assist

professionals in engineering education in updating their ability and knowledge in order to provide information about new perspectives, concepts, and studies of new innovations in engineering education (Belsare, 2013).

1.7.1 Library Resources

The college libraries must equip themselves with a variety of resources to face the changing situation. These resources would include physical resources, information resources, human resources, and financial resources. The effectiveness and efficiency of the services provided by any engineering college library depend much on the adequacy of the said resources and facilities.

1.7.1.1 Physical Resources

A well-designed library building that is outfitted with the appropriate furniture and technology is a crucial requirement for the library to operate efficiently. Readers, particularly those at colleges, will find it convenient to visit and use the resources in the absence of the classroom lecture in a centrally placed, well-designed library building. Also, the right type of furniture, if provided, makes the reader sit comfortably for longer hours and use the library untiringly (Shivalingaiah, 1994).

P. N. Kaula (1983) recommended that a library should be: (i) centrally located so as to be accessible to large number of students; (ii) located where future expansion and growth is possible; (iii) receive the maximum light and should preferably be on the north side of a college building; (iv) have an entry independent of the rest of the building with suitable arrangement for light and sanitation; (v) have adequate space and equipment; (vi) be provided with separate room for the convenience of the library staff; (vii) have room for the use of students and faculty members; and (viii) all the rooms and areas should be well furnished and equipped with suitable chairs, tables and reference books.

1.7.1.2 Information Resources

Information, sources of information, resources, and services are all gathered in a library. The library maintains this collection for a variety of users. A library's

main duty is to assist its patrons in their pursuit of knowledge. Therefore, in order for a library to provide all library services, it must have a top-notch collection of papers ("Library Material," n. d.). One important and fundamental task each library must undertake to develop its collection in order to satisfy the needs of its users is collection development and administration. This conforms with the first principle of library science as propagated by Sir S. R. Ranganathan that "books are for use." Library collections consist of all types of information materials that can be kept in the library for the purpose of meeting the overall objectives of the library. Library collections are made up of print materials, non-print materials, and digital and Electronic materials (Nworie & Magnus, 2017).

Libraries have relied on printed material to build collections. In a library, we find a variety of printed material in various forms, which are books, periodicals, newspapers, reference books, dissertations and theses, standards, patents, maps, and reports. A book is defined as a written or printed literary work that is separately published and has an independent physical existence, with pages fastened along one side and encased between protective covers. Books constitute a major portion of any library's collection. The Oxford dictionary defines a book as "a written or printed work consisting of pages glued or sewn together along one side and bound in covers." Thus, a book is a piece of writing that typically addresses a single topic and has a continuous intellectual process. A cover is typically present on books. Books are relatively priced, easy to keep and move, and a great way to learn new things. Thus, the book is considered one of humankind's biggest inventions.

UNESCO defines a periodical as "a publication that constitutes one issue in a continuous series under the same title, published at regular or irregular intervals over an indefinite period, individual issues in the series being numbered consecutively or each issue being dated." Serials and journals are other names for periodicals. Magazines are the most common sort of periodical, aside from these. Periodicals' subject matter is vital since they give readers access to the most recent or up-to-date information. When this library content is obtained, it is prominently displayed for readers before being replaced by the ensuing new editions.

A newspaper is a scheduled publication containing news of current events, informative articles, diverse features, editorials, and advertisements. It is usually printed on relatively inexpensive, low-grade papers known as "newsprint." It is a publication issued periodically, usually daily or weekly, containing the most recent news. Newspapers are thus an excellent way to stay up to date on current events. They are also very important in influencing public opinion. Newspapers include local, state, national, and international news. They feature stories, editorials, opinion columns, and entertainment content. Illustrations and photos are frequently used to support news articles and reports. Many newspapers now publish glossy, colourful supplements in an effort to increase readership.

Non-print material can be defined as any material available in a form other than printed material. These are rapidly becoming important information and learning resource materials for modern libraries. Non-printed materials differ from printed materials in several ways. One of the chief differences is that a machine must serve as a mediator between the information and the user of non-print material. The non-print resources can be divided into two groups: audiovisual resources and electronic resources. The term "audio-visual material" refers to information content that is stored and transmitted using media formats that use images and sounds instead of, or occasionally in addition to, text. Electronic resources, sometimes known as E-resources, have improved the services that libraries may provide to their users. Electronic resources can be defined as any library material that is made available electronically. These are the library resources that include electronic or e-format documents that can be accessed locally or globally via the Internet. Many reference books are also available in electronic format. Users are provided access to various E-resources which are E-books, E-journals, E-databases, E-magazines, E-images, E-audio, digital library projects, electronic exhibitions, E-newsletters, E-conference proceedings, etc. Many of the Electronic resources are available free of charge to anyone over the Internet, but some are commercial resources and are priced ("Library Material," n. d.).

1.7.1.3 Human Resources

Personnel are the essential ingredient in all organisations and institutions. In fact, they are critical resources for a successful and efficient organisation (Shivalingaiah, 1994). To quote J. O. Bryson (1990), "Personnel are an organisation's most expensive yet most valuable resource. " In any organization's budget, and this is particularly true of labour-intensive organisations such as libraries or information centers, the wages and salaries component is usually the highest of all expenditures. Managed appropriately, an organization's workforce is its life breath. Managed inappropriately, the work force becomes an expensive commitment that leads to few rewards but many problems. According to K. S. Deshapande (1985), "The trinity that goes to make an efficient library system consists of three B's - Books, Buildings and Brains. The efficacy, popularity, or usefulness of a library is measured not by the grandeur or graciousness of the buildings, nor by the variety, value, or volume of its book collection. These two B's are important: but the last "B", the library staff, is ultimately responsible for the overall success of a library's setup. It is the brains—the library staff—that are responsible for the efficient and effective organisation and administration of the library. It is they who acquire, arrange, and circulate documents. "It is they again who make or mar the career of a librarian. " Adequate manpower in general, professional manpower in particular are thus vital for the efficient and effective functioning of any library. As such, the status of the qualified manpower employed in the college libraries has been studied, and the data is presented in succeeding sections (Shivalingaiah, 1994).

1.7.1.4 Financial Resources

Finance is essential for running any institution properly. The authorities should guarantee stable and adequate financial support for the institution they created. This becomes all the more important if the institutions are to render satisfactory and efficient services to the community. No institution can achieve appreciable success in the absence of adequate funds. In the words of D. P. Mishra, "Finances are the sine Qua non of every organised human endeavor, and success in all planned public projects is often proportionate as much to the amount of finances made available as to

the wise manner in which they are put to use. " Finance plays a significant role in the organisation and administration of a library. A library has to purchase books, periodicals, and other reading materials; get modern furniture and equipment; erect and maintain the building; and employ trained and experienced staff. All this requires funds. Without sufficient funds, the library is unable to fulfil its duties and ensure that consumers will continue to get proper services. In other words, the amount of money allocated for library staff and supplies greatly influences the quality of a library and the services it offers. Therefore, it is essential that the library, along with other college departments, establish its own distinct budget needs and have them planned out methodically (Shivalingaiah, 1994).

1.7.2 Services of the Libraries

Library and information services are essential to cater to the information needs of society. It is defined as the facilities provided by a library for the use and dissemination of library material like books, journals, theses, dissertations, etc. in order to meet the users' requirements (Gavit, 2019). The library offers a variety of services ranging from circulation, reference, current awareness, selective dissemination of information, newspaper clipping, user orientation, photocopying, printing, scanning, translation, indexing, abstracting, referral, interlibrary loan, bibliography, reservation of books, and book bank facilities.

The best possible use of the material is made possible by library services. The way that these services are now provided has evolved with the development of the internet and the web environment (Gavit, 2019). Modern library services have broken the traditional boundaries of place and started delivering services outside the confines of four walls (Belsare, 2013). The library is now accessible to users from anywhere at any time. No physical visitation is required, and there are no time limits. Now that information technology and web-based services have been developed, people can access content on their desktop computer. Digital Library Services, Internet Library Services, and Electronic Library Services are the terms used interchangeably for Web-Based Library Services. Web-based library services are mainly provided through the library portal, which is a special kind of gateway to web based library resources. It

provides integrated access to the metadata of a library's multiple databases. It gathers a variety of useful information resources into a single webpage that allows users to customise their information resources by choosing and viewing information they realise is helpful in person. Some of the commonly used web-based library services are library webpages, web OPAC, bulletin board services, ask-a-librarian services, web forms, digital reference services, online document delivery, interlibrary loan, online help and information skill tutorials, online current awareness bulletins, email-based services, online reference services, online circulation services, electronic SDI services, electronic article alert services, etc. (Gavit, 2019).

The services that organisations like libraries provide to their patrons are a good indicator of how beneficial they are. This in turn depends on the staff members in charge of providing services in an effective and timely manner. Therefore, in order to deliver effective services, library professionals must be appropriately and effectively motivated, developed, maintained, and used. Librarians, therefore, occupy a prominent and decisive place in engineering colleges for the proper management and functioning of a library. The importance of a librarian cannot be ignored. Libraries can play a vital role only under the guidance of professionally qualified and well-satisfied librarians (Belsare, 2013).

1.7.3 Information and Communication Technology

Today, engineering college libraries use ICT more assertively to gather, stock, get back, and spread a vast amount of information to communicate with the users and engineering professionals (Belsare, 2013). Information and communication technology (ICT) refers to technologies that are used in the collection, processing, storage, retrieval, and dissemination of recorded information. In the study, the term "Information and Communication Technology" is used to cover all of those technologies, which include computers, the application of software, databases, CDs and DVDs, networks, the Internet, communication devices, electronic information products, and several other compatible devices used in libraries.

The engineering college libraries have largely been affected by the rapid changes in ICT. The first and foremost ICT component which can be adopted in an

academic library is the computer for library automation and to have an in-house database of library holdings in electronic form. Networking, multimedia and Internet are the other important technologies which can be used for faster access to information. The issues related to current technology discussed or addressed by the present day engineering college libraries are the following:

- Library automation of library activities like acquisition, cataloguing, circulation and serial control, online public access catalogue (OPAC) and other library services.
- Use of software for library automation like SOUL, LibSys, Libsuite, Libra, Alice for Windows, Virtua, Slim +, WIN/ISIS etc.
- Electronic publishing like Electronic databases, E-books, E-theses and dissertations, Electronic Periodicals (e-journals, e-newsletters, e-magazines, and e-discussion lists), Electronic publishing on CD-ROM, Print-on-Demand (POD), Digital content, Subject gateways or library portals etc.
- Barcode technology, Smart Cards, Tattle-tape, Biometric etc. for automatic identification and data collection technology.
- Telephone, FAX, mobile phone for dissemination of the required information.
- Photocopying machine, scanner and CDs/ DVDs writer for duplicate copy.
- Information alerting services like Current Awareness Services (CAS) and Selective Dissemination of Information (SDI), Digital references service, Electronic document delivery services, Library websites and homepage, WebPAC, Web-based user education etc.
- Digital cameras, Scanner, mobiles etc. for information capture.
- Floppy disks, CDs/ DVDs, pen drives, etc. for data storage.
- Digitization of physical media like books, reports, periodical articles, manuscripts, photographs etc., establishing institutional repositories

- CCTV cameras and RFID for security and documents theft. Cease fire equipment.
- Local, wide and metropolitan area networks, Library networks and consortia. Internet, Internet based communication services like Wi-Fi, E-mail, Chat or Instant messengers, Conferencing, Content publishing and delivery services.
- Library 2.0 components are Blogs, Wikis, RSS feeds, Podcasting, Instant messaging SMS, MMS, Social networking, 24/7/365 access to e-resources.
- Digital library software like Green stone, DSpace, and Fedora.
- Open source software like KOHA and New Gen Lib.
- Implementation of wireless and mobile technologies for all time remote/ campus wide access.

The following fundamental conditions must be met for information technology to function well in libraries: adequate funding, qualified staff, networking capabilities, and user education programmes that instruct users about computerised databases and online information retrieval.

Today's engineering colleges and institution libraries operate in a constantly changing environment and face a variety of complex challenges such as information explosion, the IT revolution, network evolution, shrinking library budgets, escalating document prices, high user expectations, and the availability of information resources in a variety of media, among others. IT offers a wide range of opportunities that could provide solutions to some of these major challenges (Ramana & Rao, 2003). Engineering colleges and institutions have the responsibility of shaping the students' careers in such a way that they get good technical training and employment. This is possible when the colleges have fully automated libraries and use e-resources and services. IT certainly helps to provide a quick, prompt, and efficient service by saving students' and faculty's valuable time. IT offers tremendous opportunities to provide solutions to some of the major challenges that libraries face. The following major factors have contributed to the application of IT in engineering colleges/ institutions

libraries: Information bang, storage and maintenance problem of print document, change in users' expectations and information seeking behavior, mode of publications changes, limited budget and price increase of documents. Speedy developments in modern technologies have greatly improved the capabilities of storage, processing, retrieval, repackaging, communicating, sharing, and managing the explosive growth of information effectively and economically in engineering libraries (Gupta, 2014).

1.7.4 Collection Development of Information Resources

The term "Collection Development" has evolved to stress personalised services to satisfy users' demands. Collection development encompasses plans formulated for the systematic and rational building of a collection. The topic of collection development is a planning and decision-making procedure that covers a broad range of activities related to the policies and procedures of selection, assessment of users' needs, evaluating the present collection, and weeding out (Khayal, 2019).

A collection development process is one that permits the library to develop a collection of materials responding to the information needs and service requirements of the users. It has also been defined as "a process that allows for the identification of the strengths and weaknesses of the material collection of a library in terms of the needs of the users and the resources of the community. " It is a universal process in the library world in which the library professional assembles a variety of materials in order to satisfy the requirements of the users.

Bloomfield, (1987) examined that collection development involves identification of some of the key issues such as: Identification of the purpose and mission of the library /parent organization. The library staff or a committee formulates the library"s collection development policy; Matching between users" requirements and institutions aim and objectives; Budgetary provisions and the contingent problems. Working out strategies for implementing the policies and programmes; and Policy statements have to be maintained, revised and updated. Collection Development is thus, a dynamic and continuous activity, which involves the users, the library staff; and the subject experts on the selection team. It is a procedure to develop

a need based on up-to-date and well-balanced collection which is sufficient to meet the document and information needs of the users.

A collection development policy statement is a document that represents a plan of action and information which is used to guide the staff's thinking and decision making. Specially, the staff consults the collection development policy when considering which subject areas to augment and determine how much emphasis is to be given to each area. The policy should be such that it seems as a means of communication with the library's service population and the people who provide it's funding (Evans, 2004).

As Collection Development is a continuous and unending activity, a well thought out long term policy is required, which should provide answers to the following. (Wilson & Tauber, 1956): Who has the responsibility for seeing that a policy is set up and regularly implemented? Who should have final authority for directing and controlling the distribution of book funds? What material should be acquired? Who should participate in the selection?

In a small library, the task is done by the librarian himself, while in case of a large scale library; the task is delegated to the other staff. However, the ultimate responsibility would lie with the head librarian. The policy should also be clear as to on what basis the selectors should take decisions. A review policy for evaluating the performance of selections should also be put together (Evans, 2004).

As selection is the heart of the collection development process and it aims to build the library's collection for a particular user community, skill, knowledge and the right tools are required to select appropriate library materials that meet the needs of the community. It is a challenge to build resources and formats for a balanced collection that meets the needs of the user community.

Wilson and Swonk who describe the acquisition as "the continuous systematic analysis of weak spots in the book collection through the checking of bibliographies against the library's holdings, the submission to the faculty lists of materials not owned, the rating by the faculty and library staff of these titles, and finally the

preparation of want or decider at a lists”. The list then goes to the other department where the process of procurement begins. Acquisition departments also have internal goals. (Evans, 2004), such as; quick procurement of order; ensuring lowest possible unit cost by keeping work processes simple, to keep work processes simple, to achieve the lowest possible unit cost, and to establish close, friendly working relationships with other library units and with vendors.

Collection analysis is the basis for evaluation. According to Katz, the purpose of analysis and evaluation of the collection is to determine the quality of the collection. Evaluating such large collections is a difficult task. Evaluation can be done either by examining how well each individual item is or how good the item suits the particular needs of the users.

De-selection is the elimination of materials from the library collection that are no longer needed or viable. It is a standard practice in managing a library’s collection. De-selection is vital in keeping a collection vibrant, relevant, and usable. It also helps in preventing stacks from becoming overcrowded, and helps make remaining materials more visible and accessible. The Library may, at its sole discretion, remove and withdraw monographs and any other materials (e. g., non-book print items, manuscript materials, electronic resources, analog media and photographs) based on some criteria. Each library librarian shall review, evaluate and de-select materials in his/her collection areas on a regular basis to ensure collection vitality (Cal State East Bay, 2021).

Sometimes robust collections may not necessarily guarantee utilization of documents. Modification of the current acquisition policy through evaluation would improve the quality of the collection (Khayal, 2019).

1.7.5 Organisation and Management of Information Resources

The arrangement and upkeep of library materials, beginning with the collection development principle, is another definition of collection management. A group of fresh generic materials define the type of information that is accessible anywhere, serve data, and designate a subject (Belsare, 2013). The library material needs to be maintained on a routine basis.

Sorts of stacking, shelf layout, cleaning, shelving, and stock verification are all part of keeping library materials in good condition. Every library must maintain its collection by regularly checking the stack room, putting new items on display racks, and rearranging books and periodicals on the shelves after each usage. In addition to these, the material must be periodically dusted and cleaned. The periodicals, damaged and torn books have to be bound. The old and obsolete documents which are no longer in use have to be withdrawn from the stacks. This also includes physical care of the books, that is, their protection from sunlight, dust, insects, moisture and heat. Many key components of the library are involved in the maintenance work. For instance, the processing department constantly makes new content available, necessitating the need to shelve these books inside the existing collection. When many books on the same subject are received, this causes shelving issues. These books have to be accommodated on the shelves without disturbing the order of arrangement of other collections. The circulation section too is involved. The users continuously pick up books from the stacks, get them issued and eventually return them. Upon their return from users, these books have to be put back in their proper places on the stacks. As a result, the task of properly storing, reshelving, and maintaining the collection remains ongoing. Finding particular books soon becomes impossible if they are not shelved in a logical and ordered way. The organisation in a classified way in accordance with the categorization scheme employed by the library is the most widely used method of shelving.

Most of the large libraries maintain a separate periodicals division. The periodicals division is the place where the information needed can be found in journals, magazines, newspapers and other serial literature. Mostly, the open shelf system is adopted in this section. Readers have access to a wide range of magazines, newspapers and topics of relevant interest. Bound periodicals and back issues are arranged alphabetically by title in most of the libraries. Latest issues are properly displayed on the display racks. The periodicals can be arranged in various ways on the display racks. The best method, of course, is the alphabetical arrangement. In many large libraries, the arrangement of periodicals is subject-wise as alphabetical

arrangement may cause problems. Therefore, under broad subject headings, the periodicals are further ordered alphabetically.

The physical care and repair of resources is another crucial task to be carried out in every library all the time. The repeated careless handling and storage of a book can quickly transform a new book into a worn out or even an unusable one. Proper handling and storage in a stable, cool, clean, non-humid environment can prolong its life. The books and the other reading materials should be cleaned as frequently as possible and they should be kept safe from dust, moisture, insects and fungi. The books should be examined from time to time and those requiring minor repairs should be immediately repaired. Those requiring major repair or binding should be immediately withdrawn from the shelves and sent to the bindery.

Stock verification is the systematic checking of the library's holdings for finding out missing items. It helps in restoration of misplaced or missing items, finding torn or worn out items for repair or binding and provides an opportunity for cleaning and changing the arrangement of documents. Each library should conduct periodic inventories, that is, stock verification in order to have an up-to-date record of library holdings, concrete data on rate of loss and to assess strengths and weaknesses in the collection.

Libraries are not always safe and secure spaces. Theft and mutilation of books and loose issues of periodicals is a widespread problem and can be damaging to the library collection. The maintenance work thus includes the security aspect of library materials as well. As periodicals are not bound when received in the library, there are frequent cases of loss of periodicals. The library staff therefore has to be very careful and vigilant in the periodical display room and in the stacks containing back issues of periodicals. The best way to provide security to the library material is to have a low priced photocopy service for the users in the library's reading room. This facility will aid the users to immediately get a copy of the material found to be of use to them and save the library materials from getting lost or torn. The most widespread response to theft and mutilation of library material across the world has been the installation of electronic security systems. But many of the libraries in India cannot afford the same due to paucity of funds ("Arrangement and Maintenance of Library Material," n. d.).

With the increase in the popularity of the Internet for circulating information and research, the demand of Electronic resources or E-resources has increased in libraries. Electronic Resources plays an emerging role in libraries on many levels. The constant intensification of e-resources available in variety viz, full-text databases, bibliographic databases, e-books, e-journals, e-theses, digitized and born-digital documents, digital images, streaming video sound, and audio books becomes more decisive to manage effectively. These resources pose huge challenges for information professionals to adequately manage and access the diverse e-resources. With these growing challenges there is a need to have a mechanism “one-stop solution” i. e. Electronic Resource Management System (ERMS) for the evaluation, selection, acquisition, renewal / cancellation, license agreement, access rights, usage statistics, single access point, copyright, implementation and administration of e-resources. ERM software assists the library to manage the details access and manages the e-resources (Patra, 2014).

According to Breeding (2004), there are two aspects of managing electronic resources. They are the front-end details of delivering the content to library users and managing the business details of back-end staff functions related to acquisition, payment, and licensing.

The process involved in the managing of e-resources i. e. life cycle of e-resources start from evaluation, trail, selection, licence agreement, acquisition, access, administration, support service and evolution monitor, renewal/cancellation. The tool used to manage the life cycle of e-resources is called ERMS which is basically for library professional, but its impact relates to end-users (Patra, 2014).

Fulfilling user requirements is an important aspect of library management, regular evaluation of user needs against existing library collection and services is a necessary management technique for the continuous upgrading of any kind of services provided by the library. The library staff should be aware of the future and latest needs of users and the information needs of the users vary from one library to another library as well as it also change from time to time. When the learning and study process has started thoroughly using information communication technology in engineering college libraries play a main character in the teaching and educating process.

At last the engineering college libraries play an important role in engineering colleges for developing countries to retrieve information at a very low cost by using new digital and technical information resources through the latest global internet network and collecting pinpointed information in their respective fields (Belsare, 2013).

1.8 Importance of Libraries in Engineering Colleges

The library is considered as the centre for information. It can be also said to create a person's emotional, social, intellectual life. Which indirectly means that all the inventions done till today are thought, founded and tested actually in libraries only. In the modern education system, the library occupies a very significant and important place. The duty of today's libraries is to preserve priceless and expensive information in all forms. Only the libraries are the first to choose and gather the various kinds and numbers of informational resources. Only one factor determines if a library is effective: whether the appropriate knowledge is delivered to the right person at the right time. This works as the step for the growth of libraries. In the second step the libraries are supposed to preserve the collected material and disperse the information accordingly to needed customers. In third place the services provided are kept. For proper development of the respective institution the systematic planning of library modules is very essential (Manik, 2015).

Currently quality assurance in higher education is given top priority. Post-secondary education needs to prepare graduates with new skills, a broad knowledge base and a wide range of competencies to enter a more complex and interdependent world. Quality is a multidimensional concept and several mechanisms for quality assurance and management at individual and institutional level are needed. Systems of accountability and accreditation with a robust regulatory mechanism are essential to the process of sustaining and improving quality. Coordination and determination of standards in institutions for higher education and research are obligations of the Central Government. It is necessary to involve all stakeholders to institutionalize internal processes of Quality as an island of excellence cannot serve the massive requirement of higher education. Quality has to be the concern of all institutions and excellence which will flow from good quality institutions and appropriate governance structures. Higher education in India has experienced an unprecedented development accompanied by diversification of the sector. The unplanned expansion of the sector

poses challenges for improving and maintaining quality. The primary purpose of assessment is to improve students' learning and teachers' teaching as both respond to the information it provides. Assessment aids to develop the interaction between teaching and learning. Collins Cobuild dictionary defines "an assessment is a consideration of someone or something and a judgement about them". Accreditation is the act of granting credit and recognition especially with respect to education institutions that maintain the suitable standards. Assessment is evaluation or appraisal, the classification of something with respect to its worth. ". Every student likes to study in excellent institutions, so assessment and accreditation is necessary to identify the excellent institutes. National Policies on Education has given the priority for the quality of the higher education institution. It suggested establishment of the National Accreditation Body. Today, every college is improving the quality of curriculum, research activities, teaching and learning processes with the help of University Grants Commission (UGC). Every student expects to get job-oriented skills for the community. A country depends upon the quality (Excellence of the services) and the quantity (increase the quantity of the 7 educational level) of higher education to the development of the nation. Hence, every college has to maintain the quality under the supervision of Internal Quality Assurance (IQAC). It is accountable to maintain the high standards. It coordinates curricular and research activities of the institute. Therefore, accreditation is necessary to improve the quality of education continuously (Karuppasamy, 2018). In India National Board of Accreditation which is established by All India Council for Technical Education is responsible for evaluation of the quality of Engineering education.

Like other colleges, engineering schools have their own libraries. However, these libraries must adhere to all fundamental requirements in order to obtain affiliation with specific governmental authorities.. These rules are constructed in such a way that they help students in developing the best of their career and to contribute in further development of the country. The learning resources are responsible for up to 65% development of the student as students are spending maximum time with books only (Manik, 2015).

1.9 NBA requirement of Library data in the Self Assessment Report (SAR)

The fact that no engineering institution can attain approval or be allowed to operate without the existence of a library, is already established by the AICTE.

Therefore the measurement of quality of the institution through the process of Accreditation includes a measurement of the quality of its library as well.

With regard to the Self-assessment report of the NBA, the data that is required from the library as well as the points allocated for the same, has changed slightly over the years. This can be depicted as follows (Janice 2016) -

Table 3
NBA requirement of library data in the Self-Assessment report

Year 2000	Year 2004	Year 2009	Year 2012	Year 2015
POINTS ALLOTTED= 25	POINTS ALLOCATED = 25	POINTS ALLOCATED = 25	POINTS ALLOCATED = 20	POINTS ALLOCATED = 20 (for Library and Internet together)
Library– seating Capacity, working Hours	Library timings Library staff	Library space and ambience, timings and usage (5)	Library space and ambience, timings and usage, availability of a qualified librarian and other staff, Library automation, online access, networking (4)	Library data (Indicate whether zero deficiency report was received for all assessment years.
Books and journals acquired for last 5 years	Information about titles and volumes of books	Availability of qualified librarian and other staff	Library automation, online access, networking (4)	Effective availability/ purchase records and utilization of facilities/ equipment etc. to be documented and demonstrated)
Book Bank	Information about users	Library automation, online access, networking (5)	Titles and volumes per title (4)	Quality of learning resources (Hard/Soft) (10)
Library Expenditure	Facilities available	Variety of titles and the volumes per title (5)	Scholarly journal subscription (4)	Relevance of available learning resources including e-resources
Departmental Library	Departmental library	Journal subscription and internationally acclaimed titles (5)	Digital library (4)	Accessibility to students
		Digital library (5)	Library expenditure on books, magazines/journal, and miscellaneous contents (4)	Support to students for self learning activities

To score maximum marks in the NBA, Libraries should maintain following standards.

- Library Budget Allocation and Utilization of funds. (Latest 3 years data)
- Library space, Reading area, Seating capacity and Good Infrastructure (Follow the AICTE Norms).
- Number of Users (Maintain Gate Registers/Thumb impressions /Barcode Scanning to record users. (Maintain Statistics)
- Library Timings (Working days, Weekends and Sundays, Late hours for hostellers.)
- Number of Library staff, Their Qualifications, Designations and Experience.
- Library Automation with standard software, web OPAC, Barcode facility and reports generation.
- Library services through Internet and Intranet, blogs, social networks and websites, email alerts SMS alerts
- INDEST or Other similar bodies Memberships
- Archival of rare materials books and publications
- Titles and Volumes available in the library according to Latest Syllabus (Follow the AICTE Norms for Number of titles and volumes)
- National and International Journals Subscriptions and Utilization. (Follow AICTE Norms)
- Department Libraries
- Back volumes of journals, Project Reports, Question Banks, Syllabus sets
- Digital library exclusive Space, Server, number of multimedia systems, internet bandwidth and speed, Access to online databases. (Usage of digital library maintain a records and statistics)

- NPTEL and other Video lectures, Audio Video Rooms
- Good collection development for Soft skills, Personality Development Higher Education and Placements
- Reprography and Scanners facility
- Library Classification and Cataloguing in standard classification format.
- Open Access arrangement of print and non book materials.
- Library bay guides to locate the materials easily.
- Stock verification reports
- Library Advisory Committee meetings minutes implementations
- Well maintain Library Registers and Files
- Display of New Arrivals
- Display boards of library data, Rules, and services
- Library Orientation Programs, Seminars
- Power backup (UPS)
- Drinking water facility
- Book exhibitions
- Organizing book talks
- News Papers clippings.
- Fire safety measures
- Neat and clean Environment
- Natural lighting and ventilation
- Suggestion, feed backs and Recommendations from users

1.10 Need and Significance of the Study

With an increasing number of engineering students, a number of engineering colleges have been established across the country. There are also issues or challenges that fail to provide the right platform for students seeking employment (Anu, 2021). The AICTE has decided to halt the establishment of new engineering colleges until 2022, citing the fact that only 6 lakh graduates received job offers out of the total of 14 lakh seats. This means that more than half of engineering graduates are competing for jobs and are currently unemployed. AICTE has decided to halt the establishment of any new engineering institutions in order to better manage the existing engineering colleges. This may assist AICTE in focusing on educational quality and student skill development. According to AICTE statistics, roughly 518 colleges were closed between 2015 and 2019, since the job ratio in the engineering and technical fields has gone down. AICTE also noticed that every alternative seat in the engineering stream remained unfilled during the 2019–20 academic year. What's more, just 13 lakh of the 27 lakh engineering and technical seats at the diploma and PG degree levels were filled during the 2019 academic session. This definitely indicates a significant disparity between engineering colleges and students' education. As a result, the council has decided to cease establishing new engineering colleges and instead focus on improving current engineering colleges in terms of faculty, facilities, and curriculum. Meanwhile, many professors and academicians agree that the mismanagement of engineering education in India has resulted in a scarcity of opportunities for engineers, making the situation dismal. Engineering institutions in India have proliferated in recent years, with many eager to admit recruits without regard for their quality. As a result, such colleges must be closed, and the AICTE has decided to postpone the establishment of new engineering colleges until 2022 (Krishnendu, 2020).

Engineering education is becoming more popular among students seeking better job opportunities. However, in addition to their studies, there are some challenges they need to face during the course of their education. Sometimes we ignore the fact that getting admitted to good universities or colleges is not important;

acquiring quality education is what matters. Every student wants to get recruited by top companies because they believe that the best recruiting occurs at big colleges. Due to recognition or a brand name, recruiters may prefer to hire students from top colleges rather than the next in line. The brand name has a significant impact on shaping people's perceptions of the educational system. It is obvious that students from top institutions would have an advantage over students from other universities. Educators play a significant role in providing students with a high-quality education. However, a dearth of qualified educators in engineering education is a point of concern. Poor teaching methods and educator competence can have an impact on student performance. Millions of students take competitive tests in order to enrol in the country's top colleges and improve their employment chances. Students are sometimes not selected for good placements due to a variety of factors. With increasing globalisation, everyone is trying to establish their place in the market. It is only conceivable if one possesses talents that can be used with multiple opportunities. There may be uncertainties or ambiguities in the world from time to time. In such instances, students should be permitted to use their problem-solving talents to realistically handle the situation so that they may fulfil the demands of the modern world. There are possibilities of students not being able to understand the concept until it is practically demonstrated. Engineering with vast knowledge about technology and innovation needs effective linkages with specific industries. If the students are sitting in the classroom and learning about the concept of manufacturing machines or any software that needs practical knowledge, it does not make sense. For training and hands-on experience, it is crucial to practically illustrate the material and connect the audience with the relevant industry. The nation is home to thousands of engineering colleges. Additionally, each college needs resources to offer improved learning possibilities. It is crucial to meet the fundamental requirements of students in terms of quality facilities, libraries, books, technology, fair assessment methods, and evaluation (Anu, 2021).

NBA provides a brand tag that distinguishes a national institution, and all necessary prerequisites for international accreditation are also included in the NBA accreditation process. Students who are studying in NBA-accredited institutes have

the benefit of studying in an institution that has attained a high standard and provides a quality education. In India, engineering education is imparted at various levels, namely craftsmanship, diploma, degree, postgraduate, and research in specialized fields. As per the records of APJ Abdul Kalam Technological University, there are about 158 engineering colleges in the state, and around 51000 students are studying in these colleges. It is important to note that as there are about 158 engineering colleges in Kerala, at present only a few colleges have NBA accreditation. Today, engineers require not only adequate technological ability and problem solving skills but also skills like cooperation, communication and presentation skills, business ethics, and interpersonal relationships. Hence, excellent engineering colleges are essential to prepare engineers with good knowledge and skills. Teachers, laboratories, and libraries are important components in imparting effective engineering education to them. The heart of a college is its library, and it may play a crucial role in helping engineering professionals improve and update their knowledge and abilities as well as inform them about new discoveries, theories, and advancements in engineering education and research. As one of the criteria for NBA accreditation of engineering colleges is the quality of their libraries, it is critical to study the status of the libraries of NBA accredited engineering colleges and understand the available information resources, facilities, management, collection development policies, as well as their development objectives and constraints in providing efficient services to users. The study is also helpful to other engineering colleges in Kerala that are not accredited by the NBA, not only in understanding the differences but also helps for improving their resources and facilities to provide qualitative services to its users thus to attain the standard level of NBA accredited college libraries.

1.11 Statement of the Problem

Technical education, especially in the field of engineering and technology, in India today has grown and multiplied at an amazing pace. As the number of engineering institutes increases, the monitoring of quality becomes a main concern of the regulatory bodies, as excellence will flow from quality institutes. The National Board of Accreditation was established by AICTE with the objective of ensuring the

quality and relevance of education, especially for programs in professional and technical disciplines. As libraries are an essential part of the teaching and learning process at engineering and technology institutes, the development of resources, services, and facilities in these libraries and the proper management of them are very important to providing better quality service to the users. The study tried to understand the development and management of NBA accredited engineering college libraries in Kerala and how the resources, services, collection development, organization and management of these libraries differ from those of engineering colleges that are not accredited by the NBA. The investigator also tries to find out the impact of NBA accreditation on engineering college libraries in Kerala. The study is titled "Development and Management of Engineering College Libraries in Kerala. "

1.12 Definition of Key Terms

The key terms in the title of the study are defined and described in the following sections.

1.12.1 Development

According to Cambridge Dictionary (2021), development is the process in which someone or something grows or changes and becomes more advanced. The Oxford Learner's Dictionaries define development as the steady growth of something so that it becomes more advanced, stronger, etc. In the study, the term development means the growth of resources, users, and budget in the engineering college libraries in Kerala.

1.12.2 Management

According to Wikipedia (2021), library management is a sub-discipline of institutional management that focuses on specific issues faced by libraries and library management professionals. Library management encompasses normal managerial tasks, as well as intellectual freedom and fundraising responsibilities. Issues faced in library management frequently overlap with those faced in managing non-profit organizations. The basic functions of library management include, overseeing all library operations, managing library budget, planning and negotiating the acquisition

of materials, interlibrary loan requests, stacks maintenance, overseeing fee collection, event planning, fundraising, and human resources.

1.12.3 Engineering College Library

Collins Dictionary (2021) defines engineering as the subject studied by people and it is the science concerned with putting scientific knowledge to practical uses, divided into different branches, as civil, electrical, mechanical, and chemical engineering. Cambridge Dictionary defines college as any place for specialized education after the age of 16 where people study or train to get knowledge and/or skills. Engineering Colleges are those colleges which provide engineering education.

According to Online Dictionary of Library and Information Science (ODLIS) (2019) "Library -- from the Latin liber, meaning "book". A collection or group of collections of books and/or other print or nonprint materials organized and maintained for use (reading, consultation, study, research, etc.). Institutional libraries, organized to facilitate access by a specific clientele, are staffed by librarians and other personnel trained to provide services to meet user needs. By extension, the room, building, or facility that houses such a collection, usually but not necessarily built for that purpose.

1.12.4 Kerala

Kerala is situated in the southwestern end of the Indian subcontinent. The state with the highest literacy rate in India, is noted for its achievements in education, health, gender equality, social justice, law and order. It has an area of 38863 sq km. The neighbouring states of Kerala are Tamil Nadu and Karnataka (Government of Kerala, 2021).

1.13 Objectives of the Study

The overall objective of the study is to analyze the development and management of NBA accredited engineering college libraries in Kerala and to make a comparative study between the engineering colleges accredited and not accredited by NBA in terms of resources, services and facilities. To achieve the main objective, the study is conducted with the following specific objectives.

1. To study the availability of library resources, services and its development in the engineering college libraries in Kerala.
2. To find out the Information and Communication Technology infrastructure and facilities available in the engineering college libraries in Kerala.
3. To examine practices followed by the engineering college libraries in Kerala for collection development, organisation and management of library resources.
4. To check the impact of NBA accreditation on resources and services in the engineering college libraries in Kerala.
5. To identify librarians views on the measures that NBA could emphasize with respect to the process of accreditation in engineering college libraries in Kerala.
6. To identify the problems and challenges faced by the engineering college libraries for further development.

1.14 Hypotheses of the Study

The hypotheses of the study are following

1. There exists no significant difference in the availability of resources and services among the libraries of NBA accredited engineering colleges in Kerala based on their category.
2. The engineering college libraries in Kerala show a significant difference in the availability of resources and services based on their accreditation.
3. The libraries of NBA accredited engineering colleges in Kerala show a difference in the availability of ICT infrastructure and facilities based on their category.
4. The engineering college libraries in Kerala show a difference in the availability of ICT infrastructure and facilities based on their accreditation.

5. The engineering college libraries which do not have the accredited programs of NBA show a low level of growth in information resources, budget and number of users when compared to the NBA accredited engineering colleges in Kerala.
6. The NBA accredited engineering colleges show no significant difference in the collection development of resources based on their category.
7. The engineering college libraries in Kerala show a significant difference in the collection development of resources based on their accreditation.
8. The libraries of NBA accredited engineering colleges show a difference in the organisation and management of information resources based on their category.
9. The engineering college libraries in Kerala show a difference in the organisation and management of information resources based on their accreditation.
10. The NBA accreditation has a positive impact on engineering college libraries in Kerala.
11. The NBA should lay more emphasis on specific services and practices of engineering college libraries with respect to its accreditation process.
12. Inadequate fund provision is the main problem faced by most of the engineering college libraries in Kerala for their further development.

1.15 Scope and Limitations of the Study

The research highlights on the development and management of engineering college libraries in Kerala with special focus on the libraries of engineering colleges which were accredited by NBA and also checking whether these libraries keep any differences from the libraries of engineering colleges which do not have the accredited programs of NBA. The data for the study was collected in 2020. Out of 158 engineering colleges in Kerala, the researcher selects 120 as a sample. Only 36 of the

120 engineering colleges have NBA accredited programs. The researcher adopted the criteria for selecting the NBA accredited engineering colleges by considering the programs that get the accreditation of NBA in between 2018 and 2022 including the years and also.

Dependent variables used for the study was library resources (which includes physical, informational, human and financial resources), library services, information and communication technology facilities, collection development process, methods adopted for organization of information resources, management of information resources and problems faced by the engineering college libraries for further development and the impact of NBA accreditation on engineering college libraries in Kerala. Independent variables used for the study was the category of NBA accredited engineering colleges (which include Government engineering colleges, engineering colleges under Government departments and self-financing engineering colleges in Kerala) and accreditation status of engineering colleges (which includes engineering colleges that was accredited and not accredited by NBA).

The researcher considered only the engineering colleges which are under Government, Government aided, Government departments, universities and self financing in Kerala. The engineering colleges which are under the control of Central Government and under Kerala Veterinary and Animal Science University are excluded from the study. NBA accreditation is considered for all technical disciplines like Engineering and Technology, Management, Architecture, Pharmacy and Hotel Management and Catering Technology but only colleges which provide engineering and technology programs were considered for the study. NBA gives accreditation to the programs of engineering colleges and it doesn't give accreditation to the whole institution. But for convenience the investigator used the term NBA accredited engineering colleges/institutions too in the study. For comparing the category analysis of NBA accredited engineering colleges the researcher selects the undergraduate programs of engineering colleges which belong to the Tier II category of NBA accreditation. Post graduate level programs accreditation is not considered for the study. The respondents of the study were only the librarian/librarian in charge of the

engineering colleges. Other library staff, students and faculties were not included in the study. The researcher studies the development of engineering college libraries only in terms of development of printed resources, financial resources and users. Any of the other aspects were not included.

1.16 Organisation of the Thesis

The thesis is organised under five chapters, as follows:

Chapter I introduces the problem of the study. It includes a brief description of the subject which includes technical education, engineering education in India, engineering education in Kerala, role of AICTE and NBA, engineering college libraries and its importance, library criteria requirement for NBA accreditation. Further the chapter outlines the need and significance of the study, statement of the problem, definition of key terms, objectives of the study, hypotheses, scope and limitations of the study, and organisation of the thesis.

Chapter II deals with a literature survey of related studies conducted in India and abroad covering the availability of information resources and services, ICT infrastructure and facilities in engineering colleges in Kerala. It also covers the collection development process, organization and management of information resources and problems faced by these engineering college libraries.

Chapter III describes the methodology of research, variables used for the study, sampling design, data collection tools, data collection procedures and various tools and techniques used for data analysis.

Chapter IV includes the analysis and interpretations of data. The results are presented in tables and figures in order to understand it in a simplified manner.

Chapter V gives a summary of the major findings, tenability of hypotheses, suggestions based on the study, conclusions and recommendations for further research.

Style Manual Used

The researcher followed guidelines in the APA (American Psychological Association) 7th edition for preparing references and bibliography in the study even though with minor changes in the in-text citations. In order to make it more readable, the researcher has limited explicit mentioning of the names of authors up to the first three during in-text citations. However, in the references and select bibliography, the names of authors are provided following the style manual.

1.17 Conclusion

The present study aims to analyse the development and management of NBA accredited engineering college libraries in Kerala and to make a comparative study between the engineering colleges accredited and not accredited by NBA in terms of resources, services and facilities. It includes the various aspects of the study, the relevance of the study, its objectives, research methodology, scope and limitation of the study. The study aims to give specific suggestions and recommendations for improving the quality of engineering college libraries in Kerala.

Reference

- AICTE (2021). *All India Council for Technical Education: Approval process handbook 2021-22*. AICTE. [https://aicte-india.org/sites/default/files/approval/Approval%20Process%20Handbook_2021-22%20\(Revised\).pdf](https://aicte-india.org/sites/default/files/approval/Approval%20Process%20Handbook_2021-22%20(Revised).pdf)
- Alliance University (2020, December 18). *Engineering education in India: A brief overview*. <https://www.alliance.edu.in/blog/2020/12/18/engineering-education-in-india-a-brief-overview/>
- American Library Association (2019). Library. In *Online Dictionary of Library and Information Science*. <https://libguides.ala.org/library-definition>
- Anu, V. (2021). The state of engineering education in India: Know here. <https://www.embibe.com/exams/state-of-engineering-education-in-india/>
- Archana, S. N. & Humayoon, K. (2012). E-resources in the engineering college libraries of Kerala: Problems towards sustainable collection development. <https://dyuthi.cusat.ac.in/purl/3927>
- Belsare, S. D. (2013). *Development and management of engineering college libraries in Western Vidarbha Region -: An Analytical Study* [Doctoral thesis, Shri Jagdish Prasad Jhabarmal Tiberwala University]. <http://shodhganga.inflibnet.ac.in/handle/10603/16127>
- Bhargava (2001). Present engineering education in India-an emerging economy- and a glimpse of the scenario in the 21st century. In Weichert, D. Rauhut, B., Schmidt, R. (Eds), *Educating the Engineer for the 21st Century* (pp 77-80). Kluwer Academic Publishers. https://link.springer.com/chapter/10.1007%2F0-306-48394-7_9
- Bloomfield, B. C. (1987). Collection development the key issues. In S. Konall (Ed.) *Collection development options for efficient management*. Tayler Graham
- Breeding, M. (2004). The many facets of managing electronic resources. *Computer in Libraries Westport*, 24 (1), 25-33

- Bryson, J. O. (1990) *Effective Library and Information Centre Management*. P.71.
- Cal State East Bay (2021) *Materials deselection policy*. <https://library.csueastbay.edu/usingthelibraries/collections/materials-deselection-policy>
- Cambridge University Press. (2021, June 7). College. In *Cambridge Dictionary*. <https://dictionary.cambridge.org/dictionary/english/college>
- Cambridge University Press. (2021, June 7). Development. In *Cambridge Dictionary*. <https://dictionary.cambridge.org/dictionary/english/development>
- Collins (2021, June 12) Engineering. In *Collins Dictionary*. <https://www.collinsdictionary.com/dictionary/english/engineering>
- Deshapande, K. S. (1985) *University library system in India*. Sterling. p. 87.
- Evans. G. E. (1987). *Developing library and information centre collections*. Littleton
- Evans, G. E. (2004). *Developing library and information centre collection*, (4th ed.). Greenwood Publication.
- Gavit, B. K. (2019). Web based library services. *Library Philosophy and Practice*. 2931. <https://digitalcommons.unl.edu/libphilprac/2931>
- Government of Kerala (2021, March 21). *About Kerala*. <https://Kerala.gov.in/about-Kerala>
- Gupta, R. K. (2014). *Status and impact of Information Technology in engineering colleges institutions libraries of Rajasthan A study*[Doctoral thesis, Banasthali Univesity]. <http://hdl.handle.net/10603/141889>
- Janice, F. (2016). *Impact of accreditation on engineering college libraries in Mumbai* [Doctoral thesis, Tilak Maharashtra Vidyapeeth]. <https://sg.inflibnet.ac.in/handle/10603/166487>
- Karuppasamy, P (2018). *Quality of library services in engineering colleges and arts science colleges of South Tamil Nadu*. [Doctoral thesis, Madurai Kamraj University]. <http://hdl.handle.net/10603/305412>

- Katz, W. A. (1980). *Collection development: the selection of materials for libraries*. Holt
- Kaula, P. N. (1983). Guidelines for college libraries. *Herald of Library Science*, 22 (1-2) p. 48.
- Khayal, O. (2019). Role of technical education. DOI: 10.13140/RG.2.2.15406.05447
- Krishnendu, C. (2020, February 14). More than 50 percent engineers jobless, AICTE decides to stop setting up new engineering colleges till 2022. *News Nation*. <https://english.newsnationtv.com/education/more/aicte-to-stop-setting-up-more-engineering-colleges-till-2022-253899.html>
- Library Management (2021, May 18). In *Wikipedia*. https://en.wikipedia.org/wiki/Library_management
- Library Material (n. d.). <https://nios.ac.in/media/documents/SrSecLibrary/LCh-009.pdf>
- NBA (2019). General manual for accreditation. https://www.nbaind.org/Uploads/General_Manual_V1.0.pdf
- NBA (2020). Evaluation guidelines with indicative exhibits/context to be observed/assessed - SAR tier – II (UG Engineering): first time accreditation. <https://www.nbaind.org/files/evaluation-guidelines-tier-ii-v0.pdf>
- NBA (2020). National Board of Accreditation. <https://www.nbaind.org/about>
- NBA Accreditation (2015, march 7). <http://www.uiet.puchd.ac.in/index.php/2015-12-23-06-54-18>
- Nworie, J. & Magnus, U. (2017) *Library use companion and study skills*. Springfield Publishers. p24-32. https://www.researchgate.net/publication/327187509_LIBRARY_COLLECTION_NATURE_TYPES_AND_USES_IN_ACADEMIC_LIBRARIES

- Oxford University Press. (n. d.). Development. In *Oxford Learner's Dictionaries*.
<https://www.oxfordlearnersdictionaries.com/definition/english/development>
- Patra, N. K. (2014) *Electronic resource management: A case study of management school libraries in Kerala*. [Doctoral thesis, Sambalpur University]. http://ir.inflibnet.ac.in:8080/jspui/bitstream/10603/57323/1/phd%20thesis%20topic_electronic%20resource%20management_a%20case%20study%20of%20management%20school%20libraries%20in%20india.pdf.
- Ramana, V. P., & Rao, C. V. (2003) Use of Information Technology in central university libraries of India, *DESIDOC Bulletin of Information Technology* 23. 2 p.35.
- Rao, N. V. (2013). *Management of electronic resources in NBA accredited engineering college libraries in Andhra Pradesh (INDIA): A survey* [Doctoral thesis, Andhra University]. <http://shodhganga.inflibnet.ac.in/handle/10603/12710?mode=simple>
- Shivalingaiah (1994) *Library facilities in colleges in Karnataka: a study* [Doctoral thesis, Mangalore University].. <http://hdl.handle.net/10603/131340>
- Technical Education - Kerala (2014). <https://ktu.edu.in/eu/core/technicalEducationGrowthIntake.htm?jpxEU9Czq%2BMoNbhlpPiNevBBY22LVH%2BIF0uxmjnFYbr8R5izegPCarhViLMj0VH6>
- Wilson, L. R. & Tauber, M. F. (1956). *The university library*. New York: Columbia University Press.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

Review of literature refers to the documentation of a comprehensive analysis of the published and unpublished work from primary sources in the areas of current topic of the study. It provides the background theories and concepts in the areas where the researcher has a particular interest. It suggests methods, procedures, sources of data and statistical methodologies that are suitable for the problem's solution. In order to evaluate and discuss the results, it locates comparative data and findings. The conclusion reached in the connected studies may be considerably compared and may be used as the subjects for the findings of the study. It makes it possible to prevent repeating work that has already been completed. It aids the investigator to go deep into the subject on one hand and study the different angles of the problem on the other (Vahida, 2016).

The chapter described the earlier studies that were done in the field of present research topic. It examined studies carried out both inside and outside India. The investigator consulted various sources like periodicals, online journals, and online databases to get the idea of similar studies related to the problem. The review of literature is arranged in four headings and it is arranged chronologically.

- Accreditation and Libraries
- Library Resources and Services
- ICT Infrastructure and Facilities
- Collection Development, Organisation and Management of Library Resources

2.2 Accreditation and Libraries

Accreditation is crucial for improving quality and maintaining standards in academic institutions. Each accreditation team is required to visit the library since it serves as the centre of activity during accreditation in order to assess the quality of library resources and services in relation to each programme being accredited (Umeozor & Emasealu, 2016). Warning, Henri, Sinclair, Chan and Chu (2021) investigated a range of existing library benchmarks from developed countries as well as criteria for school library evaluation and proposed a framework for accreditation of International Baccalaureate school libraries. Staffing, collections, services, facilities, equipment, collaboration, and networking were among the factors that were evaluated and, as a consequence, accredited.

Naveen (2020) evaluated how NAAC accreditation affected the development of college libraries. The study reveals that there has been an increase in library facilities after the NAAC accreditation, and the number of library facilities in the library increased by 14.84 percent before and after the accreditation. College libraries are advised to create a model library in order to meet the NAAC assessment procedure and demonstrate their significance in the colleges.

Ram (2020) examined how academic libraries contribute to accreditation. It aimed to understand the guidelines and processes needed for academic institutions to get accreditation from organisations like AICTE, UGC, ABET, NAAC, etc. As the libraries are one of the important criteria for accreditation and ranking of academic institutions, the study identified the key expectations from these bodies for library science education and libraries in terms of collection, services, and other crucial aspects which contribute to an institution's success.

By examining the outcomes of library quality accreditation criteria that were gathered from universities between 2016 and 2020, Linh and Le (2020) evaluated the limits of libraries for quality accreditation. According to the report, libraries should take steps to understand their patrons' requirements and offer services that live up to their expectations. It was assumed that the libraries might raise the standard of their services by conducting regular user surveys.

Kulkarni (2018) discussed the importance of libraries and librarians in the accreditation process. The study made clear that libraries are crucial to meeting the information needs of the academic community. Libraries play important roles in guiding the parent institutions' pursuit of innovative approaches to academic research and output. The base of academic output is libraries and librarians, who have the capacity to broaden the scope and depth of the creative work done by academics and students in related areas. The study came to the conclusion that, in addition to serving as a valuable learning resource, libraries and librarians may contribute significantly to the accreditation and assessment processes.

Agbetuyi, Adegbilero-Iwari and Subair (2017) focused on the role of academic libraries in accreditation of courses and teaching programs in Afe Babalola University of Nigeria. The results demonstrated that Afe Babalola University's decentralised library system had improved specialised collections for giving access to information in print and electronic media. Also, the systematic organisations of the resources have enhanced accessibility by users. As a result, most of the courses offered have got full accreditation. Additionally, the library has helped students acquire the skills they need for effective learning, including information literacy, reading comprehension, and the availability of up-to-date, pertinent information resources. Access to collections has also been enhanced through long opening hours including weekends.

Men and Isreal (2017) made a case study on the part that academic libraries play in Nigeria's undergraduate programme accreditation. The questionnaire served as the primary tool for collecting data, which was done using the census design technique. The study found that libraries are actively involved in all accreditation processes because they make information resources accessible and available, which are crucial and necessary for accreditation. The study concluded with the suggestion that academic libraries be given enough funding and personnel with training in librarianship to enable them to operate efficiently and bring library services closer to each student and staff member.

Janice (2016) conducted research on the impact of accreditation on engineering college libraries in Mumbai. It concentrated on the accreditation

procedure and evaluated how accreditation affected collection development, infrastructure, personnel, and services in engineering college libraries. The study adopted survey method with questionnaire and interview as a tool for data collection. It is found that most engineering college librarians in Mumbai had either already undergone the accreditation process or were currently applying, and that they were all aware of its significance and complexity. The study also proposed a model for the accreditation of engineering college libraries.

Umeozor and Emasealu (2016) analysed the impact of external quality assurance on academic libraries in Nigerian universities. The study employed structured questionnaire to find out the librarian's opinion on quality assurance. It was revealed that the high impact of accreditation in all libraries was the improved provision of library resources and services.

Odera-Kwach and Ngulube (2013) conducted an exploratory study on the impact of accreditation on university libraries in Kenya. The result of the study demonstrated that university librarians are well aware of the significance of accreditation. Majority of them agreed positively that the accreditation has made significant changes in their libraries and also offered suggestions to make the accreditation process better.

A research was conducted by Raut and Kokate (2013) among the accredited academic libraries in the Sant Gange Baba Amaravati University Region. The aim of the study was to check the impact of NAAC on college library development and best practices followed by them. The study collected data through questionnaire method and peer team reports. It was found that after the NAAC accreditation process, almost all colleges attempt to focus towards the improvement of their libraries. Additionally, it was noted that libraries have made improvements in the areas of infrastructure, learning resources, IT introduction, e-resource collection, user services, and all of the best practices specified by NAAC. Along with these initiatives, libraries introduced some other innovative practices too.

Ghumre and Veer (2013) analysed the impact of NAAC accreditation on the college library services in Maharashtra. The data for the study was collected with

questionnaire method. The findings indicated that NAAC accreditation had a favourable impact on library services. The accreditation not only increased the number of library services but also made the libraries introduce new services which were not previously available.

Belsare (2013) conducted an analytical study on development and management of engineering college libraries in western vidarbha region. The study examined the engineering college libraries' compliance with all AICTE requirements and also analysed the reading materials and facilities available in these libraries. The study concluded with findings that all colleges are approved by the AICTE and adhere to its rules and regulations. The college libraries' infrastructure and information resources are adequate and the computerization facility shows a positive trend towards engineering college libraries.

2.3 Library Resources and Services

By offering information resources and services, engineering college libraries aim to improve the performance of their user communities. Any library system's most important component is service because it serves users by providing the right information at the right time in the right format. For many years, most of the libraries and the librarians have been using printed resources made available to users by the systematic efforts of publishers and booksellers. The scope of the library system has significantly increased as a result of the rapid development and subsequent widespread use of computing and networking systems. These technologies have also changed how libraries gather, organise, store, and disseminate information, which was previously impossible (Krishnamurthy & Roopa, 2019).

Pal and Barman (2020) assessed the status of library services and resources offered by the private university libraries in Assam. The study primarily focused on the collection, infrastructure, staff position, and library services offered by these libraries. Questionnaire method was adopted to collect data for the study. It was revealed that the private university libraries collection of E-books and E-journals services are not sufficient to satisfy the rising needs of its patrons. The study suggested

that there needs to be an adequate number of library staff to manage all the different collections and services of the library in light of the increasing number of library users.

Mozumder, Barooah and Hussain (2020) looked into the status of various library services provided by the college libraries in Southern Assam. The study used the questionnaire method to gather its data. It was found that most of the college libraries under study were in the developing stage of their library infrastructure and automation. According to the study, libraries should focus more on offering better library services and infrastructure to users in order to maximise the utilisation of ICT-based resources and services. It was also suggested that the concerned authority should encourage library personnel to attend training sessions and seminars in order to advance their technical abilities and help libraries in developing their ICT and other infrastructure facilities.

In the Bhubaneswar region of Odisha, Partap and Saha (2019) conducted a comparative analysis of engineering college libraries. The purpose of the study was to comprehend the present state of the ICT infrastructure, staff, collection, and services in engineering college libraries. The study found that all the engineering colleges chosen for the study were privately run, automated and providing open access to its collections. It was also found that the staff were satisfied with their salary and working conditions. According to the study, libraries should focus more on providing high-quality services. To achieve this, they should solicit feedback from the user community, which will help them understand their information needs and assist them reach their goals.

Krishnamurthy and Roopa (2019) assessed library resources and services provided by the engineering college libraries in India. It mainly concentrated on the digital library facilities and services in the libraries. The study adopted the quantitative and qualitative research method and employed the questionnaire and interview as data collecting tools. It was revealed that the librarians of engineering college libraries were satisfied with the idea of the digital library and digital services and considered that it was an important tool that they could use to provide innovative information services to their users.

The resources and services provided in the selected engineering college libraries in the state of Karnataka were surveyed by Satheesha and Vaddankere (2018). The paper also covered the collection development, library membership, staff position, working hours and e-resources subscribed by libraries. For collecting data questionnaire method was used as the main tool. The study concluded with findings that higher authorities should support engineering college libraries by providing continuous financial support, skilled professional staff and better infrastructure which would enable them to improve their service more effectively.

Sharma and Sharma (2018) assessed the current position of E-resources and its impact on the libraries of private engineering colleges. The scope of the study was five private engineering colleges near Mewar University region of Uttar Pradesh. The researcher used questionnaire as the main tool for data collection. It is found that the engineering college libraries do not have enough online resources to meet the demands of their users. The study's suggestion for engineering colleges is to expand their collection of electronic resources in order to meet users' needs for research and academic purposes.

In their evaluation of college library services in upper Assam, Nandita and Rajani (2018) drew attention to the issues and challenges in providing better library services to the user community. The study found that as the college libraries have grown significantly, the services provided were mostly traditional based and only a small percentage of them have started providing ICT based services to the users. It also found several flaws in the manpower and infrastructure facilities and advised the Department of Higher Education and the Government of Assam to fill up the vacant posts of library professionals in these colleges.

Krishnamurthy, Roopa and Reddy (2018) conducted a pilot study to explore the collection building of E-resources and impediments in fostering the use of E-resources in the engineering college libraries in Karnataka. Questionnaire was the main tool used for data collection. It was revealed that most libraries in Karnataka have the sufficient infrastructure in place to provide their users access to electronic resources. The study also found that the librarians of engineering college libraries in

Karnataka were moderately successful in satisfying the users' information demands and abiding with AICTE rules and regulations in this area.

Goud (2017) discussed the status of total library collection, financial sources of library budget and collection development policies adopted by the Kakatiya University library, Warangal, Telangana State. The university library annual records and accession registers were used by the investigator to gather data. The findings revealed that there are more general books than other information sources, indicating the need to reinforce the textbooks that are essential for professors and students. The university provides an annual budget to the library for the purchasing of library books, journals and equipment etc. The study recommended that the university allocate more funding for purchasing online materials and hire professionals with ICT abilities to provide online services to its users.

Panneerselvam (2016) investigated the status of autonomous engineering college libraries in Tamilnadu. It was observed that the engineering college libraries are well-equipped with print and electronic resources and are able to satisfy the contemporary requirements of its users. The average working hours of the libraries were also reported to be ten hours, which is a strong indication of support for the institutions' educational system.

Jestin and Sornam (2016) investigated the awareness and availability of electronic resources in engineering college libraries in Kerala. The study included a variety of data gathering techniques, including surveys, questionnaires, participant observations, and participant interviews. It was highlighted that while the availability of E-resources was excellent and the engineering college librarians' awareness of different consortia and E-resource packages in engineering disciplines was very high, subscriptions to technical reports, patents, and standards, as well as multimedia products, were very low, and many libraries lacked the infrastructure needed for creating, storing, and using E-resources. The study suggested allocating more funds and excellent infrastructure for E-resources since they are extremely useful and required in the current engineering scenario.

In order to assess the status of engineering college libraries in the Haryana district of Ambala, Partap (2016) conducted an evaluation survey. The study concentrated mainly on the technical activities of engineering college libraries as well as the personnel, collection, services, ICT infrastructure, and collection development policies. It was revealed that all engineering college libraries had adequate ICT infrastructure and offered internet service to their patrons. The study proposed that in order to fulfil their objective of meeting the information needs of their users in the digital environment, colleges need to enhance their libraries in terms of staff positions, buildings, collection development policy, and professional salary structures.

Bhavsar and Patel (2016) investigated various services provided by the engineering college libraries of Anand district in Gujarat. The study adopted tools like questionnaire, interview and personal interview for data collection. It was understood that the engineering college libraries in the Anand district are unable to effectively provide their services as a result of a number of issues, including a lack of adequate funding, sufficient staff, collection, and inadequate facilities. According to the study, users' information needs are continually changing in the modern age. To adapt to these changes and meet user requirements, libraries should change themselves from the traditional one to the modern system.

Manik (2015) conducted a study on the information resources, infrastructure facilities and services in NBA accredited engineering college libraries in Maharashtra. The researcher collected data through questionnaire method, mobile interviews and face to face interactions with librarians and analysed by using percentage method. As per the study, the staff's lack of confidence, their lack of coordination and planning, and their lack of ICT training are the main issues facing engineering college libraries. The conclusion of the study included the recommendation that staff members maintain effective communication with one another and with users in order to better understand the development and progress of the institute and of themselves.

Bhattacharya and Das (2015) made an effort to analyse the budget status and E-resource availability in West Bengal's engineering college libraries. It was found out that majority of engineering college libraries have subscriptions to the databases

that the AICTE had suggested, and that the majority of these libraries did not have a separate budget allocation for E-resources and finance is the main problem faced by them. The study strongly recommended that AICTE should prescribe a slightly more comprehensive list of databases of E-resources in various branches of engineering and permit the institutions to select the required items since engineering college libraries face financial difficulties to subscribe to E-resources.

Shivakumaraswamy and Nikam (2015) made a study on the development of different kinds of printed library resources available at Mysore region engineering college libraries of Visvesvaraya Technological University in Karnataka state. Questionnaire method was employed to collect data from the colleges. The survey discovered that, out of six engineering disciplines, Electronics and Communication Engineering had the greatest growth rates and spending for printed books. It is also found that almost the same trend has been observed in the collection development of other library materials too.

Balu and Reddy (2014) performed a survey on the present status of engineering college libraries in Sri Venkateswara University area, Andhra Pradesh, India. The study used questionnaire method to gather data from 29 librarians, and the percentage technique was used to analyse the results. The survey found that a significant portion of engineering college libraries did not subscribe to periodicals in accordance with AICTE standards, 17.2% of libraries did not have a plinth area of 400 square metres, and 79.3% of libraries lacked independent buildings. It is advised that the concerned library authorities should take the appropriate actions to meet the AICTE standards for library resources and facilities. The majority of engineering college libraries use DDC and AACR 2, although a few of these libraries did not classify and catalogue their publications. It is advised that these libraries classify their publications according to DDC and catalogue them in accordance with AACR 2.

Kannappanavar and Jayaprakash (2014) discussed the information resources, services and facilities available in the government and private engineering college libraries in Goa. The study adopted a survey method with structured questionnaire and interview as tools for data collection. The majority of libraries did not set aside a

separate budget for IT resources and facilities, and all libraries are automated to perform their daily tasks and offer internet and other electronic information services to their patrons. It has been determined that the libraries lack sufficient professional staff to provide proper service to their patrons. The study recommended that libraries should acquire modern tools and techniques for providing proper service to its user community.

Kumar (2012) conducted a study on growth and development of architectural engineering college libraries in Haryana. The study covered topics such as library space and related facility issues, the different types of resources offered in the library, library hours, number of patrons served, library staff qualifications, collection policies and practises, financial resources and expenditure on equipment, technical processing of documents, library services being offered, and state of IT applications in the library. The study found that most of the architecture engineering college libraries in Haryana started functioning in the last three years. Additionally, it recommended strengthening the library's collection and personnel as well as preparing an annual budget for the library in order to expand its collections, purchase and maintain equipment, create digital libraries, and offer high-quality services to its patrons.

The resources and services offered by engineering college libraries in the state of Karnataka were investigated by Kannappanavar and Manjunatha (2011). Out of one hundred and twenty seven engineering colleges the investigator selected forty five libraries. Primary data was collected through questionnaire method and analysed by using percentage method. It was found that although some colleges have rich collections and infrastructure resources, other institutions are not interested in adding new services to their libraries due to a lack of staff and equipment. According to the study, as computers and communication infrastructures are necessities of the modern day, libraries should allocate more resources and hire more qualified personnel in order to maintain and give better service to engineering college library users.

Mulla and Chandrashekra (2006) conducted a case study on E-resources and services available in the engineering college libraries of Karnataka. It is found that the availability of E-resources and services in the engineering college libraries are not

satisfactory owing to lack of ICT infrastructure, lack of qualified staff, lack of awareness about the digital resources, financial support etc. The study suggested that a better effort from engineering colleges with the support from INFLIBNET can improve the situation of E-resources and services in engineering college libraries.

Tadasad (1999) made a study in the academic libraries in Karnataka to know the existing resources, collection development process, methods adopted for organization of collection, and practices followed in management of collection. The scope of the study was 571 college libraries. Data was gathered by questionnaire method and analysed by using percentage and chi-square test. The reasons for underutilization of library resources, according to study, are lack of a need-based collection and lack of knowledge on how to use the resources among the users. It was also found that financial restrictions, lack of manpower resources, high cost of involvement and non-corporation of higher authorities are the problems faced by libraries in case of collection management. The study suggest an in-depth study at the national level by apex bodies like UGC, AICTE etc. to assess management system, staffing models, academic status of professional staff, library professionals attitude towards profession and authorities towards libraries.

2.4 ICT Infrastructure and Facilities

The library system and services have been completely revolutionised by the introduction, rapid advancement, and subsequent widespread use of information technologies. Through various search engines, free and paid e-books and journals, institutional repositories with open access, open courseware, open software, electronic theses and dissertations (ETD), etc., the Internet offers society a sea of knowledge. The continuing new developments in information and communication technology (ICT) are bringing a new library era that nobody could have imagined a few decades ago. Due to technological innovation, the engineering education system has completely transformed. Libraries of engineering educational institutions are also influenced by ICT (Partap & Tiwari, 2018).

Subba and Das (2019) conducted a survey on ICT infrastructure in college libraries of Darjeeling district of West Bengal. The paper investigated the level of

automation, bandwidth and internet speed, networking components and its use and financial assistance for the development of ICT infrastructure available in college libraries. The data for study was collected from twenty college libraries by adopting questionnaire as the main tool. From the study, the ICT infrastructure in college libraries was found to be at various stages of development. The study concluded with a suggestion of providing hardware and software, adequate financial allocation and proper training to library professionals which would help the libraries to strengthen its ICT infrastructure thus to improve its services.

Jestin and Sornam (2019) looked at the network facilities and ICT infrastructure in the engineering college libraries in Kerala. The survey found that most of the engineering colleges in Kerala were well equipped with sufficient E-resources, infrastructure and facilities to efficiently deliver services to the users. It was advised that the librarian should make sure that regular refresher courses and training programs were organised for library staff in order to make them aware about new technologies in the field.

Hanchate and Sawant (2018) made a survey of Information and Communication Technology based library services in AICTE approved institutes in the rural areas of Pune district. The librarians were given a structured questionnaire for the purpose of gathering relevant data both directly and by email. It was observed that the libraries under study primarily offered ICT-based services like OPAC, full-text database access, reprographic services, bibliographic services, etc., but they were not at the level of offering the latest trends in library services like digital libraries, institutional repositories, WebOPAC etc. The main problems faced by these libraries were a limited budget and a shortage of qualified library staff. The study came to the conclusion that rural academic libraries were capable of offering ICT-based library services via social media, the internet as well as using library automation software.

Chavan and Naik (2018) conducted a study on Information and Communication Technology infrastructure in thirty eight engineering college libraries in North Karnataka. The study's major goal was to learn about the availability of library resources, ICT facilities, status of library automation software, and the network

of engineering college libraries. Structured questionnaire and interview method were adopted as main tools for data collection. It was noted that the majority of engineering college libraries are automated, that they all have adequate ICT infrastructure, that about half of the engineering colleges use KOHA as library management software, and that the majority of colleges use LAN for internet connectivity.

Duragannavar, Manjunath, and Mamdapur (2018) explored the benefits of ICT-based tools in libraries. It mostly included topics such as library automation, network technologies, barcode, scanning, electronic security system, cloud computing, and so on. According to the study, each advancement in ICT speeds up the growth of libraries. It was also observed that in the modern environment libraries are totally dependent on ICT based tools and services to fulfil the 'HI-TECH' users need.

Patel (2018) in a study described ICT based best practices in libraries. It explored ICT-based techniques in libraries such as automation, library website, Online Public Access Catalogue, electronic document delivery services, CAS and SDI services, electronic resources, institutional repository, online services, library portal, and so on. The study concluded that best practises in libraries would aid in providing up-to-date information to the user community, hence increasing user satisfaction.

Rajendran and Kumar (2018) analysed the status of automation and networking facilities available in college libraries affiliated to Bharathiar University. The study adopted survey method with questionnaire as the main tool for data collection. It was observed that the majority of colleges under study use commercial software for automation, have LAN connectivity, and are interested in resource sharing. It was also found that some of the libraries had barcode facility, availability of OPAC through web and RFID technology. The result of the study indicated that the college libraries under Bharathiar University have a positive attitude towards library automation and networking.

Rahman, Choudhury, and Barooah (2018) investigated the extent to which ICT infrastructure is used in Assam's special libraries to make services useful to the user community. The study followed a survey method using schedule, questionnaire,

observation and conducting interviews. The findings revealed that the ICT application and its development on library services in Assam were not satisfactory. According to the survey, the authorities of the library, the librarian, and the faculty should all share responsibility for enhancing the library's services. They should learn about new technology and apply their expertise to library activities in order to improve library services.

Bhoi (2017) in a study discussed ICT tools used for communication purpose, video conferencing, remote control technology, library security, quick response code technology, resource sharing etc. It discussed how library automation may help with acquisition, cataloguing, classification, serial control, circulation, and stock verification. The study also looked at ICT-based library services such as OPAC, reference/ILL services, reprographic services, SDI, document delivery services, and so on. The study opined that the library professionals should be updated with the technology for their own existence.

Kumar (2017) made an attempt to study ICT infrastructure, ICT based services and recent trends of library services provided by the selected engineering college libraries in Coimbatore district of Tamilnadu. The study adopted a structured questionnaire and interview method for data collection. It has been found that some colleges need to upgrade their ICT infrastructure, and that despite the availability of various e-resources and digital repositories, users are trailing in their utilisation. The study also revealed that as all the colleges have qualified librarians, most of them lack professional assistance. As a result, it was proposed that the authorities take the required steps to hire professional employees and require them to engage in professional training. It was also advised that libraries implement new technologies such as Web 2.0, cloud computing, and internet-based services to meet the information demands of their users.

Malipatil and Nagaraj (2017) made a comprehensive analysis of the digital library infrastructure and automation status of engineering college libraries in Karnataka. The survey revealed that while the majority of engineering college libraries under consideration were automated, others were not fully automated and

were still in the early stages of development. According to the study, a well-equipped library with all of the facilities of modern infrastructures and technologies could withstand the changing environment, and library automation is highly important in the fast-growing technology. The staff, management and resources play a vital role in the building of their future.

Reddy (2015) conducted a survey on Information and Communication Technology Infrastructure in engineering college libraries in Sri Venkateswara university area. Questionnaire method was used for collecting data for the study. It was noted that while the majority of engineering college libraries possess basic hardware facilities such as servers, computers, printers, and so on, they are often underutilised. The study concluded with a recommendation to provide better training to library staff to make them capable of using the resources in a better way.

Mondal and Jana (2015) investigated the latest trends in private engineering college library services in West Bengal as well as the significance of digital resources provided by the libraries. The study covered traditional services that were given in modified ways after the integration of ICT in libraries, as well as new services that were developed following the integration of ICT in libraries. It was revealed that the large number of private engineering colleges that did not meet minimal criteria slowed the growth of engineering education in West Bengal. It was also found that the progress in Information Technology has offered different opportunities to user for seeking information in a shortest time.

Arokyamary and Ramasesh (2014) investigated the availability of ICT infrastructure facilities in the engineering college libraries of Karnataka. It also tried to understand the distinction between the ICT-based facilities offered by government-aided and private engineering college libraries. The study found that majority of engineering college libraries lack basic and advanced IT infrastructure facilities and services, due to the lack of budget and management lacunas.

Kumar (2014) made an effort to study the initiatives on digital collection and development in engineering college libraries in Andhra Pradesh. According to the study, a significant number of engineering colleges are in the process of developing

digital collections in their libraries, which is an encouraging trend among Engineering Educational Institutions. The survey also recommended that engineering college libraries should proceed with new digital projects despite financial restrictions and shrinking institutional budgets.

Saleem, Tabusum, and Batcha (2013) provided an overview of information and communication technology applications and ICT tool usage in engineering and arts and science college libraries. Questionnaire is used as the main tool of data collection. The findings of the study revealed that due to a lack of LAN facilities, internet usage seems to be relatively low in most academic libraries, and suggested for high speed internet connection and a consortium of libraries to more efficiently utilise ICT services.

Dayal (2012) in a paper discussed the recent trends of using ICT in modern college libraries. The study explained various modern technologies like web technology, networking technology, library automation, scanning technology, barcoding technology and RFID technology practices in libraries. It also discussed digital and virtual libraries. According to the study, the use of ICT-based modern technology in libraries will allow every reader to receive the information he or she wants faster, saving time.

Tiwari and Sahoo (2011) investigated ICT infrastructure and usage in university libraries of Madhya Pradesh. The study is based on librarians' perspectives on the infrastructure and difficulties associated with developing and maintaining ICT in university libraries in Madhya Pradesh. The questionnaire and observation methods have been used to collect data for the study. It was found that university libraries in MP are still in the early stages of developing infrastructure. It was also reported that lack of infrastructure, effective planning, and frequent changes in ICT are the main barriers to successful ICT development in MP university libraries.

Kumar (2011) investigated the challenges faced by professionals in engineering college libraries, particularly in the areas of automation, internet and networking, preservation of digital and paper-based materials, intellectual property rights and their significance for future library management. The findings revealed that

in the modern library environment, library professionals faced many tough challenges and concluded with the observation that technological application in the library institution will be fully successful only when there is close coordination between IT and human resources.

Rao and Choudhury (2010) made a case study on the network infrastructure facilities available at NIT libraries in India. Questionnaire was used as the main tool for data collection. As per the study, the present state of NIT libraries across the country in terms of network infrastructure facilities is good. It was shown that the majority of the library's local network was part of their campus network. Every library has an internet connection, with the majority of them using leased lines. It was found that fifty percent of institutions report the network bandwidth of 6.0 Mbps and above. The network infrastructure facilities of the south zone NIT libraries are better to those of the other zones.

Mondal and Bandyopadhyay (2010) analysed application of ICT and related problems of library professionals in the government aided degree college libraries of Burdwan, West Bengal. The data for the study was collected through questionnaires and interviews with library professionals. It was discovered that the automation levels of the colleges under investigation were at varying states of development. The main issues in implementing ICT in libraries were a lack of funding, a shortage of staff, a lack of IT expertise among library professionals, and a lack of cooperation from the authorities. The study recommended the authorities to give support to library professionals to extend their IT abilities by sending them for training in reputed institutions which help the college libraries to provide better IT enabled services to its students.

Rao and Choudhury (2010) examined the availability of computer infrastructure, electronic equipment, and the current state of computer-based library services provided by National Institutes of Technology across India. The questionnaire was used to collect data for the study. According to the survey, the majority of NIT libraries have more than twenty computers, and almost one-third of libraries have digital and barcode scanners. The NIT libraries in the South Zone are

significantly superior to those in the other zones. According to the study, NIT libraries might extend their infrastructure facilities to provide more value-added services to users, but they need good initiation, planning, management, and experience to create their system more effectively.

2.5 Collection Development, Organisation and Management of Library Resources

Collection development, organisation, and management are crucial components in the growth of a library collection. It is considered that development of the collection of titles is one of the most significant and essential activities in the library (Ravikumar & Naick, 2016). The process includes several activities such as the user's needs, evaluation of current collections, determination of a selection policy, management of selected items, analysis and storage of collection items incorporated into the planning and resource sharing. As a result, collection development is a combination of actions rather than a single activity (Shanmugam, 2012). In fact, the use of a library is determined by the quality of its collection.

Obiano (2021) discussed the impact of collection development policy in providing required information in the academic libraries of Nigeria. The study found collection development as a necessity for building qualitative collection of print as well as E-resources in academic libraries. The primary issues facing academic libraries were identified as being insufficient financing, a lack of proper coverage of all disciplines, the high cost of library resources, and the collection development librarian's failure to interpret and follow the policy. The study advised that the government should give libraries enough money, hire specialists to handle collection development tasks, and have librarians make sure that the money is used wisely for the policy-aligned acquisition of pertinent items.

Varadaraju and Ramesh (2018) made a case study on collection development of information resources in Methodist engineering college library, Telangana. The questionnaire was used as a data gathering tool in the study. It was revealed that the library had a written collection development policy, that the library committee was in charge of selection of resources, and that the library collection met all of the AICTE standards. The study recommended that an ICT centre be established to subscribe to

all E-resources offered by AICTE on behalf of all private engineering colleges and provide access to them, allowing the institutions to save money on E-resource subscriptions.

Rajasekharam and Anjaiah (2018) conducted a survey on collection development of NAAC accredited Government degree college libraries in Telangana state. The information was gathered via a structured questionnaire, interviews, observation, a schedule, and the review of registers, among other methods. According to the survey, the majority of libraries have policies in place for both book and non-book collection development, and they are working to improve these areas as well as hiring skilled library staff members. The study recommended for a network or college consortia to share library resources and services among all NAAC accredited Government degree college libraries of Telangana state.

Gulnaz and Nishat (2018) conducted a comparative analysis of collection development and management of resources in the libraries of IIT Guwahati and IIT Patna. For data collection, a well-structured questionnaire was employed. The investigation discovered differences in several elements between the newly built IIT Patna library and the old IIT Guwahati library. One of the significant contrasts was that in IIT Patna, the library committee was in charge of collection development policies as well as resource selection recommendations. At the same time, the library advisory committee was in charge of collection development policy and resource selection based on faculty recommendations at IIT Guwahati. When the IIT Guwahati library was plagued by issues such as a lack of money, information overload, and dispersed literature, the IIT Patna library was not.

Kaur and Walia (2016) attempted to examine the collection development of electronic resources in management libraries of India. It was focused on the types of E-resources available in management libraries, determining the budget allocated for E-resources, learning about the factors influencing e-resources selection, learning about the problems libraries face when building E-resources collections, identifying authentication and accessibility issues, and so on. The survey approach was used for the investigation. For data collecting, questionnaires and interviews were used. The

study indicated that management libraries were still actively involved in developing E-resource collections and demonstrated that librarians did not have total authority over their library' collection development.

Reddy and Chandraiah (2017) assessed collection development of the university library of Dravidian university from 2011 to 2016. The researcher gathered the relevant data for the study from library annual records and accession registers. The study clearly explained the university's collection development as subject-wise, school-wise, and department-wise within the aforementioned time period. According to the study's findings, Dravidian University should allocate more funds to buy more E-resources like as E-books and E-journals, and library employees, regardless of cadre, should be provided ICT training to deliver more services to customers to their satisfaction.

Naick and Mohan (2017) made a survey on collection development practices in the libraries of 32 engineering colleges in Karimnagar and Warangal districts of Telangana state. The study adopted questionnaire as the main tool for data collection. It was discovered that the engineering college libraries' information resources are primarily composed of print materials, and it was advised to create an integrated collection based on a more useful collection development policy by valuing media and electronic resources.

Khan and Bhatti (2016) made an attempt to check the collection development in the university libraries of Pakistan. The study focused on user needs assessment, collection development policies, collection development budgets, collection evaluation, responsibility for reading material selection, formats of materials chosen, access vs ownership, weeding, and legal issues, among other things. It has been discovered that the collection development practises of university libraries in Pakistan are primarily influenced by factors such as a lack of standards and CDPs, insufficient coordination, rapid growth of electronic resources, application of ICT, a lack of collaborative and alternative plans, and so on. According to the findings of the study, university libraries in Pakistan develop their collections, which mostly consist of

books and journals, and the nature of library material acquisition is collection-centered rather than user-centered.

Patel (2016) discussed the importance of collection development in academic libraries. The study revealed that while building qualitative collections for the benefit of users, numerous variables such as policies, principles, techniques, and processes, as well as challenges related with collection development, must be considered. The study found that the librarian must exercise extreme caution when building library collections since the ultimate goal of any librarian is to meet the demands of the users.

Gill, Sharma, and Karki (2016) did a study to learn about collection development policies and the perspectives of users on several aspects of NIT libraries in North India. It provided a basic overview of library collection development, collection management, and collection development policy. The survey approach was used in the study, with a questionnaire serving as the primary data gathering tool. According to the findings of the survey, users are content with the collection of their libraries, and the collection of NIT libraries is more relevant when compared to other libraries.

Sahu (2015) conducted an analytical study on collection development function of the libraries affiliated to Biju Patnaik University of Technology, Odisha. It discusses the strengths and weaknesses of collection management in academic libraries, the organisational structure adopted by libraries, the financial activities implemented on collection management, the policy and procedure implemented for collection development and management, as well as the licencing policy and methods adopted for collection maintenance and preservation. The investigator used questionnaire to collect data. According to the study, an effective library committee and well-experienced library employees were required to propel the library to new heights. It was also proposed that the institution allow its library personnel to participate in various training programmes, conferences, and seminars to improve their understanding of the digital environment.

Shivakumaraswamy (2015) made a survey on collection development practices in the engineering college libraries of Mysore region. The questionnaire was

used as the primary data gathering tool in the survey. The study discovered that the quality, quantity, and currency of the library collection were directly connected to user satisfaction. It was suggested that library professionals include faculty members and other users in the selection of books and other information resources in the library, and that the policy should be to acquire the best book for the right reader at the lowest possible cost.

Ravikumar and Naick (2015) conducted a study on collection development of autonomous engineering college libraries affiliated to JNTUK Kakinada. It reviewed the significance and necessity of collection development policies in engineering college libraries and examined the resources-books, titles, journals, nonbook materials, and back volumes-available at twelve engineering colleges affiliated with JNTUK, Kakinada.

Sasikala, Nagaratnamani and Dhanraju (2014) conducted a study on pattern of collection development in academic libraries in Andhra Pradesh. It looked at the management of electronic resources in university libraries and the difficulties facing librarians in the new environment. Additionally, it looked at the types of collaborative initiatives undertaken by libraries and how librarians see cooperative collection development. According to the report, libraries should have a separate collection development policy for their electronic resource collections, and their librarians should have the necessary skills to oversee these collections. Additionally, it is advised that libraries allocate funds for collection development on a category-by-category basis.

Khayal (2013) made a comparative study among the law libraries in Delhi by focusing mainly on collection development policies, selection criteria of documents, collection evaluation methods, users' assessment methods and the different types of services provided by the libraries. Data was gathered via questionnaires, interviews, observations, and a literature review. It was discovered that special law libraries had a good collection, an adequate budget, and qualified staff to assist its users, but academic law libraries' collection, budget, staff qualification, services given, and level of satisfaction with library staff were not satisfactory. The report advised that the

government enhance academic library conditions by increasing budgets and allocating trained professional employees to the library.

Shanmugam (2012) conducted a survey on collection development practices in selected engineering college libraries in Tamilnadu. The study adopted questionnaire method for data collection. The sample for the study was ten engineering college libraries. It was found that the selected engineering college libraries have an adequate number of books, theses and dissertations, and periodicals. Seventy percent of libraries are found to be completely digitised, and the majority of institutions allocate their money to the procurement of science and engineering materials. According to the study, a strong policy of collection development, regular funding allocations, and ongoing digitalization will increase the library's information resources and enable it to meet its users' information demands.

Khan (2010) conducted a study on managing collection development and organization in globalizing Indian university libraries. It conducted a comparative examination of collection development and organisational tendencies at Uttar Pradesh's four central university libraries. This study used a structured questionnaire that was delivered to central university librarians and acquisition librarians. It was found that collection development organisational patterns varied between newly centralised university libraries and old centralised university libraries. The investigator suggested that a separate post of collection development in charge is needed in all university libraries.

Rajendran (2007) conducted a study on planning and development of library and information services of engineering colleges in Tamil Nadu. The study adopted a questionnaire method for data collection. The analysis revealed that the engineering college libraries did not develop their collections in a consistent manner. Libraries found difficulties to implement innovative library services and it also faced difficulties for implementing Information Technology Services too.

To analyze the e-resource collection development practices of the engineering college libraries of Aligarh, Mushtaq and Tausif (2020) conducted a descriptive study. The research included collection development policy, sources of funds, budgeting,

collection evaluation, pricing models, modes of procurement and other aspects related to collection development activity. The study adopted a well-structured questionnaire followed by interviews of the librarians for data collection. It was found that engineering college libraries in Aligarh are much more interested in focusing on building a strong e-resource collection, most libraries lack proper collection development policy especially for e-resources and the study suggested that these libraries should build their collections in the areas of specializations in engineering studies.

Nimbhorkar (2019) conducted a study on collection development of digital resources in the electronic environment. The study examined the electronic environments that exist in library models, the changing mode of information access in the electronic era, the necessity for libraries to acquire electronic resources, the collection development process for electronic resources, and the E-resources cycle in libraries. It ended with the recommendation that library personnel be e-positive, participatory, and professional in order to satisfy the information demands of users in the digital era.

Horsfall (2019) conducted a study on the management of social media and electronic resources and the problems related to their use in Nigerian libraries. According to the study, social media and electronic resources are effectively leveraged to deliver cutting-edge library and information services, and libraries can use social media platforms to encourage the use of electronic resources. ICT skills are necessary for both library employees and librarians to manage E-resources efficiently. The study also identified the challenges related with social media and electronic resource management in libraries, which are planning, policy, and workflow. The study concluded with recommendations for improving library performance, such as developing a policy framework for the selection and acquisition of e-resources and developing ICT infrastructure for effective library and information service delivery.

Rahman, Choudhury and Barooah (2019) discussed the management of library collection in ICT Environment in the university libraries of Assam. The study looked at the important criteria, such as the organisational structures of libraries, collection

development policies, document selection, supplier selection, book orders, resource collections, licensing policies, technical processing, etc. The primary research tool was both the survey method and the interview method. The study's conclusions show that Assam's university libraries have developed and provided overall services that are satisfactory. It also suggested that the librarians should be fully equipped with ICT knowledge and well concerned with recent trends and developments.

Emery, Stone and McCracken (2019) described Techniques for Electronic Resource Management (TERMs) which was a major framework to help library workers become more familiar with a lifecycle of electronic resource management. The book, which was divided into six sections that go through selection, procurement and licensing, implementation, troubleshooting, evaluation, and preservation and sustainability, exposed new concerns and problems in the administration of electronic resources.

Wadekar and Nagarkar (2018) carried out a study on the current practices of managing online databases at university libraries in Maharashtra state of India. The study focused on the challenges and difficulties that university librarians confront while managing electronic resources. It used the survey method, using a questionnaire as the primary data gathering tool. According to the findings, the databases in the library were subscribed to based on the suggestions of the department heads and senior professors on campus. The lack of an acquisition policy and standard procedures for purchasing online databases is a challenge for librarians. It was also found that the library personnel is not properly trained to manage electronic databases. The research concluded with the recommendation that library personnel enhance their abilities in order to manage electronic databases successfully, and that library science curriculum include a paper on electronic resource management to enable future librarians handle electronic resources effectively.

Okogwu and Ozioko (2018) investigated the challenges of electronic resource collection development in university libraries in south-east Nigeria. In the study, the researcher adopted a descriptive survey research method. The instruments for the collection of data were interviews and questionnaires. The study revealed that the

major challenge for the collection development of electronic resources was cost. The major recommendations of the study was university libraries need to give regular training to staff on new skills for electronic collection development, upward review of the library budget in order to attain the cost of electronic resources, libraries should improve internet bandwidth for better access to the network and maximize profit and acquire electronic resources in a discount cost conduct accession through consortium.

Sajini (2018) sought out the collection development policy for e-resources in university libraries. The study adopted survey method with questionnaire for data collection. It was found that all the libraries followed a written collection development policy. Faculty plays a major role in the selection of library collections. Most of the users responded that they do not have good internet connectivity and speed in their libraries. The study concluded with a suggestion that there was a need to increase the awareness of the users about the e-resources available in the universities and how to access them well.

Patra (2014) made an attempt to know the electronic resource management (ERM) in the libraries of management institutes in India. Findings of the study indicated that all libraries are not following all the steps of electronic resource management such as selection, evaluation, acquisition, licence agreement and renewal/cancelation of e-resources. And also hardware required for the management of e- resources minimum in all the libraries. The investigator suggested that the administrators are required to follow all the steps of ERM for the better management of e-resources.

Hosburgh (2014) conducted a study entitled “managing the electronic resources lifecycle: creating a comprehensive checklist using Techniques for Electronic Resource Management (TERMS) ”. Using the newly created techniques for electronic resource management, the author details the process by which librarians navigate the e-resource lifecycle. The author opined that an e-resources acquisition checklist can assist the librarian in covering all aspects of evaluation, acquisition, renewal, and cancellation of e-resources such as databases, e-books, e-journals, and more.

Merugu and Bandi (2014) discussed E-resource management and its role in the engineering college libraries of Karimnagar district, Telangana. The study also described the application of ICT on E-resource management and E-services provided by these engineering college libraries. The questionnaire method was used to collect data for the study. It was found that the management of E-services in engineering colleges seem to be a difficult task for librarians as they are time sensitive. With a stagnant or declining library budget, engineering college libraries have to improve their operational efficiency by applying knowledge management in order to meet the challenges. The study concluded with a suggestion that college authority and state Government has to give attention towards the establishment and maintenance of e-libraries for catering to the needs of the users of the needs of the engineering colleges.

Arapu (2013) conducted an analytical study on collection management of electronic information resources in university libraries in Andhra Pradesh. The study made an effort to find out whether the libraries were fully equipped to select, manage and organize the print and electronic resources. It was found that libraries faced difficulty in subscribing to the required number of E- journals according to their requirement from consortia. It was also found that faculty and research scholars are familiar with E-resources and prefer to use them for their academic purposes. According to the study collection development and the management of print and access to electronic resources in the university libraries require close cooperation between collection development librarians, faculty and users. The collection development librarians may find that, in the future, their expertise may be the most important resource they have to share rather than the collections they are building due to the proliferating growth of e-resources and increasing pressures on the budgets for the libraries.

Rao (2013) conducted a descriptive study to understand the management process of different electronic resources in NBA accredited engineering college libraries in Andhra Pradesh. The researcher adopted survey method with questionnaire as tool for data collection and analyzed data by using SPSS software. The study found that engineering colleges were subscribing to a variety of electronic resources to meet

the information demands of users. Most of the engineering college libraries follow management aspects to maintain E resources in their libraries. It also suggested that the engineering college libraries should give importance to formulate collection development policy for E resources and it is necessary for professionals to attend information literary programmes on the areas of management of electronic resources.

Nwosu et al. (2013) carried out a study on challenges faced by Nigerian University libraries in electronic information management. Survey method with interviews and observations were used for data collection. The study found four major challenges faced by the libraries. They are financial challenges for electronic resources, attitude of the university authorities towards library networking, insufficient electronic devices and increasing cost of connectivity. The study concluded with recommendations to face these challenges like, the library need to form library consortium, the library need to adapt to continuing changes in electronic information, external environments and technology.

Mansur (2012) conducted a study on E-resource collection development in engineering college libraries. The paper described various facets in collection development in a digital environment and various changes that occurred in acquisition, retrieval and storage of information processes due to technological developments. It also discussed the way these developments affected the academic environment in general and engineering college libraries in particular, and have changed the role of librarian.

Okoye and Ugwuanyi (2012) examined management of electronic resources by cataloguers in Nigerian federal university libraries. Descriptive survey method was used in the study. Data were collected from ninety five academic librarians from the four federal universities. Findings of the study revealed that availability and management of e- resources in these libraries are still in the budding stage.

2.6 Conclusion

The review of related literature has given a perception into the area of research. It also helped to know the various tools and methods that are appropriate for the study. Majority of the above mentioned studies adopted survey, questionnaire, personal interview and observation as the method for data collection. As the literature survey covered the studies that were conducted abroad, it mainly focused on the related studies conducted inside India as it would help to understand the availability of resources and services in different parts of the country as well as the impact of accreditation on them. From the literature review, it is understood that accreditation has made a positive impact on the libraries of inside and outside India. As a good part of libraries can provide better resources, services and facilities to the user community, most of the libraries report the inadequate fund provision, insufficient trained manpower, inadequate infrastructure facilities and lack of support from authority as their main problems for providing better services to the user community. Majority of studies conducted in different parts of the country also suggested to the authorities to provide constant financial support, trained professional staff and better infrastructure to help the libraries overcome their current situation.

Reference

- Agbetuyi, P. A., Adegbilero-Iwari, I. & Subair, R. (2017) Role of academic libraries in accreditation of courses and teaching programs: A case of Afe Babalola University Library, Ado-Ekiti. *International Journal of Library and Information Science Studies*, 3 (1), 16-24. <https://www.eajournals.org/wp-content/uploads/Role-of-Academic-Libraries-in-Accreditation-of-Courses-and-Teaching-Programs.pdf>
- Agrapu, D. (2013). *Collection management of electronic information resources: An analytical study of selected University Libraries in Andhra Pradesh* [Doctoral thesis, Andhra University]. <http://shodhganga.inflibnet.ac.in/handle/10603/8666>
- Arokyamary, R & Ramasesh, C. P. (2014) IT infrastructure facilities in engineering college libraries of Karnataka. *Pearl A Journal of Library and Information Science*, 8 (4). DOI: 10.5958/0975-6922.2014.00750.5
- Balu, C. C., & Reddy, V. P. (2014). A survey on the present status of engineering college libraries in Sri venkateswara University area, Andhra Pradesh, India. *International Journal of Library and Information Science*, 6 (4), 49–56. <https://doi.org/10.5897/IJLIS2012.028>
- Belsare, S. D. (2013). *Development and management of engineering college libraries in Western Vidarbha Region -: An analytical study* [Doctoral thesis, Shri Jagdish Prasad Jhabarmal Tiberwala University]. <http://shodhganga.inflibnet.ac.in/handle/10603/16127>
- Bhattacharya, N. & Das, S. K. (2015). Present status of e-resources available in the engineering college libraries of West Bengal: Problems towards sustainable collection development. *Knowledge Librarian*, 2 (3), 232-251. <http://www.klibjlis.com/2.3.12.pdf>
- Bhavsar, V. & Patel, U. (2016). Issues and challenges of engineering college library services in ANAND district of Gujarat: A study. *61st International*

Conference of Indian Library Association (ILA) on Sustaining the Excellence: Transforming Libraries Through Technology, Innovation and Value Added Services in Google Era, Saurashtra University, Rajkot, March 2016. <https://www.researchgate.net/publication/309856190>

Bhoi, N. K. (2017). *Use of Information Communication Technology (ICT) and library operation: An overview*. 445–456. <http://eprints.rclis.org/32231/1/Use%20of%20Information%20Communication%20Technology%20%28ICT%29%20and%20Library%20OperationAn%20Overview.pdf>

Chavan, S., & Naik, R. R. (2018). Information and Communication Technology infrastructure in the engineering college libraries of north Karnataka. *Pearl : A Journal of Library and Information Science*, 12 (1), 67–71. https://www.researchgate.net/profile/Santosh-Chavan-7/publication/304714388_Impact_of_Social_Media_among_the_PG_Students_of_Karnatak_University_Dharwad_A_Study/links/5c021f93a6fdcc1b8d4d121f/Impact-of-Social-Media-among-the-PG-Students-of-Karnatak-University-Dharwad-A-Study.pdf

Choudhury, T. A., Rahman, M. & Barooah, P. K. (2018) A scenario of special libraries and ICT application in the State of Assam: A study. *Library Philosophy and Practice (e-journal)*. <http://digitalcommons.unl.edu/libphilprac/2045>.

Dayal, R. (2012). Recent trends of using ICT in modern college libraries. *International Journal of Engineering and Mathematical Sciences*, 1 (1), 55–59. <http://www.ijems.org/uploads/5029054700IJEMS9.pdf>

Duragannavar, G. F., Manjunath, N and Mamdapur, G. M. (2018). ICT based tools and its benefits in library and information centre. *International Journal of Research in Humanities, Arts and Science*, 3 (11), 427-432. https://www.researchgate.net/publication/327281881_ICT_Based_Tools_and_it%27s_Benefits_in_Library_and_Information_Centre

Emery, J., Stone, G., & McCracken, P. (2019). *Techniques for electronic resource management: TERMS and the Transition to Open*. American Library Association. <https://doi.org/10.15760/lib-01>

- Ghumre, S. & Veer, D. K. (2013) College library services in Marathwada Region: A study on impact of NAAC accreditation. *9 th International CALIBER - 2013*, Gujarat, March 2013. <https://www.researchgate.net/publication/314286665>.
- Gill, M., Sharma, N., & Karki, K. (2016). Evaluation of collection development provided by NIT libraries in North India. *Journal of Advancements in Library Sciences*, 3 (3), 1–6. <http://sciencejournals.stmjournals.in/index.php/JoALS/article/view/328/160>
- Goud, T. L. (2017). Collection development in University Libraries: A case study of Kakatiya University, Warangal, Telangana State. *International Journal of Library and Information Studies*, 7 (2), 10. http://ijlis.org/img/2017_Vol_7_Issue_2/235-244.pdf
- Gulnaz, & Nishat, F. (2019). Collection development practice in Indian Institute of Technology libraries of Eastern India: A study. *Collection and Curation*, 38 (2), 25–31. <https://doi.org/10.1108/CC-08-2018-0015>
- Hanchate, P. D., & Sawant, S. (2018). A study on ICT based library services with reference to academic libraries in rural area. “*Knowledge Librarian*” *An International Peer Reviewed Bilingual E-Journal of Library and Information Science Special Issue*, 85–89. <http://eprints.relis.org/32346/3/SNDT%20CONFERENCE%20PROCEEDING-100-104.pdf>
- Horsfall, M. N. (2019). Management of media and electronic resources in Nigerian Libraries. *Library Philosophy and Practice (e-Journal)*, 12. https://www.researchgate.net/publication/335856719_Management_of_Media_and_Electronic_Resources_in_Nigerian_Libraries
- Hosburgh, N. (2014) Managing the electronic resources lifecycle: Creating a comprehensive checklist using Techniques for Electronic Resource Management (TERMS). *The Serials Librarian*, 66 (1-4). <https://www.tandfonline.com/doi/full/10.1080/0361526X.2014.880028>

- Janice, F. (2016). *Impact of accreditation on engineering college libraries in Mumbai* [Doctoral thesis, Tilak Maharashtra Vidyapeeth]. <https://sg.inflibnet.ac.in/handle/10603/166487>
- Jestin, K. J. J., & Sornam, S. A. (2019). Infrastructure and facility readiness for providing E-learning and allied services in the engineering college libraries of Kerala. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/2881>
- Jestin, J. K. J., & Sornam, S. A. (2016). E-resources in engineering college libraries in Kerala: Awareness and availability – A study. *International Journal of Digital Library Services*, 6 (2), 85–90. <http://www.ijodls.in/uploads/3/6/0/3/3603729/ijodls929.pdf> dt 25/03/19
- Kannappanavar, B. U., & Jayaprakash. (2014). Library facilities, sources and services in the engineering colleges in Goa State: A study. *International Journal of Librarianship and Administration*, 5 (2), 131–146. http://www.irphouse.com/ijla/ijlav5n2_06.pdf
- Kannappanavar, B. U., & Manjunatha, K. V. (2011). Library resources and services of engineering colleges in Karnataka. *Library Philosophy and Practice (e-Journal)*. <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1501&context=libphilprac>
- Kaur, M., & Walia, P. K. (2016). Collection development of electronic resources in management libraries of India. *Collection Building*, 35 (3), 73–83. <https://doi.org/10.1108/CB-04-2016-0007>
- Khan, A. M. (2010). Managing collection development and organization in globalizing Indian university libraries. *Collection Building*, 29 (1), 15–21. <https://doi.org/10.1108/01604951011015259>
- 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>

- Khayal, R. (2013). *Collection development and services in Law libraries in Delhi: A comparative study* [Doctoral thesis, Aligarh Muslim University]. <https://sg.inflibnet.ac.in/handle/10603/138842>
- Krishnamurthy, M. & Roopa, E. (2019). Assessment of library resources and services in engineering colleges in India: A study. *Library Philosophy and Practice*, 1-11. <https://www.proquest.com/openview/9582b9c8ad5ce493c1292e9f95f9ed40/1?pq-origsite=gscholar&cbl=54903>
- Krishnamurthy, M., Roopa. & Reddy, S. (2018). Provision of e-resources in engineering college libraries in India: A pilot study. *International Journals of Library and Information Science*, 10 (8), 85-93. DOI: 10.5897/IJLIS 2018.0849.
- Kulkarni, J. N. (2018) Beyond 4.2: Librarian's role in overall NAAC process of the institution in the light of revised framework. *IP Indian Journal of Library Science and Information Technology*, 3 (2), 67-69. DOI: 10.18231/2456-9623.2018.0015.
- Kumar, K. (2014) Digital collection and development initiatives in engineering college libraries: An analytical survey. *International Journal of Knowledge Content Development & Technology*, 4 (1), 5-21. <http://dx.doi.org/10.5865/IJKCT.2014.4.1.005>.
- Kumar, R. (2012). Growth and development of architectural engineering college libraries in Haryana, India. *Library Philosophy and Practice (e-Journal)*, 743. <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1817&context=libphilprac>
- Kumar, S. K. R. (2017). Recent trends of ICT services and the present scenario of some selected engineering college libraries in Coimbatore district, Tamilnadu: A study. *Asian Journal of Applied Science and Technology*, 1 (1), 199–202. <http://ajast.net/data/uploads/ajast-42.pdf>.

- Kumar, S. P. (2011). *Challenges for library professionals of engineering colleges in southern district of Tamil Nadu* [Doctoral thesis, Manonmaniam Sundaranar University]. <http://shodhganga.inflibnet.ac.in/handle/10603/26786>
- Linh, A. C. & Le, T. A. (2020). Improving the quality of university library services to meet the requirements of basic educational quality accreditation. DOI: 10.46223/HCMCOUJS.soci.en.10.1.572.2020
- Malipatil, B. & Nagaraj, J. (2017) Automation of engineering college libraries in Kalaburagi and Bidar districts of Karnataka State. *PESQUISA*, 2 (2), 77-86. <http://pesquisaonline.net/wp-content/uploads/2017/05/Pesquisaonline.net-Bazavaraj-Librarian.pdf>
- Manik, S. D. (2015). *A study of NBA accredited engineering college libraries in Maharashtra with relevance to marketing of library and information product, sources and services*. [Doctoral thesis, Shri Jagdish Prasad Jhabarmal TiberwalaI University]. <http://shodhganga.inflibnet.ac.in/handle/10603/74805>
- Mansur, S. (2012). E- resource collection development in engineering college libraries: A challenge for knowledge centre managers. *International Journal of Digital Library Services*, 2 (1), 166–177. http://www.ijodls.in/uploads/3/6/0/3/3603729/sunil_mansur_ok_166-177_.pdf
- Men, J. M. & Isreal, A. A. (2017) The role of academic libraries in the accreditation of undergraduate programmes: A case study of Federal University of Technology Minna, Niger State. *Library Philosophy and Practice (e-journal)*. <http://digitalcommons.unl.edu/libphilprac/1529>
- Merugu, R. K. & Bandi, Y (2014) E-resource management at the engineering college libraries of Karimnagar District, Telangana: A study. *International Journal of Technology and Business Management*, 3 (1), 37-44. https://www.academia.edu/11968640/_E_Resource_Management_at_the_Engineering_College_Libraries_of_Karimnagar_District_Telangana_A_Study_

- Mozumder, S. K., Barooah, P. K. & Hussain, M. (2020) Status of college library services in Barak Valley, Assam: A study. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/4011>.
- Mondal, A. K., & Bandyopadhyay, A. K. (2010). Application of ICT and related manpower problems in the college libraries of Burdwan. *DESIDOC Journal of Library & Information Technology*, 30 (4), 44–52.
- Mondal, N. C., & Jana, P. K. (2015). Trends in private engineering education institutions and their libraries services in West Bengal: An overview. *Journal of Advancements in Library Sciences*, 2 (2), 32–40. sciencejournals.stmjournals.in/index.php/JoALS/article/download/381/207
- Mulla, K. R. & Chandrashekra, M. (2006) E-resources and services in engineering college libraries – A case study. *E-JASL 1999-2009*, 7 (1). <https://digitalcommons.unl.edu/ejasljournal/76>
- Mushtaq, M., & Tausif, A. (2020). Collection management of electronic resources in engineering college libraries of Aligarh, India: A study. *Collection and Curation*, 39 (3), 89–96. <https://doi.org/10.1108/CC-09-2019-0028>
- Naick, B. R. D., & Mohan, R. (2017). A survey of library collection development among the engineering colleges of Karminagar and Warangal districts of Telegana State. *International Journal of Digital Library Services*, 7 (2), 1–14. <http://www.ijodls.in/uploads/3/6/0/3/3603729/1ijodls217.pdf>
- Nandita, B. & Rajani, K. B. (2018). Issues and challenges of college library services in Upper Assam: An evaluative study. *ACLA 15th Biennial Conference & National Seminar on the Role of College Libraries in Meeting Users' Information Needs*, Assam, October 2018. <https://www.researchgate.net/publication/352249130>.
- Naveen, C. L. (2020). Impact of NAAC assessment on the development of college libraries: A study. https://www.researchgate.net/publication/344085863_

Impact_of_NAAC_Assessment_on_the_development_of_college_libraries_A_Study.

Nimbhorkar, S. P. (2019). Electronic resources collection development policy. *Journal of Library and Information Technology*, 15 (1), 47–51.

Nwosu, R. O., Ejedafiru, E. F., Ifeka, & Okeke, E. (2013). Challenges of electronic information management in Nigerian University Libraries. *IOSR Journal Of Humanities And Social Science*, 13 (2), 75–79. <https://doi.org/10.9790/0837-1327579>

Obiano, D. C. (2021). The impact of collection development policy on the provision of library resources in academic libraries in Imo State, Nigeria. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/5538>.

Odera-Kwach, B. A., & Ngulube, P. (2013) The impact of accreditation exercise on university libraries in Kenya. *African Journal of Library, Archives and Information Science*, 23 (1), 75-87. <https://www.researchgate.net/publication/298441254>.

Okogwu, F. I. & Ozioko, R. E. (2018). Challenges of collection development of electronic resources in University Libraries in South East Nigeria. *Library Philosophy and Practice (e-Journal)*, 22. <https://digitalcommons.unl.edu/libphilprac/1880/>

Okoye, M. O., & Ugwuanyi, C. F. (2012). Management of electronic resources by cataloguers in Nigerian Federal University Libraries. *Library Philosophy and Practice (e-Journal)*. <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1781&context=libphilprac>

Pal, N. & Barman, R. K. (2020) Current scenario of library resources and services in the private University Libraries of Assam, India. https://www.researchgate.net/publication/344883343_Current_Scenario_of_Library_Resources_and_Services_in_the_Private_University_Libraries_of_Assam_India

- Panneerselvam, P. (2016). A Study on Autonomous Engineering College Libraries in Tamil Nadu. *International Journal of Information Sources and Services*.3 (5), 72-80. https://www.researchgate.net/publication/311774379_A_STUDY_ON_AUTONOMOUS_ENGINEERING_COLLEGE_LIBRARIES_IN_TAMIL_NADU
- Partap, B. (2016). Status of engineering college libraries in Ambala District of Haryana: A survey. *SRELS Journal of Information Management*, 53 (2), 153-162. DOI: 10.17821/srels/2016/v53i2/91277
- Partap, B. & Saha, P. (2019). Status of engineering college libraries in Bhubaneswar Region of Odisha, India: A comparative study. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/2722>.
- Partap, B. & Tiwari, M. (2018). Status of ICT Infrastructure and services of libraries of SRMSWCET Bareilly and DBITE Dehradun: A comparative study. *International Journal of Information, Library & Society*,
- Patel, R. P. (2018). ICT based best practices in library. *IP Indian Journal of Library Science and Information Technology*, 3 (2), 101–105. <https://www.ipinnovative.com/media/journals/IJLSIT-3-2-101-105.pdf>
- Patel, S. (2016). Collection development in academic libraries. *International Journal of Library and Information Science*, 8 (7), 62–67. <https://doi.org/10.5897/IJLIS2015.0601>
- Patra, N. K. (2014). *Electronic resource management: A case study of management school libraries in India*. [Doctoral thesis, Sambalpur University]. <http://hdl.handle.net/10603/57323>
- Rahman, M., Choudhury, T. A., & Barooah, P. K. (2019). Management of collection in university libraries of Assam in ict environment: A study. *Library Philosophy and Practice (e-Journal)*, 36. <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=5409&context=libphilprac>

- Rajasekharam, D., & Anjaiah, M. (2018). A survey on collection development of NAAC accredited Government degree college libraries affiliated to Kakatiya University, Warangal, Telangana state. *International Journal of Advance Research, Ideas and Innovations in Technology*, 4 (5), 154–168. <https://www.ijariit.com/manuscripts/v4i5/V4I5-1224.pdf>
- Rajendran, L. (2007). *Planning and development of library and information services of engineering colleges in Tamil Nadu with special reference to Chennai* [Doctoral thesis, Manonmaniam Sundaranar University]. <https://sg.inflibnet.ac.in/handle/10603/65648>
- Rajendran, V., & Kumar, R. S. (2018). Status of automation and networking among the college libraries affiliated to Bharathiar University. *Journal of Current Trends in Library and Information Science : International Refereed Journal*, 5 (1), 1–4. <http://jctl.org/index.php/jctl/article/view/46>
- Ram, S. (2020). Role of academic libraries in the accreditation process: A case of library science and engineering education in India. In *Internationalization of Library and Information Science Education in the Asia-Pacific Region* (pp.269-281). DOI: 10.4018/978-1-7998-2273-8. ch012
- Rao, N. V. (2013). *Management of electronic resources in NBA accredited engineering college libraries in Andhra Pradesh (INDIA): A survey* [Doctoral thesis, Andhra University]. <http://shodhganga.inflibnet.ac.in/handle/10603/12710?mode=simple>
- Rao, Y. S., & Choudhury, B. K. (2010). Computer infrastructure facilities and services at National Institutes of Technology libraries in India. *DESIDOC Journal of Library & Information Technology*, 30 (1), 32–37. <https://doi.org/10.14429/djlit.30.282>
- Rao, Y. S., & Choudhury, B. K. (2010). Network infrastructure facilities: A case study of NIT Libraries in India. *International Journal of Library Science*, 1 (J10), 11. <http://eprints.rclis.org/25004/2/network%20infrastructure%20facilities.pdf>

- Reddy, K. H., & Chandraiah, I. (2017). Collection development in university libraries: A case study. *International Journal of Digital Library Services*, 7 (3), 114–126. <http://www.ijodls.in/uploads/3/6/0/3/3603729/11ijodls3717.pdf>
- Reddy, T. R. (2015). *A survey on Information and Communication Technology infrastructure in engineering college libraries in Sri Venkateswara University Area* [Doctoral thesis, Sri Venkateswara University]. <http://hdl.handle.net/10603/185405>
- Raut, A. S., & Kokate, R. G. (2013). Study of best practices in the accredited academic libraries of Sant Gadge Baba Amravati University region [PowerPoint slides]. <https://fdocuments.in/document/study-of-best-practices-in-the-accredited-academic-libraries-of-sant-gadge.html>
- Ravikumar, A., & Naick, B. R. D. (2015). Collection development in autonomous engineering college libraries affiliated to JNTUK Kakinada: A study. *International Journal of Library & Information Science*, 4 (3), 85–97. https://iaeme.com/MasterAdmin/Journal_uploads/IJLIS/VOLUME_4_ISSUE_3/IJLIS_04_03_011.pdf
- Sahu, M. K. (2015). An academical study of collection development activity in academic libraries affiliated to BijuPatnaik University of Technology (BPUT), Odisha. *SRELS Journal of Information Management*, 52 (2), 131–140.
- Sajini, P. N. (2018). Collection development policy for e-resources in University Libraries: A study. *Indian Journal of Information Sources and Services*, 8 (1), 64–68. <https://www.trp.org.in/wp-content/uploads/2018/05/IJISS-Vol.8-No.1-January-June-2018-pp.64-68-1.pdf>
- Saleem, A., Batcha, M. S., & Tabusum, S. S. Z. (2013). Application and uses of Information Communication Technology (ICT) in academic libraries: An overview. *International Journal of Library Science*, 2 (3), 49–52. <https://doi.org/10.5923/j.library.20130203.01>

- Sasikala, C., Nagaratnamani, G., & Dhanraju, V. (2014). Pattern of collection development in academic libraries in Andhra Pradesh: A study. *IOSR Journal Of Humanities And Social Science*, 19 (2), 05–18. <http://iosrjournals.org/iosr-jhss/papers/Vol19-issue2/Version-3/B019230518.pdf>
- Satheesha, H., & Vaddankere, M. (2018). Library resources and services in the selected engineering college libraries of Karnataka, India-A survey. *International Journal of Library and Information Studies*, 8 (2), 71–77. http://www.ijlis.org/img/2018_Vol_8_Issue_2/71-77.pdf
- Shanmugam, T. (2012). Collection development practices in selected engineering college libraries in Tamil Nadu : A survey. *International Journal of Opinion in Physical Sciences*, 1 (1), 11–16
- Sharma, P., & Sharma, A. K. (2018). E-resources and their use in private engineering college libraries. *International Journal of Library Information Network and Knowledge*, 3 (1), 146–154. <http://slp.org.in/IJLINK/volumes/IJLINK-V3I1-13.pdf>
- Shivakumaraswamy, K. N., & Nikam, K. (2015). Developing print collection at Mysore region engineering college libraries (MRECL) in Karnataka: A study. *Journal of Advancements in Library Sciences*, 2 (2), 1–11. <http://sciencejournals.stmjournals.in/index.php/JoALS/articles/view/373/199>
- Shivakumaraswamy, K. N. (2015). *Collection development in the engineering college libraries of Mysore region: A survey* [Doctoral thesis, University of Mysore]. <https://shodhganga.inflibnet.ac.in/handle/10603/108438>
- Subba, S., & Das, S. K. (2019). ICT infrastructure in college libraries of Darjeeling district of West Bengal, India: A survey. *International Journal of Research in Social Sciences*, 9 (1), 476–490. http://www.ijmra.us/project%20doc/2019/IJRSS_JANUARY2019/IJMRA-14972.pdf

- Tadasad, P. G. (1999). *Collection development, organisation and management among academic libraries in Karnataka state* (Doctoral thesis, Karnatak University). <https://sg.inflibnet.ac.in/handle/10603/95507>
- Tiwari, B. K., & Sahoo, K. C. (2011). Infrastructure and use of ICT in University Libraries of Madhya Pradesh: Librarians views. *International Journal of Information Dissemination and Technology*, (4), 9.
- Umeozor, S. N. & Emasealu, H. (2016). Impact of external quality assurance on academic libraries. https://www.researchgate.net/publication/306193743_Impact_of_external_quality_assurance_on_academic_libraries
- Vahida, B. T. (2016). *Six Sigma Analysis of University Libraries in Kerala*. [Doctoral thesis, University of Calicut]. <http://hdl.handle.net/10603/186242>.
- Varadaraju, N. C. H., & Ramesh, A. (2018). Collection development in engineering college libraries: A case study of methodist college of engineering, Hyderabad, Telangana. *International Journal of Library and Information Studies*, 8 (1), 278–286. http://www.ijlis.org/img/2018_Vol_8_Issue_1/278-286.pdf
- Wadekar, P. P., & Nagarkar, S. P. (2018). Current practices of management of online databases at university libraries in Maharashtra state of India. *Library Management*, 39 (8/9), 569–582. <https://doi.org/10.1108/LM-08-2017-0073>
- Warning, P., Henri, J., Sinclair, C., Chan, C. Y. C., & Chu, B. (2021). A framework for accreditation of International Baccalaureate School Libraries. IASL Annual Conference Proceedings, March 2021. DOI: 10.29173/iasl7988

CHAPTER 3

METHODOLOGY

3.1 Introduction

The methodology of the study requires the collection of relevant data with a view to obtain answers to the stated objectives. The accuracy of research work depends upon the methods by which the conclusion arrived at. The present study aims to analyse the development and management of engineering college libraries in Kerala in terms of library resources and services, ICT infrastructure and facilities, collection development process, organisation and management of resources. The method adopted to conduct the study was a quantitative research method. The chapter gives a description of variables used for the study, samples used for the study, data collection tools, data collection procedure and data analysis techniques.

3.2 Variables Used for the Study

The variables used for the study are broadly classified into two, namely, independent and dependent variables. The following part deals with the variables undertaken for the study.

3.2.1 Independent Variables

Independent variables selected for the study are category of NBA accredited engineering colleges and accreditation status of engineering colleges in Kerala.

3.2.1.1 Category of NBA Accredited Engineering Colleges

The engineering colleges in Kerala are divided into various categories according to its parent body. The wikipedia (2021) categorised the engineering colleges in Kerala into Government (which include Government aided engineering colleges), engineering colleges under government departments like IHRD, CAPE, LBSCET etc., engineering colleges under Kerala Veterinary and Animal Science University, engineering colleges under universities and private self-financing colleges. As the NBA accredited engineering colleges in Kerala selected for the study includes Government, under government departments and private self-financing

category, the researcher considered only these three categories of engineering colleges for comparison.

3.2.1.2 Accreditation Status of Engineering Colleges

The word accreditation represents a process at the end of which a certificate of competency, authority, or credibility is presented. Accreditation is of many types and has many functions. In the context of Higher Education in general and engineering colleges in particular, educational accreditation is a quality assurance process under which services and operations of educational institutions or their individual programs are evaluated by an external body in order to determine if certain applicable standards are met. If these predetermined standards are met, then the institution or its educational program is granted an accredited status by the appropriate agency (Janice, 2016). In the case of engineering colleges, the National Board of Accreditation is responsible for evaluating the quality. The researcher considered the accreditation status of engineering colleges, which have the accredited programs of NBA and which do not have the accredited programs of NBA for comparison.

3.2.2 Dependent Variable

Dependent variables of the study are:

- Library resources and services
- ICT infrastructure and facilities
- Collection development, organisation and management
- Impact of NBA accreditation
- Librarians views on NBA accreditation
- Problems and challenges

3.2.2.1 Library Resources and Services

The college libraries must equip themselves with a variety of resources to face the changing situation. These resources would include physical resources, information resources, human resources and financial resources. Library services are defined as

the facilities provided by a library for the use and dissemination of library material like books, journals, theses, dissertations, etc. in order to meet the users' demand (Gavit, 2019). The effectiveness and the efficiency of the services provided by any engineering college library much depends on the adequacy of the said resources & facilities. In this section an attempt has been made to understand and compare the library resources and services available in engineering college libraries in Kerala.

3.2.2.2 ICT Infrastructure and Facilities

Information and Communication Technology (ICT) makes a tremendous impact on library's operations, services, users and staff. In broad terms the ICT consists of all modern technical means used to store and handle information, its communication through computer and related hardware, communication networks technology and necessary software etc. ICT is important to the libraries to achieve its goals for management of information, effective services and extension of boundaries from the four-walls to the globe. ICT presents an opportunity to libraries to provide value-added information services and access to a wide variety of digital-based information resources to their users (Tiwari & Sahoo, 2013). The section deals with the analysing and comparison of ICT infrastructure and facilities among the engineering college libraries in Kerala.

3.2.2.3 Collection Development, Organisation and Management

Collection development means selection, acquisition and disposal of library materials, noting the needs of current and future users as well as the guidelines established by the policy of development of institutional collections. Collection development includes everything that goes into acquiring materials, including selection, ordering and payment. It is a chain of events that includes planning, administration, and control (Thanuskodi, 2012). Collections management involves various managerial aspects, such as budget allocation, assessment of information access, conditions of storage and the use, organization, application of methods of preservation and conservation, and also when necessary the access monitoring for the best use of information resources. It not only involves the collections development, but also the presentation of the collections to the users (Thanuskodi, 2012). Here the

researcher endeavours to examine and compare the collection development, organisation and management practices followed by the engineering college libraries in Kerala.

3.2.2.4 Impact of NBA Accreditation

Since there are marks awarded to the engineering college library in the Accreditation process, most of the librarians hasten to ensure that the minimum criteria of the AICTE is fulfilled with respect to library resources and services. Accreditation is issued for a certain duration of time, generally 3-5 years. After that, the technical institution has to apply for Re-accreditation. The quest for excellence does not stop after the result of the Accreditation process but is rather an on-going procedure aimed at building a “quality library” (Janice, 2016). Hence the researcher wishes to know the impact on NBA accreditation in the resources, services and other aspects of the engineering college libraries.

3.2.2.5 Librarians Views on NBA Accreditation

NBA has laid down some criteria for libraries in the process of accreditation. Besides the criteria laid down by NBA, the librarians of engineering colleges may have some more library activities which they think or wish that NBA may consider or include in the accreditation process of the library. The researcher has made an attempt to know whether the librarians have any ideas which they wish to include in the accreditation process of NBA.

3.2.2.6 Problems and Challenges for Further Development

The exponential growth of literature in all forms made it difficult for the users to find out the required information and it became the responsibility of the librarian to satisfy their need by devising new ways and new means. The college libraries of the present age are facing new types of challenges, which they cannot imagine a decade ago. In order to cope up with the changing environment, the college libraries need to reorganize their systems and procedures and adopt modern techniques in order to survive in the environment of continuing technological development. There is an urgent need for the college libraries to re-invent their conventional procedures and methods practiced for organization and dissemination of knowledge in order to adapt in the recent technological changes (Bhavsar & Patel, 2016). Here the researcher tries

to understand the problems and challenges faced by engineering college libraries for further development of their resources, services and facilities.

3.3 Sample Design

The population of the study comprises of engineering college libraries in Kerala which provide undergraduate programs. According to wikipedia (2021) and Office of the Commissioner for Entrance Examinations (2021) there are 158 engineering colleges in Kerala.

3.3.1 Sample

The researcher selects a sample of 120 engineering colleges out of 158 in Kerala by following the US National Education Association Statistical Table prepared by Krejcie and Morgan (1970). It is a very commonly used statistical table in Social Science in order to estimate the sample size of a given population. In the article “Small Sample Techniques,” the research division of the National Education Association has published a formula for determining sample size which is given below,

$$S = \frac{\chi^2 NP (1 - P)}{d^2(N - 1) + \chi^2 P (1 - P)}$$

where

S = required sample size,

χ^2 = the table value of Chi-square for 1 degree of freedom at the desired confidence level (3.841),

N = the population size,

P = the population proportion (assumed to be 0.50 since this would provide the maximum sample size) and

d = the degree of accuracy expressed as a proportion (.05).

Following Krejcie and Morgan (1970), there is no need to calculate sample size by applying the above equation directly. Only the table proposed by them has to

be considered while deciding the sample size. Table 4 displays the sample size of the study.

Table 4
Sample

Population	Total Number	Sample Size	Response
Engineering Colleges	158	120	100 (83.33%)

(List of Engineering colleges attached in Appendix B)

3.3.2 Distribution of the Engineering Colleges

Two independent variables are chosen for the study. They are the category of NBA accredited engineering colleges and accreditation status of engineering colleges. The distribution of the engineering colleges are given in table 5.

Table 5
Distribution of Engineering Colleges

Sl No.	Variables	Category	Frequency (%)
1	Category of NBA Accredited Engineering Colleges	Government Engineering Colleges	11 (30.56%)
		Engineering Colleges under Government Departments	7 (19.44%)
		Self -Financing Engineering Colleges	18 (50.00%)
	Total		36 (100.00%)
2.	Accreditation Status of Engineering Colleges	NBA Accredited Engineering Colleges	36 (36.00%)
		Engineering Colleges not Accredited by NBA	64 (64.00%)
Total			100 (100%)

According to table 5, the category of NBA accredited engineering colleges shows that fifty percent of them belong to the self-financing category, a good number of them belong to the Government college category (30.56%) and nearly one fifth of engineering colleges belong to under Government department category. In the case of accreditation status of engineering colleges, it is visible that more than one third of engineering colleges belong to NBA accredited category (36%) whereas nearly two third of them belong to the engineering colleges which do not have the accredited programs of NBA category (64%).

3.4 Data Collection Tools

The research method used to carry out the present study was survey method. A large number of data collection techniques are available such as questionnaire, interview, schedule, observation, document review etc. In order to accomplish the objectives of the study four methods viz., document review, questionnaire surveys, interviews with librarians and observational visits in the libraries are used.

The investigator began literature search and collected selected documents on the topic of research and related fields. The website of Directorate of Technical Education, APJ Abdul Kalam Technological University, Commissioner for Entrance Examinations and National Board of Accreditation were used to identify the names, status and addresses of libraries for the study. Shodhganga - a National repository of electronic theses and dissertations with full text content was used as the main source of information. Besides this the full text database Emerald and Science Direct available at UGC INFONET Centre, Calicut University, Google Scholar, ResearchGate are used for searching E-resources. The review of related literature helped the investigator to identify the previous and present research studies on the same or similar topic and assisted the researcher to properly understand the issue involved in the present study in the right perspective.

In the present study, the researcher adopts questionnaire as a main tool for data collection. The librarians of engineering colleges are the respondents of the study. The purpose of the questionnaire is to obtain the data regarding the development and management of engineering college libraries in Kerala. Based on the prior study items, and newly formulated ones a basic structure of possible questions and answers are

formulated. A draft of the questionnaire was prepared by discussing with supervising teacher, subject experts and professional colleagues. The questionnaire was modified by adding and removing some points as per the comments and suggestions of the experts.

To understand the validity of the questionnaire and to make sure that the engineering college librarians do not have any difficulty to understand the precise meaning of each question, some questionnaires were distributed among the respondents as part of pilot study. As there is not much difficulty found to fill up the questionnaire from the part of most of the librarians, the researcher has made minor corrections to make the questionnaire more readable and understandable to the respondents. Finally the full structured questionnaire (Appendix A) was formulated with a suitable presentation format and to be fit for data collection in the engineering college libraries under the sample.

The questionnaire started with a covering letter briefly describing the topic and assured the respondents that the information provided by them will be kept strictly confidential. Both open ended and closed ended questions were included in the questionnaire and it was divided into seven sections.

The first section deals with the general information of the engineering colleges. It includes the name of the college, year of establishment, category in which the college belongs to, status of its accreditation, and courses offered by these engineering colleges.

The second section includes questions on the resources and services available in these engineering college libraries. It includes the physical, informational, human and financial resources. The services commonly provided by the libraries and web based services are included in the second section.

The third section deals with the ICT infrastructure and facilities available in the engineering college libraries. It includes the questions on network infrastructure, availability of ICT tools, status of automation, digital library, institutional library and membership of engineering college libraries in any consortia.

The fourth section intended to collect data on the collection development of information resources in engineering college libraries. It included the status of collection development policy, authorities responsible for document selection, tools and criteria followed in document selection process, channels for acquiring the resources, evaluation and deselection procedure of resources in engineering college libraries.

The fifth section deals with the procedures followed to organise and manage the library resources in engineering colleges. It included the questions on classification, catalogue, method of access, preservation and stock verification of print resources. The questions on mode and method of access to E-resources and procedures followed to manage E-resources to make its service better to the users are also included in this section.

The sixth section deals with the impact of NBA accreditation on library resources and services and the seventh section collects data on the problems faced by the librarians for further development of the library resources, services and facilities.

Besides the questionnaire method interviewing the librarian also adopted for getting more details related to the study. Visiting the library helped to get information regarding the current state of the libraries.

3.5 Data Collection Procedure

For collecting data from the engineering college libraries, the researcher converted the questionnaire into an online form using jotform which is a powerful online application that allows anyone to quickly create a custom online form. After taking due permission from the authorities, the researcher mailed the questionnaire to the librarians of engineering colleges with a covering letter indicating the significance of the study with a request for their cooperation. Clarifications were given to the respondents as and when necessary, even though instructions were provided in the questionnaire itself for filling it. Out of 120 questionnaires distributed to the engineering college libraries, 100 were received back. The filled up questionnaires were collected by the researcher for analysis.

3.6 Data Analysis Technique

The data received from the respondents were evaluated and analysed for the study results. It was segregated and consolidated in Excel form. In order to determine the inherent meaning of the data, statistical analysis is required. SPSS version 21 was used to do the required statistical analysis. The data analysed were presented through tables and graphs with proper interpretations. The researcher used the following statistical techniques to draw the findings and conclusions.

- Simple Percentage Method: It is used to consolidate the whole collected data.
- Arithmetic Mean: It is the most commonly used and readily understood measure of central tendency in a data set. In statistics, the term average refers to any of the measures of central tendency. The arithmetic mean of a set of observed data is defined as being equal to the sum of the numerical values of each and every observation, divided by the total number of observations (“Arithmetic Mean”, 2021).
- Standard Deviation: It is a statistic that measures the dispersion of a dataset relative to its mean. The standard deviation is calculated as the square root of variance by determining each data point's deviation relative to the mean. If the data points are further from the mean, there is a higher deviation within the data set; thus, the more spread out the data, the higher the standard deviation (“Standard Deviation”, 2021).
- Chi square: It is symbolically written as X^2 is a common test for analysing data from surveys. Chi-square test is based on chi-square distribution and as a parametric test is used for comparing a sample variance to a theoretical population variance. It is an inferential statistical test that is used to examine the relationship between two variables with nominal or ordinal data. The Chi-square value measures the discrepancy between the observed frequencies and the expected frequencies. The larger the Chi-square score, the larger the discrepancy, and the more likely that the two variables being studied are related. If the calculated value of Chi-square is less than the table value, it

indicates that the difference between actual and observed frequencies is due to chance of variation and can be ignored (Kothari, 2004).

- Fisher's Exact Test: It is practically applied only in the analysis of small samples but actually it is valid for all sample sizes. While the chi-squared test relies on an approximation, Fisher's exact test is one of exact tests. Especially when more than 20% of cells have expected frequencies < 5 , we need to use Fisher's exact test because applying an approximation method is inadequate. Fisher's exact test assesses the null hypothesis of independence by applying hypergeometric distribution of the numbers in the cells of the table (Kim, 2017).

As the majority of questions in the questionnaire gave multiple answers and the usage of percentage analysis was unable to find any significant differences among the engineering colleges, the researcher classified the above mentioned answers into three levels - low, medium and high. For example, table 12 shows percentage analysis of library sections available in NBA accredited engineering colleges (category-wise) in Kerala. For understanding the category wise differences in the availability of library sections among these engineering colleges in table 13, the thirteen library sections given are divided into low, medium and high levels. The availability of library sections ranges from 0 to 4 categorised under low level, library sections ranges from 5 to 8 categorised under medium level and library sections ranges from 9 to 13 categorised under high level respectively.

3.7 Conclusion

The section explained the methodological approaches adopted by the researcher to find out the development and management of engineering college libraries in Kerala. The methodology helps the researcher to minimize the errors occurred in data collection and analysis. It described both dependent and independent variables, sample design, data collection tools, data collection procedure and analysis techniques used for the study in detail. The report of the analysis of the data in detail and its interpretations are described in the next chapter.

Reference

- Arithmetic Mean. (2021, June 5). In *Wikipedia*. https://en.wikipedia.org/wiki/Arithmetic_mean.
- Bhavsar, V & Patel, U. (2016). *Issues and challenges of engineering college library services in Anand District of Gujarat: A study*. 61st International Conference of Indian Library Association (ILA) on Sustaining the Excellence: Transforming Libraries Through Technology, Innovation and Value Added Services in Google Era, Saurasthara University Library. https://www.researchgate.net/publication/309856190_Issues_and_Challenges_of_Engineering_College_Library_Services_in_ANAND_District_of_Gujarat_A_Study_1_Dr_Vaishali_Bhavsar_2_Dr_Umesh_Patel
- Gavit, B. K. (2019). Web based library services. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/2931>
- Janice, F. (2016). *Impact of accreditation on engineering college libraries in Mumbai* [Doctoral thesis, Tilak Maharashtra Vidyapeeth]. <https://sg.inflibnet.ac.in/handle/10603/166487>
- Kim, H. Y. (2017). Statistical notes for clinical researchers: Chi-squared test and fisher's exact test. *Restor Dent Endod*, 42 (2), 152–155. DOI: 10.5395/rde.2017.42.2.152.
- Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International (P) Ltd, Publishers.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurements*, 30, 607-610. https://home.kku.ac.th/sompong/guest_speaker/KrejcieandMorgan_article.pdf
- List of Engineering Colleges in Kerala (2021, May 17). In *Wikipedia*. https://en.wikipedia.org/wiki/List_of_engineering_colleges_in_Kerala.

List of Engineering Colleges in Kerala (2021, May 17). Office of the Commissioner for Entrance Examinations. <https://cee.kerala.gov.in/collegelist/main/index.php>

Standard Deviation (2021, April 15). In *Investopedia*. <https://www.investopedia.com/terms/s/standarddeviation.asp>.

Thanuskodi, S. (2012). Collection development practices in selected engineering college libraries in Tamil Nadu, India: A survey. *International Journal of Opinion in Physical Sciences, 1 (1)*, 011-016. https://www.researchgate.net/publication/329895134_Collection_Development_Practices_in_Selected_Engineering_College_Libraries_in_Tamil_Nadu_India_A_Survey

Tiwari, B. K. & Sahoo, K. C. (2013) Infrastructure and use of ICT in University Libraries of Rajasthan (India). *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/883>

CHAPTER 4

DATA ANALYSIS AND INTERPRETATIONS

4.1 Introduction

The study was conducted to understand the development and management of NBA accredited ECs' libraries in Kerala and it was compared with the EC libraries that were not accredited by NBA. The detailed online questionnaire was sent to the librarians of hundred EC libraries. The respondents were asked about the current status of information resources and services, ICT infrastructure and facilities, collection development process, organisation and management of information resources, impact of NBA accreditation on EC libraries and problems and challenges for further improvements of EC libraries in Kerala. The filled questionnaires received back are converted into excel form and SPSS was used to analyse the data. Various statistical tests like Simple Percentage analysis, Mean, Standard Deviation, Chi-square test were used to analyse the data. The analysis is presented in tabular form and also in graphs wherever necessary.

4.2 Library Resources and Services

The engineering college libraries should equip themselves with a variety of resources to face the changing situation. The effectiveness and the efficiency of the services provided by any engineering college library much depends on the adequacy of these resources and facilities (Shivalingaiah, 1994). The section divides the library resources into four categories. They are physical resources, information resources, human resources and financial resources.

4.2.1 Library Physical Resources

The use of information resources and facilities in libraries is dependent on the physical resources available for the users (Kannappanavar & Manjunatha, 2011). EC librarians were asked about the physical resources available in their libraries which

covers the status of their library building, area and seating capacity of the building, library sections, furniture and equipment available.

4.2.1.1 Separate Library Building, Area and Seating Capacity of the Libraries

Library building has significant bearing on engineering college libraries acceptance and use and most important is that it should be a neutral place and heart of college (Belsare, 2013). It plays a vital part in the important mission of bringing the library's materials into the lives and thinking of those who normally might not make use of this treasure house of knowledge (Balu & Reddy, 2014). According to S. R. Ranganathan's fifth law of library science, library is a growing organism. It is evident that over a period, a library is growing in two ways, one is growth of collections and services and another one is growth of users. The library established for a particular purpose should cope up with this development/growth in due course of time. As such, the library building should be able to accommodate future growth of the library. Thus, many library scientists insisted on a modular building plan rather than that of the fixed building plan since modular library building facilitates future expansion. The AICTE norms also insist that the library building for an engineering institution should be separate and flexible for future extension (Rajendran, 2007). At the same time it is also important to provide adequate seating arrangements with comfortable tables and chairs to users for using the library resources more conveniently.

Questions were asked in the questionnaire to elicit information on the nature of library buildings - separate or form the part of the main building, the total area of the library building and its seating capacity. The category-wise response from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise response from libraries of ECs in Kerala were presented in table 6 and table 7 respectively.

Table 6

Separate Library Building, Area and Seating Capacity of NBA Accredited ECs' Libraries (Category-Wise)

Category	Separate Library Building		Area (Sqm)				Seating Capacity			
	Yes	No	Below 500	501- 1500	1501- 2500	Above 2500	Below 100	101- 200	201- 300	Above 300
Govt.	7 (63.63%)	4 (36.36%)	1 (9.09%)	9 (81.81%)	1 (9.09%)	0 (0.00%)	5 (45.45%)	5 (45.45%)	1 (9.09%)	0 (0.00%)
Under Govt. Dept.	3 (42.85%)	4 (57.14%)	4 (57.14%)	3 (42.85%)	0 (0.00%)	0 (0.00%)	3 (42.85%)	4 (57.14%)	0 (0.00%)	0 (0.00%)
Self-Financing	11 (61.11%)	7 (38.88%)	1 (5.55%)	10 (55.55%)	5 (27.77%)	2 (11.11%)	1 (5.55%)	10 (55.55%)	6 (33.33%)	1 (5.55%)

Table 6 shows that out of 36 NBA accredited ECs in Kerala, 63.63 percent of Government EC libraries, 61.11 percent Self financing EC libraries and 42.85 percent EC libraries under Government departments are functioning in a separate library building.

When considering the area of EC library buildings, it can be seen that majority (81.81%) of Government ECs have an area between 501 to 1500 sqm, more than fifty percent of EC libraries under Government departments and Self financing EC libraries have an area of below 500 Sqm and in between 501 to 1500 Sqm respectively. From the part of Self financing ECs it can also be noted that 27.77 percent of libraries have an area of between 1501 to 2500 Sqm and two libraries have an area of above 2500 Sqm.

The data from table 6 regarding the total seating capacity of the libraries of NBA accredited ECs, it is visible that 57.14 percent of libraries under Government departments, 55.55 percent of Self financing EC libraries and 45.45 percent of Government EC libraries have a seating capacity between 101 to 200 respectively. It is also noticed from the table that a good number of Self financing EC libraries have a seating capacity between 201 to 300 and one library has a seating capacity of above 300.

The overall analysis of the data shows that from the three categories of NBA accredited EC libraries, Government libraries have the highest percent of separate library building and self-financing EC libraries have high percent of library area and seating capacity.

Table 7
Separate Library Building, Area and Seating Capacity of EC Libraries (Accreditation-Wise)

Accreditation Status	Separate Library Building		Area (Sqm)				Seating Capacity			
	Yes	No	Below 500	501-1500	1501 - 2500	Above 2500	Below 100	101 - 200	201-300	Above 300
NBA Accredited	21 (58.33%)	15 (41.67%)	6 (16.67%)	22 (61.11%)	6 (16.66%)	2 (5.56%)	9 (25.0%)	19 (52.78%)	7 (19.44%)	1 (2.78%)
Non-NBA Accredited	38 (59.37%)	26 (40.63%)	40 (62.50%)	20 (31.25%)	4 (6.25%)	0 (0.0%)	24 (37.5%)	33 (51.56%)	3 (4.69%)	4 (6.25%)
Total	59 (59.00%)	41 (41.00%)	46 (46.00%)	42 (42.00%)	10 (10.00%)	2 (2.00%)	33 (33.00%)	52 (52.00%)	10 (10.00%)	5 (5.00%)

Table 7 articulates that nearly one third of ECs in Kerala which have and have not NBA accredited programs possess separate library buildings. When considering the area of library buildings it can be seen that majority of NBA accredited ECs have an area in between 501 to 1500 Sqm (61.11%), a low number of them possess area between 1501-2500 sqm (16.67%) and below 500 Sqm (16.67%). It is interesting to note from the table that two EC libraries which have the programs of NBA accredited have an area of above 2500 Sqm. In the meantime, the majority of non-NBA accredited ECs report an area of below 500 Sqm (62.5%) to their libraries and a low number of them have an area between 1501 to 2500 Sqm (6.25%). When checking the seating capacity of these EC libraries it can be seen that more than fifty percent of ECs which have and have not the programs that are accredited by NBA report a seating capacity between 101 to 200. A good number of them report the seating capacity of below 100 and a very low number of them report the seating capacity of above 200.

The overall analysis of the table shows that nearly one third of ECs in Kerala have separate library buildings. When the majority of EC libraries which have the accredited programs of NBA reports an area in between 501 to 1500 Sqm, the ECs which do not have the accredited programs of NBA reports an area of below 500 Sqm. In the case of the seating capacity of these library buildings it can be visible that above fifty percent of EC libraries which have and have not NBA accredited programs possess a seating capacity in between 101 to 200 seats.

4.2.1.2 Library Working Hours

The effective functioning of any organization depends on its working hours /days. Libraries are supposed to function on all the days of the year as they are service institutions. The number of working hours provides the users more time to access and read the available collections. In simple terms the utility concept of a library depends on the working hours/ days (Agrapu, 2013).

The EC librarians were enquired about the working hours of their libraries and the category-wise response from the libraries of ECs which have the accredited

programs of NBA and NBA accreditation-wise response from EC libraries in Kerala were presented in table 8 and table 9 respectively.

Table 8

Working Hours of the Library in NBA Accredited ECs (Category-Wise)

Category	Working Hours		
	Below 8 hours	8-10 hours	10-12 hours
Govt.	1 (9.09%)	7 (63.63%)	3 (27.27%)
Under Govt. Dept.	1 (14.28%)	6 (85.71%)	0 (0.00%)
Self- Financing	0 (0.00%)	4 (22.22%)	14 (77.77%)

Data from table 8 highlights that the working of the majority of Government EC libraries is between 8 to 10 hours (63.63%), three of them are working between 10 to 12 hours (27.27%) and only one Government EC library reports working below 8 hours. At the same time a highest percent of EC libraries under Government departments report their working between 8 to 10 hours (85.71%) and one library reports it as below 8 hours. As the Self financing EC libraries are concerned, it is visible that most of them have working hours of 10 to 12 (77.77%) and a few of them are working between 8 to 10 hours (22.22%).

The overall analysis of the data highlights that the working hours of Self financing EC libraries seem to be high as most of them work from 10 to 12 hours when compared to other two categories of libraries from which most of them work 8 to 10 hours.

Table 9

Working Hours of EC Libraries in Kerala (Accreditation-Wise)

Working Hours	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Below 8 hours	2 (5.55%)	14 (21.87%)	16 (16.00%)
8-10 hours	22 (61.11%)	47 (73.43%)	69 (69.00%)
10-12 hours	12 (33.33%)	3 (4.68%)	15 (15.00%)

Working hours of the EC libraries in Kerala are displayed in table 9. According to the table, the majority of NBA (61.11%) and non-NBA (73.43%) accredited EC libraries work between 8 to 10 hours. It is noted that while a good number of NBA accredited ECs' libraries work between 10 to 12 hours, more than twenty percent of libraries of non-NBA accredited ECs work below 8 hours.

As a whole it can be concluded from the analysis that the majority of EC libraries in Kerala work in between 8 to 10 hours and the working hours of NBA accredited ECs' libraries to be higher than the libraries of non-NBA accredited ECs. As Agbetuyi, Adegbilero-Iwari and Subair (2017) in their study opined, libraries can enhance access to the library resources through long opening hours including weekends.

4.2.1.3 Average Number of Users of the Library per Day

The main function of the engineering college library is to satisfy its readers by providing needed information and by giving access to resources for longer hours. It is necessary that libraries should be kept open longer than the working hours of the college. During college hours, faculties are busy in the classes and it is not possible for them to spare their time in the library for reading (Kannappanavar & Manjunatha, 2011). Education is a process of interaction between learners and information sources. Hence to increase interaction between the user and the library, the working hours of the library need to be increased (kumar, 2011). The EC librarians were enquired about the average number of users of their library per day and the category-wise response from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise response from EC libraries in Kerala were presented in table 10 and table 11 respectively.

Table 10
Average Number of Users per day in the Libraries of NBA Accredited ECs
(Category-Wise)

Category	Average Number of Users per Day			
	Below 100	101-200	201-300	Above 300
Govt.	3 (27.27%)	3 (27.27%)	5 (45.45%)	0 (0.0%)
Under Govt. Dept.	5 (71.42%)	1 (14.28%)	1 (14.28%)	0 (0.0%)
Self-Financing	5 (27.77%)	10 (55.55%)	2 (11.11%)	1 (5.55%)

Data from table 10 reveals that nearly fifty percent of Government EC libraries have an average number of 201 to 300 users per day followed by 27.27 percent of them having below 100 and 101 to 200 users per day respectively. When considering the NBA accredited ECs' libraries under Government departments it displays that a large majority of EC libraries have an average number of below 100 (71.42%) users following that one library each has the average number of between 101 to 200 and 201 to 300 users. In the meanwhile, when the Self financing EC libraries are concern, it can be observed that more than fifty percent of libraries have an average number of 101 to 200 users per day (55.55%), more than twenty five percent of them have below 100 average users per day, two libraries have an average users of 201 to 300 per day and it is interesting note that one Self financing EC library report more than 300 users per day.

The overall analysis shows that the Government EC libraries have a high percent of average number of library users per day when compared to other two categories of libraries.

Table 11
Average Number of Users per day in EC Libraries in Kerala
(Accreditation-Wise)

Accreditation Status	Average Number of Users per Day			
	Below 100	101-200	201-300	Above 300
NBA Accredited	13 (36.11%)	15 (41.67%)	7 (19.44%)	1 (2.78%)
Non-NBA Accredited	41 (64.06%)	19 (29.69%)	3 (4.69%)	1 (1.56%)
Total	54 (54.00%)	34 (34.00%)	10 (10.00%)	2 (2.00%)

Table 11 illustrates the average number of users per day in EC libraries in Kerala. It is reported that more than forty percent of libraries from NBA accredited ECs have an average number of 101 to 200 users per day, nearly forty percent of them have an average number of below 100 users per day. It is reported from the analysis that a low number of libraries from NBA accredited ECs have 201 to 300 and above 300 average users per day. When going through non-NBA accredited ECs, it is visible that the majority of libraries have an average of below 100 users per day (64.09%), more than one fourth of them have an average number of 101 to 200 users per day. It is also noted from the table that a very low number of libraries from non-NBA accredited ECs report the average number of users from 201 to 300 and above 300 per day.

Altogether it can be concluded from the table that more than 50 percent of EC libraries in Kerala have an average number of below 100 users per day. When more than 40 percent of librarians from NBA accredited ECs report an average number of 101 to 200 users per day, more than sixty percent of EC librarians from non-NBA accredited categories report an average number of below 100 users per day in their libraries.

4.2.1.4 Library Sections

For the functional convenience the libraries are divided into different sections like stack room, circulation section, technical section, periodical section, reference section etc. The EC librarians were asked about the availability of different sections of the library. The category-wise response from the libraries of ECs which have the accredited programs of NBA are presented in table 12 and table 13 respectively whereas NBA accreditation-wise response from EC libraries in Kerala are presented in table 14 and table 15 respectively.

Table 12

Library Sections of NBA Accredited ECs (Category-Wise)

Library Section	Category		
	Government	Under Govt. Dept.	Self-Finance
Stack room	11 (100%)	7 (100%)	18 (100%)
Circulation	11 (100%)	7 (100%)	18 (100%)
Technical	9 (81.8%)	4 (57.1%)	16 (88.9%)
Reference	11 (100%)	7 (100%)	18 (100%)
Periodical	11 (100%)	7 (100%)	18 (100%)
Back volume section	8 (72.7%)	5 (71.4%)	14 (77.8%)
New arrivals section	9 (81.8%)	5 (71.4%)	17 (94.4%)
Librarian Cabin	9 (81.8%)	6 (85.7%)	17 (94.4%)
Binding	4 (36.4%)	4 (57.1%)	4 (22.2%)
Newspaper section	11 (100%)	7 (100%)	18 (100%)
Reading room	11 (100%)	7 (100%)	16 (88.9%)
Reprography section	8 (72.7%)	6 (85.7%)	16 (88.9%)
Property counter	10 (90.9%)	7 (100%)	17 (94.4%)

Data from table 12 points out that all libraries of Government ECs have stack, circulation, periodical, reference, newspaper and reading room. A large majority of them have property counter (90.9%), technical (81.8%), new arrival (81.8%), librarian cabin (81.8%), back volume (72.7%) and reprography (72.7%) sections. At the same time it is observed that all EC libraries under Government Departments have stack,

circulation, reference, periodical, newspaper, and reading room. The highest percent of them have librarian cabin (85.7%), reprography (85.7%), back volume (71.4%) and new arrival (71.4%) sections. When considering the matter of Self financing ECs it can be seen that all libraries have stack, circulation, reference, periodical and newspaper sections. A large majority of them have new arrival (94.4%), librarian cabin (94.4%), property counter (94.4%), technical (88.9%), reading room (88.9%), reprography (88.9%) and back volume (77.8%) section. It is also noted from the table that 4 libraries from each category of ECs have binding section.

The overall analysis of the data shows that almost all categories of ECs have the most common sections like stack, circulation, periodical, reference and periodical sections in their libraries and compared to other two categories of NBA accredited ECs, the self financing college libraries report the availability of more library sections at percent level.

Table 13

Availability of Library Sections in NBA Accredited ECs (Category-Wise)

Library Sections Availability	Category		
	Government	Under Govt. Dept.	Self-finance
Low	1 (9.09%)	1 (14.28%)	1 (5.55%)
Medium	2 (18.18%)	1 (14.28%)	1 (5.55%)
High	8 (72.72%)	5 (71.42%)	16 (88.88%)
Chi-square = 2.798**; p-value =0.609			

** Significant at 0.01 level

When checking the category-wise difference in availability of library sections among the libraries of NBA accredited ECs, it is visible from table 13 that three categories of EC libraries have a high level of library sections availability. Since the p-value is greater than the level of significance, it can conclude that there is no significant difference in the availability of library sections among the Government, under Government Departments and Self financing ECs which have the accredited programs of NBA.

Table 14
Library Sections of EC Libraries (Accreditation-Wise)

Name of the section	Accreditation Status		
	NBA Accredited	Non-NBA Accredited	Total
Stackroom	36 (100%)	64 (100)	100 (100%)
Circulation	36 (100%)	64 (100)	100 (100%)
Technical	29 (80.56%)	37 (57.81%)	66 (66.00%)
Reference	36 (100%)	59 (92.19%)	95 (95.00%)
Periodical	36 (100%)	59 (92.19%)	95 (95.00%)
Back volume section	27 (75.00%)	40 (62.50%)	67 (67.00%)
New arrivals section	31 (86.11%)	41 (64.06%)	72 (72.00%)
Librarian Cabin	32 (88.89%)	50 (78.13%)	82 (82.00%)
Binding section	12 (33.33%)	8 (12.50%)	20 (20.00%)
Newspaper section	35 (97.22%)	56 (87.50%)	91 (91.00%)
Reading room	34 (94.44%)	57 (89.06%)	91 (91.00%)
Reprography section	30 (83.33%)	51 (79.69%)	81 (81.00%)
Property counter	34 (94.44%)	55 (85.94%)	89 (89.00%)

Data illustrated in table 14 explains the library sections available in EC libraries in Kerala. According to the table all libraries of NBA accredited ECs possess stackroom, circulation, reference and periodical section. A large majority of them possess the newspaper section (97.22%), reading room (94.44%), property counter (94.44%), librarian cabin (88.89%), new arrival sections (86.11%) reprographic section (83.33%), technical section (80.56%) and back volume section (75%). It is noted from the table that 33.33 percent of ECs report the availability of binding section in their libraries. At the same time when checking the availability of different sections

in non-NBA accredited ECs' libraries, it is visible from the table that all of them have the sections like stack room and circulation. Most of them have the sections like reference (92.19%), periodical (92.19%), reading room (89.06%), newspaper section (87.50%), property counter (85.94%), reprography section (79.69%) and librarian cabin (78.13%). Majority of them possess new arrival section (64.06%), back volume section (62.50%) and technical section (57.81%). It is also noted from the table that 12.50 percent of ECs possess binding sections in their libraries.

As a whole it can be concluded from data that a major part of libraries from both categories of ECs which have and have not the accredited programs of NBA possess all important common sections of the libraries and the libraries of NBA accredited ECs shows high percent level in the availability of library sections when compared to the libraries of ECs which do not have the accredited programs of NBA.

Table 15

Availability of Library Sections in EC Libraries (Accreditation-Wise)

Library Sections Availability	Accreditation Status		
	NBA Accredited	Non-NBA Accredited	Total
Low	3 (8.33%)	7 (10.94%)	10 (10.00%)
Medium	4 (11.11%)	16 (25%)	20 (20.00%)
High	29 (80.56%)	41 (64.06%)	70 (70.00%)
Chi-square = 3.274**; p-value = 0.195			

** Significant at 0.01 level

While checking the accreditation-wise differences in the availability of sections in EC libraries in Kerala, table 15 shows that majority of NBA accredited and non-NBA accredited ECs have high availability of library sections. Since the p-value is greater than the level of significance it can conclude that there is no significant difference in the availability of library sections between the libraries of NBA accredited and non-NBA accredited ECs.

4.2.1.5 Furniture Available in the Libraries

The books and records are subject to the damage and attack by white ants, termites, beetles; they are to be kept in safe custody and for that the almirahs, racks, book shelf is must. For providing the comfort and congenial atmosphere to the reading students and any other users of the library and enable the library staff to discharge their duties efficiently and effectively minimum requirements of furniture is necessary in all ECs (Belsare, 2013).

The EC librarians were enquired about the availability of furniture in their libraries. The category- wise response from the libraries of ECs which have the accredited programs of NBA is presented in table 16 and table 17 and NBA accreditation-wise response from EC libraries in Kerala were presented in table 18 and table 19 respectively.

Table 16

Furniture in the Libraries of NBA accredited ECs (Category-Wise)

Furniture	Category		
	Government	Under Govt. Dept.	Self-Finance
Book shelves/Racks	11 (100%)	7 (100%)	18 (100%)
Almirah	11 (100%)	7 (100%)	18 (100%)
Tables	11 (100%)	7 (100%)	18 (100%)
Chairs	11 (100%)	7 (100%)	18 (100%)
Newspaper stand	7 (63.6%)	4 (57.1%)	16 (88.9%)
Periodical display board	11 (100%)	7 (100%)	18 (100%)
Circulation desk	11 (100%)	7 (100%)	18 (100%)
CD rack	6 (54.5%)	5 (71.4%)	17 (94.4%)
Suggestion box	11 (100%)	3 (42.9%)	14 (77.8%)
Notice board	11 (100%)	7 (100%)	17 (94.4%)
Step stools	3 (27.3%)	6 (85.7%)	11 (61.1%)
Book trolley	11 (100%)	6 (85.7%)	15 (83.3%)

The table 16 reveals that all Government EC libraries under study have furniture like bookshelves, almirah, tables, chairs, periodical display board, circulation desk, suggestion box, notice board and book trolley. Majority of them have newspaper stands (63.6%), CD rack (54.5%) and a few of them possess step stools (27.3%). It is observed from the table that all EC libraries under Government departments also possess the furniture like bookshelves, almirah, table, chairs, periodical display board, circulation desk and noticeboard. Majority of them have step stools (85.7%), book trolley (85.7%), CD rack (71.4%) and newspaper stand (57.1%). The data from the table also discloses that all libraries of Self-financing ECs have furniture like bookshelves, almirah, tables, chairs, periodical display board and circulation desk. A large majority of them have CD rack (94.4%), notice board (94.4%), newspaper stand (88.9%), book trolley (83.3%) and suggestion box (77.8%).

The overall analysis of the data highlights that almost all libraries from three categories of NBA accredited ECs possess furniture like bookshelves, almirah, tables, chairs, circulation desk and periodical display board. The Government EC libraries show a high percent of availability of furniture when compared to other two categories of NBA accredited ECs.

Table 17
Availability of Furniture in the Libraries of NBA Accredited ECs
(Category-Wise)

Furniture Availability	Category		
	Government	Under Govt. Dept.	Self-Finance
Low	1 (9.09%)	1 (14.28%)	1 (5.55%)
Medium	1 (9.09%)	1 (14.28%)	2 (11.11%)
High	9 (81.81%)	5 (71.42%)	15 (83.33)
Chi-square = 2.606**; p-value = 0.670			

**** Significant at 0.01 level**

While checking the category-wise differences in the availability of furniture among the libraries of NBA accredited ECs, table 17 shows that a large majority of libraries from three categories of ECs have high levels of furniture availability. Since the p-value is greater than the level of significance it can conclude that there is no

significant difference in the availability of furniture among Government, under Government departments and Self- financing EC libraries.

Table 18
Furniture in the EC Libraries (Accreditation-Wise)

Furniture	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Book shelves/Racks	36 (100.00%)	64 (100%)	100 (100%)
Almirah	36 (100.00%)	62 (96.88%)	98 (98.00%)
Tables	36 (100.00%)	64 (100%)	100 (100%)
Chairs	36 (100.00%)	64 (100%)	100 (100%)
Newspaper stand	27 (75.00%)	48 (75.00%)	75 (75.00%)
Periodical display board	36 (100.00%)	62 (96.88%)	98 (98.00%)
Circulation desk	36 (100.00%)	63 (98.44%)	99 (99.00%)
CD rack	28 (77.78%)	33 (51.56%)	61 (61.00%)
Suggestion box	28 (77.78%)	24 (37.50%)	52 (52.00%)
Notice board	35 (97.22%)	56 (87.50%)	91 (91.00%)
Step stools	20 (55.56%)	17 (26.56%)	37 (37.00%)
Book trolley	32 (88.89%)	37 (57.81%)	69 (69.00%)

Table 18 indicates the availability of furniture in the libraries of ECs in Kerala. It depicts that all libraries of NBA accredited ECs possess the furniture like bookshelves/racks, almirah, tables, chairs, periodical display board, circulation desk. A large majority of them have notice boards (97.22%), book trolley (88.89%), suggestion box (77.78%), CD rack (77.78%), newspaper stand (75%). When checking the availability of furniture in non-NBA accredited ECs, it is observed from the table

that all of them possess book shelves/racks, tables and chairs. A great majority of them have circulation desk (98.44%), almirah (96.88%), periodical display board (96.88%), notice board (87.50%) and newspaper stand (75%). It can be also understood from the table that more than fifty percent of non-NBA accredited EC libraries possess book trolley (57.81%) and CD rack (51.56%). A good number of them report the availability of suggestion box (37.50%) and a limited number of them report the availability of step stools (26.56%).

Altogether it can be assumed from the table that as NBA accredited ECs shows a slight increase in the availability of furniture like CD rack, suggestion box, step stools and book trolleys as a whole the main furnitures like bookshelves, almirah, table, chairs, periodical display board, circulation desk etc. are available in a large majority of EC libraries in Kerala.

Table 19

Availability of Furniture in EC Libraries (Accreditation-Wise)

Furniture Availability	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	3 (8.33%)	4 (6.25%)	7 (7.00%)
Medium	6 (16.66%)	27 (42.18%)	33 (33.00%)
High	27 (75%)	33 (51.56%)	60 (60.00%)
Chi-square = 7.053**; p-value = 0.033			

** Significant at 0.05 level

While checking the accreditation-wise difference in the availability of furniture between the EC libraries in Kerala, it is visible from table 19 that since the p-value is less than the level of significance there is a significant difference between the NBA accredited and non-NBA accredited ECs in Kerala in the availability of furniture in their libraries

4.2.1.6 Equipment Available in the Libraries

Equipment and facilities are very essential for the utmost realization of the goals of the library. During this era of fast technological development, modern equipment facilities like photocopiers/xerox machine, CCTV camera, telephone, fire and safety measures are expected to be available in good condition and properly utilized in EC libraries.

The EC librarians in Kerala were asked about the availability of equipment in their libraries and the category-wise response from the libraries of ECs which have the accredited programs of NBA are presented in table 20 and table 21 whereas NBA accreditation-wise responses from EC libraries in Kerala are presented in table 22 and table 23 respectively.

Table 20

Equipment in NBA Accredited ECs' Libraries (Category-Wise)

Equipment	Category		
	Government	Under Govt. Dept.	Self-Finance
Binding machine	3 (27.3%)	0 (0.00%)	2 (11.1%)
Lamination machine	3 (27.3%)	0 (0.00%)	2 (11.1%)
Xerox machine	11 (100%)	5 (71.4%)	18 (100%)
Air conditioner	6 (54.5%)	2 (28.6%)	9 (50%)
Telephone	7 (63.6%)	4 (57.1%)	17 (94.4%)
Drinking water dispenser	11 (100%)	4 (57.1%)	15 (83.3%)
Fire and safety measures	11 (100%)	7 (100%)	17 (94.4%)
CCTV camera	8 (72.7%)	5 (71.4%)	17 (94.4%)

As far as table 20 is considered, it reveals that all EC libraries have equipment like xerox machines, drinking water dispensers and fire and safety measures. Majority of them possess CCTV camera (72.7%), telephone (63.6%) air conditioner (54.5%) and only three libraries possess equipment like binding machine (27.3%) and lamination machine (27.3%). When considering the EC libraries under Government departments, it is visible from the table that all libraries possess fire and safety

measures, majority of them possess xerox machine (71.4%), CCTV camera (71.4%), telephone (57.1%), drinking water dispenser (57.1%) and a few of them have air conditioner (28.6%). At the same time, the libraries of Self-financing ECs report that all libraries have xerox machine, a great majority of them possess CCTV camera (94.4%), fire and safety measures (94.4%), telephone (94.4%) and drinking water dispenser (83.3%). It is also clear from the table that 50 percent of Self-financing EC libraries possess air conditioner and two libraries possess binding and lamination machine.

The overall analysis of the data from the data discloses that the highest percent of libraries from three categories of NBA accredited ECs have the equipment like xerox machine, telephone, drinking water dispenser, fire and safety measures and CCTV camera. The Government EC libraries show an increase in the availability of equipment at percent level when compared to other two categories of NBA accredited ECs.

Table 21

Availability of Equipment in NBA Accredited ECs' Libraries (Category-Wise)

Equipment Availability	Category		
	Government	Under Govt. Dept.	Self-Finance
Low	3 (27.27%)	3 (42.86%)	1 (5.55%)
Medium	5 (45.45%)	3 (42.86%)	15 (83.33%)
High	3 (27.27%)	1 (14.28%)	2 (11.11%)
Chi-square = 7.367**; p-value = 0.080			

** Significant at 0.01 level

The category-wise difference in the availability of equipment among the libraries of ECs which have the accredited programs of NBA are analysed by Chi-square test and displays in table 21. Since the p-value is greater than the level of significance it is found that there is no significant difference in the availability of equipment among the Government, under Government department and Self financing EC libraries.

Table 22
Equipment in the EC Libraries in Kerala (Accreditation-Wise)

Equipment	Accreditation Status		Total ECs
	NBA Accredited	Non-NBA Accredited	
Binding machine	5 (13.89%)	1 (1.56%)	6 (6.00%)
Lamination machine	5 (13.89%)	3 (4.69%)	8 (8.00%)
Xerox machine	34 (94.44%)	55 (85.94%)	89 (89.00%)
Air conditioner	17 (47.22%)	12 (18.75%)	29 (29.00%)
Telephone	28 (77.78%)	51 (79.69%)	79 (79.00%)
Drinking water dispenser	30 (83.33%)	34 (53.13%)	64 (64.00%)
Fire and safety measures	35 (97.22%)	52 (81.25%)	87 (87.00%)
CCTV camera	30 (83.33%)	34 (53.13%)	64 (64.00%)

Table 22 specifies the availability of equipment in EC libraries in Kerala. According to the table a lion's share of NBA accredited EC libraries possess fire and safety measures (97.22%), xerox machine (94.44%), CCTV camera (83.33%), drinking water dispenser (83.33%) and telephone (77.78%), a good number of them seem to possess air conditioner (47.22%) and a low number of them possess the equipment like binding machine (13.89%) and lamination machine (13.89%). In the case of the libraries of non-NBA accredited ECs, It is also observed from the table that a biggest share of them possess equipment like xerox machine (85.94%), fire and safety measures (81.25%) and telephone (79.69%). More than fifty percent of them have CCTV camera (53.13%), drinking water dispenser (53.13%) and a very few of them possess air conditioner (18.75%), lamination machine (4.69%) and binding machine (1.56%).

As a whole it can be concluded from the data that a large majority of EC libraries in Kerala have the availability of equipments like Xerox machine, fire and safety measures, telephone, CCTV camera and drinking water dispenser. ECs which have the accredited programs of NBA shows an increase in the availability of Equipments except in the case of telephone in which the ECs which do not have the accredited programs of NBA show high percent level.

Table 23**Availability of Equipments in the EC Libraries in Kerala (Accreditation-Wise)**

Equipment Availability	Accreditation Status		Total ECs
	NBA Accredited	Non-NBA Accredited	
Low	7 (19.44%)	30 (46.87%)	37 (37.00%)
Medium	23 (63.88%)	31 (48.43%)	54 (54.00%)
High	6 (16.66%)	3 (4.68%)	9 (9.00%)
Chi-square = 9.378**; p-value = 0.009			

** Significant at 0.01 level

The accreditation-wise difference in equipment availability between the EC libraries in Kerala were analysed by Chi-square test and displays in table 23. Since the p-value is less than the level of significance it is clear that there is a significant difference between the libraries of NBA accredited and non accredited ECs in the availability of equipment.

4.2.2 Information Resources

The main function of an EC library is to select and acquire sufficient reading resources for its readers. Keeping the users requirements the library should collect good and worthwhile information resources. Without a balanced and rich collection, an EC library is like a temple without an idol or a body without soul. The section covered availability of both printed resources and E- resources available in the EC libraries in Kerala.

4.2.2.1 Information of Printed Resources Available in the Libraries

The print resources are the most important part of the EC library collection. It is commonly known as the hard copy and most used collection in libraries. Print resources include, but not limited to books, journals, bound volumes of journals, theses, project reports, newspaper. It is essential for the EC library to procure these resources on various subjects offered in the college. The EC librarians were enquired

about the availability of printed resources in their libraries and the category-wise response from the libraries of ECs which have the accredited programs of NBA and NBA accreditation status-wise response from EC libraries in Kerala were presented in table 24 and table 25 respectively.

Table 24
Printed Resources Available in NBA Accredited ECs' libraries
(Category-Wise)

Print Resources	Category		
	Government	Under Govt. Dept.	Self-Finance
Book			
12000-42000	6 (54.54%)	5 (71.42%)	12 (66.66%)
42001-72500	2 (18.18%)	1 (14.28%)	5 (27.77%)
72501-102894	3 (27.27%)	1 (14.28%)	1 (5.55%)
Mean (SD)	48437.09 (30525.63)	22612.14 (4107.26)	40018.11 (16656.07)
Chi-square = 3.048**; p-value = 0.622			
Journal			
Below 90	8 (72.72%)	5 (71.42%)	7 (38.88%)
91-180	2 (18.18%)	1 (14.28%)	10 (55.55%)
181-270	1 (9.09%)	1 (14.28%)	1 (5.55%)
Mean (SD)	69.91 (76.07)	43.86 (13.55)	116.22 (61.69)
Chi-square = 6.194**; p-value = 0.142			
Journal Bound Volume			
Below 500	9 (81.81%)	5 (71.42%)	13 (72.22%)
501-2000	1 (9.09%)	1 (14.28%)	3 (16.66%)
Above 2000	1 (9.09%)	1 (14.28%)	2 (11.11%)
Mean (SD)	356.00 (767.65)	36.57 (66.78)	588.44 (1030.81)
Chi-square = 1.065**; p-value = 0.978			
Theses/dissertations/ Projects			
Below 500	8 (72.72%)	5 (71.42%)	12 (66.66%)
501-2000	1 (9.09%)	1 (14.28%)	5 (27.77%)
Above 2000	2 (18.81%)	1 (14.28%)	1 (5.55%)
Mean (SD)	549.44 (1002.69)	117.43 (236.81)	466.89 (968.83)
Chi-square = 2.646**; p-value = 0.651			

Patents			
Below 50	9 (81.81%)	5 (71.42%)	16 (88.88%)
51-150	1 (9.09%)	1 (14.28%)	1 (5.55%)
Above 150	1 (9.09%)	1 (14.28%)	1 (5.55%)
Mean (SD)	0.30 (0.67)	0.14 (0.38)	12.72 (44.40)
Chi-square = 2.284**; p-value = 0.851			
Newspaper			
Below 5	3 (27.27%)	1 (14.28%)	3 (16.66%)
6-10	7 (63.63%)	1 (14.28%)	10 (55.55%)
11-15	1 (9.09%)	5 (71.42%)	5 (27.77%)
Mean (SD)	7.36 (2.66)	5.43 (2.82)	8.56 (3.11)
Chi-square = 7.704**; p-value = 0.084			

** Significant at 0.01 level

Data illustrated in table 24 shows that the average number of books seem to be high in the libraries of Government ECs (48437.09) which have NBA accredited programs and it is followed by the libraries of Self financing ECs (40018.11) and ECs under Government departments (22612.14). In the meantime the average number of journals seems to be high in the case of Self financing EC libraries (116.22) following that of libraries of Government ECs (69.91) and ECs under Government departments (43.86). When the bound volumes of journals are concerned the average number shows highest in Self financing EC libraries (588.44) next to that coming Government EC libraries (356.00) and ECs under Government departments (36.57) respectively. At the same instant, the average number of theses and dissertations appears to be high in Government EC libraries (549.44) since then coming Self financing EC libraries (466.89) and libraries of ECs under Government departments. Data from the table also disclose that in the case of average number of patents and newspapers, Self financing EC libraries report high availability when compared to other two categories of EC libraries.

As a whole, it can be concluded from the data the average number of books and theses/ dissertations are high in Government EC libraries and all other printed resources like journals, bound volumes of journals, patents and newspapers the Self financing EC libraries shows a high rate of availability.

The category-wise difference in the availability of printed resources among the libraries of NBA accredited ECs are analysed with Chi-square test and found that since the p-value is greater than the level of significance there is no significant difference among the Government, under Government and Self financing category of ECs in their availability of print resources.

Table 25
Availability of Print Resources in the EC Libraries in Kerala
(Accreditation-Wise)

Print resources	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Books			
5000-37000	21 (53.33%)	61 (95.31%)	82 (82.00%)
37001-70000	11 (30.55%)	2 (3.12%)	13 (13.00%)
70001-103000	4 (11.11%)	1 (1.56%)	5 (5.00%)
Mean (SD)	39206.08 (22046.89)	18944.94 (8826.12)	29075.51 (14879.99)
Chi-square = 20.345**; p-value = 0.000			
Journals			
Below 90	20 (55.55%)	54 (84.37%)	74 (74.00%)
91-180	13 (36.11%)	9 (14.06%)	22 (22.00%)
181-270	3 (8.3%)	1 (1.56%)	4 (4.00%)
Mean (SD)	88.00 (66.60)	54.70 (32.60)	71.35 (47.37)
Chi-square = 9.946**; p-value = 0.006			
Journals Bound Volume			
Below 500	27 (75.00%)	61 (95.31%)	88 (88.00%)
501-2000	5 (13.88%)	2 (3.12%)	7 (7.00%)
Above 2000	4 (11.11%)	1 (1.56%)	5 (5.00%)
Mean (SD)	413.29 (859.53)	117.63 (284.37)	265.46 (559.15)
Chi-square = 8.492*; p-value = 0.010			
Theses/Dissertations/ Project Reports			
Below 500	25 (69.44%)	55 (85.93%)	80 (80.00%)
501-2000	7 (19.44%)	5 (7.81%)	12 (12.00%)
Above 2000	4 (11.11%)	4 (6.25%)	8 (8.00%)
Mean (SD)	416.79 (873.29)	326.53 (749.87)	371.66 (792.12)
Chi-square = 4.092**; p-value = 0.147			

Patent			
Below 50	30 (83.33%)	62 (96.87%)	92 (92.00%)
51-150	3 (8.33%)	1 (1.56%)	4 (4.00%)
Above 150	3 (8.33%)	1 (1.56%)	4 (4.00%)
Mean (SD)	6.66 (32.03)	5.75 (17.67)	6.20 (23.69)
Chi-square = 5.407*; p-value = 0.042			
Newspaper			
Below 5	7 (19.44%)	30 (46.87%)	37 (37.00%)
6-10	18 (50.00%)	33 (51.56%)	51 (51.00%)
11-15	11 (30.55%)	1 (1.56%)	12 (12.00%)
Mean (SD)	7.58 (3.08)	5.92 (2.19)	6.75 (2.53)
Chi-square = 20.836**; p-value = 0.000			

** Significant at 0.01 level * Significant at 0.05 level

According to table 25, the average availability of books in the libraries of NBA accredited ECs is 39206.08 whereas the average availability of books in ECs which do not have the accredited programs of NBA is 18944.94. The average availability of journals in NBA accredited ECs appears to be 88 and it seems to be 54.70 in non-NBA accredited ECs' libraries. When the average availability of bound volumes of journals in the libraries of ECs which have NBA accredited programs is reported as 413.29, it is reported as 117.63 in the libraries of ECs which do not have the accredited programs of NBA. In the meanwhile the libraries of NBA accredited ECs report the average availability of theses/dissertations/project reports as 416.79 and the libraries of NBA accredited ECs report it as 326.53. When checking the average availability of patents it is visible from the table that the libraries of NBA accredited and non accredited disclosed it as 6.66 and 5.75 respectively. The average availability of newspapers also reported by the libraries of NBA accredited and non accredited ECs as 7.58 and 5.9 respectively.

The overall analysis of the data shows there is difference between the ECs in Kerala in the average availability of printed resources in their libraries. The ECs which have the accredited programs of NBA shows an increase in the average availability of books, journals, bound volumes of journals, theses/dissertations/project reports etc with the ECs which do not have the accredited programs of NBA.

The accreditation-wise difference in the availability of print resources between the EC libraries in Kerala are analysed with Chi-square test. Since the p-value is less than the level of significance it can conclude that there is a significant difference

between the numbers of print resources in the libraries of NBA accredited and Non-NBA accredited colleges.

4.2.2.2 Growth of Print Resources in EC Libraries

Library is a growing organism. This growth of library collection, if not properly nurtured, invariably deteriorates not merely in its physical aspects but also in its coverage and depth of specialization. The college library has to develop a planned and systematic collection of various kinds, so that the needs of teachers and students are fulfilled and their academic objectives are accomplished (Kannappanavar & Manjunatha, 2011). Data regarding the growth of printed resources in EC libraries for three consecutive years were collected and category-wise reports from the libraries of ECs which have the accredited programs of NBA and status of NBA accreditation-wise reports from EC libraries in Kerala were presented in table 26 and table 27 respectively.

Table 26

Growth of Print Resources in NBA Accredited ECs' Libraries (Category-Wise)

Printed Resources		Govt.	Under Govt. Dept.	Self-Financing
Books				
Average number of Books	2017-18	45889.64	20467.00	35729.83
	2018-19	47009.00	21373.43	37998.94
	2019-20	48437.09	22612.14	40018.11
Year to year growth rate	(2018-19) over (2017-18)	1119.36	906.43	2269.11
	(2019-20) over (2018-19)	1428.09	1238.71	2019.17
Average annual growth		1273.73	1072.57	2144.14
Annual compound growth rate		0.027	0.051	0.058
Journals				
Average number of Journals	2017-18	54.818	44.57	120.61
	2018-19	66.364	45.29	115.89
	2019-20	69.909	43.86	116.22
Year to year growth rate	(2018-19) over (2017-18)	11.55	0.71	-4.72
	(2019-20) over (2018-19)	3.55	-1.43	0.33
Average annual growth		7.55	-0.36	-2.19
Annual compound growth rate		0.1293	-0.0080	-0.0184

Journals Bound volume				
Average Number of Journals (Bound vol.)	2017-18	333.00	30.71	535.22
	2018-19	344.56	33.14	556.83
	2019-20	356.00	36.57	588.44
Year to year growth rate	(2018-19) over (2017-18)	11.56	2.43	21.61
	(2019-20) over (2018-19)	11.44	3.43	31.61
Average annual growth		11.50	2.93	26.61
Annual compound growth rate		0.0340	0.0912	0.0485
Theses/Dissertations/Project				
Average Number of theses/Dissertations/Project	2017-18	435.00	97.43	359.28
	2018-19	490.89	103.29	406.61
	2019-20	549.44	117.43	466.89
Year to year growth rate	(2018-19) over (2017-18)	55.89	5.86	47.33
	(2019-20) over (2018-19)	58.55	14.14	60.28
Average annual growth		57.22	10.00	53.81
Annual compound growth rate		0.1239	0.0979	0.1400
Patents/Standards				
Average Number of Patents/Standards	2017-18	0.3	0.14	12.22
	2018-19	0.3	0.14	12.39
	2019-20	0.3	0.14	12.72
Year to year growth rate	(2018-19) over (2017-18)	0	0	0.17
	(2019-20) over (2018-19)	0	0	0.33
Average annual growth		0.00	0.00	0.25
Annual compound growth rate		0.0000	0.0000	0.0202
Newspapers				
Average Number of Newspapers	2017-18	7.364	5.43	8.72
	2018-19	7.364	5.43	8.94
	2019-20	7.364	5.43	8.56
Year to year growth rate	(2018-19) over (2017-18)	0	0	0.22
	(2019-20) over (2018-19)	0	0	-0.39
Average annual growth		0.00	0.00	-0.08
Annual compound growth rate		0.0000	0.0000	-0.0096

It can be understood from table 26 that average annual growth sounds highest in the libraries of Self financing ECs (2144.14) which have accredited programs of NBA and it is followed by Government (1273.73) and ECs under Government

departments (1072.57). At the same moment the annual average growth of journals shows a high rate in Government EC libraries and both of other categories of ECs under Government departments and Self financing shows low growth in the number of journals. When considering the average annual growth of bound volumes of journals, Self financing EC libraries (26.61) produce the highest growth and it is followed by the libraries of Government (11.50) and ECs under Government departments (2.93). Annual growth of theses/dissertations/projects are highest in Government EC libraries (57.22) and it was succeeded by Self financing (53.81) and ECs under Government departments (10). It is also clearly visible from the table that the average annual rate of patents/standards and newspapers are increasing and decreasing respectively in Self financing EC libraries whereas there are no changes seen in the other two categories of ECs in patents/standards and newspapers annual growth rate.

As a whole it can be concluded from the data that when average annual growth of journals and theses/dissertations are highest in the libraries of Government ECs which have accredited programs of NBA, the growth rate of books, bound volumes of journals and patents/standards seem to be highest in Self financing EC libraries.

The graphical representation of growth of print resources which includes books, journals, journal bound volume, theses/dissertations/projects, patents/standards and newspapers in the libraries of NBA accredited ECs are shown in Figure1, Figure 2, Figure 3, Figure 4, Figure 5, Figure 6 respectively.

Figure 1
Growth of Print Resources (Books) in NBA Accredited ECs' Libraries
(Category-Wise)

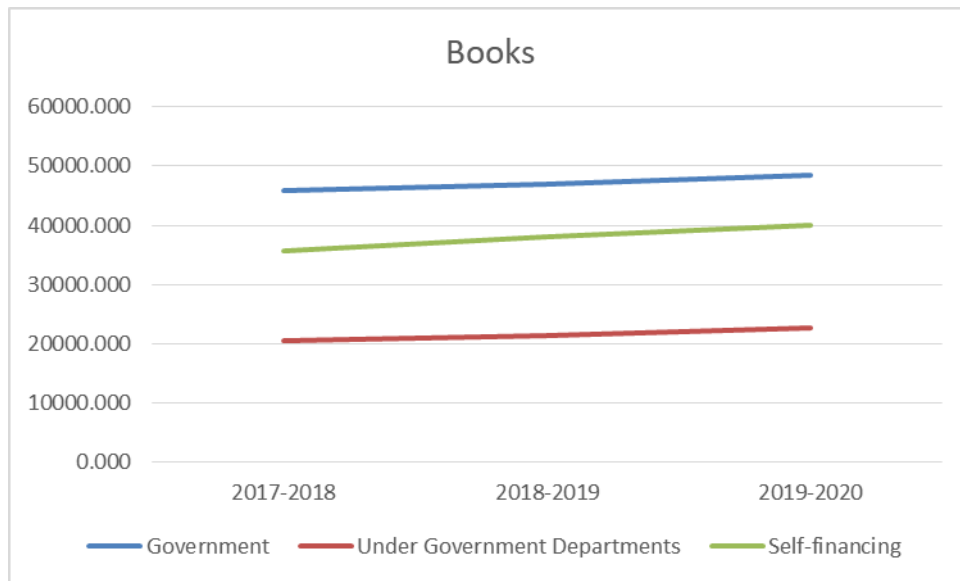


Figure 2
Growth of Print Resources (Journals) in NBA Accredited ECs' Libraries
(Category-Wise)

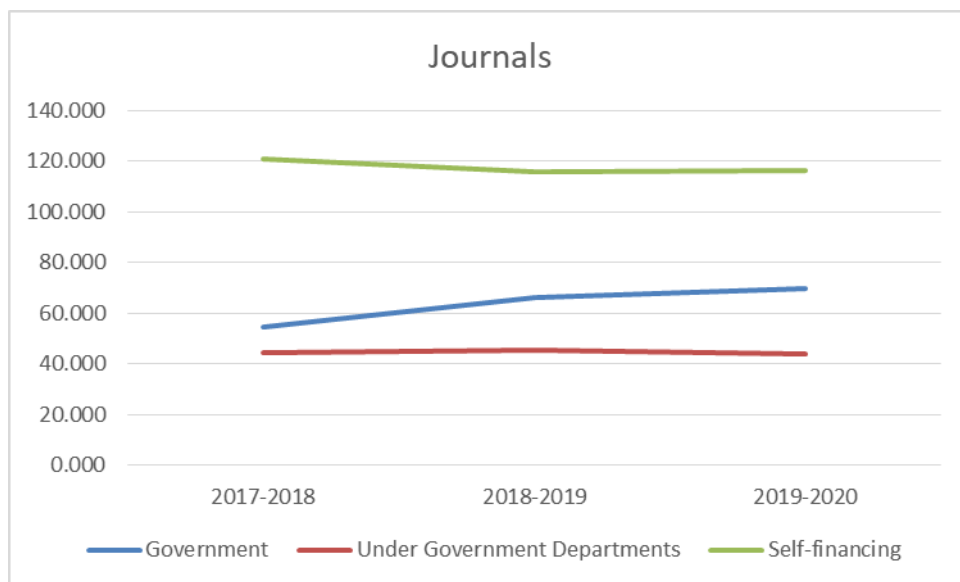


Figure 3
Growth of Print Resources (Journal Bound volume) in NBA Accredited ECs' Libraries (Category-Wise)

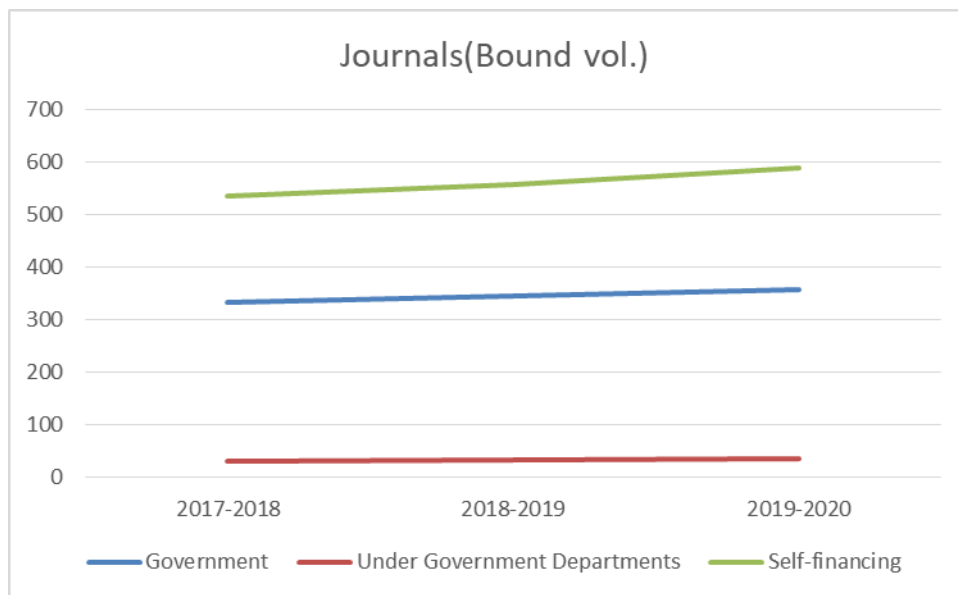


Figure 4
Growth of Print Resources (Theses/Dissertations/Projects) in NBA Accredited ECs' Libraries (Category-Wise)

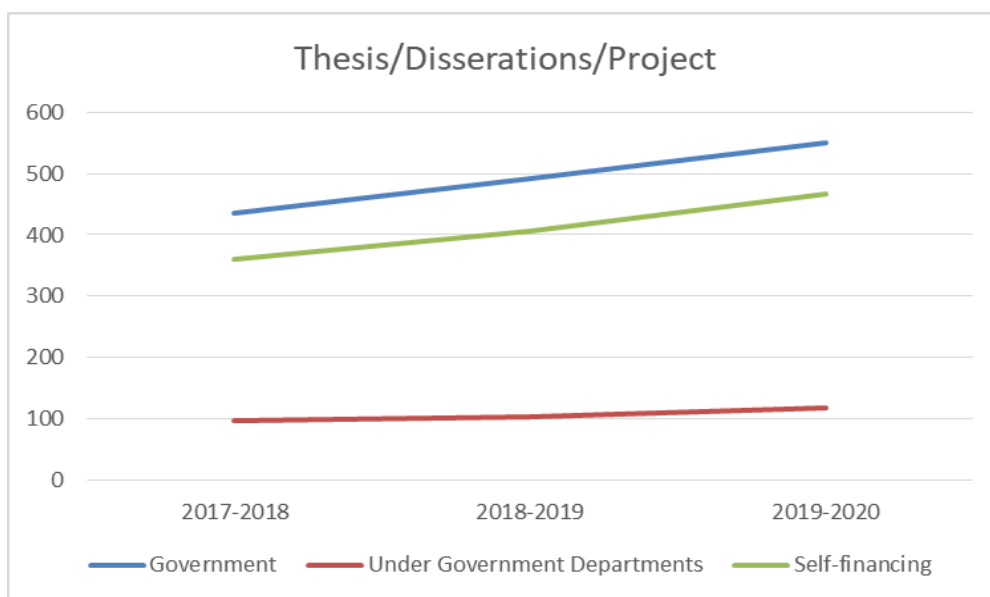


Figure 5
Growth of Print Resources (Patents/Standards) in NBA Accredited ECs' Libraries (Category-Wise)

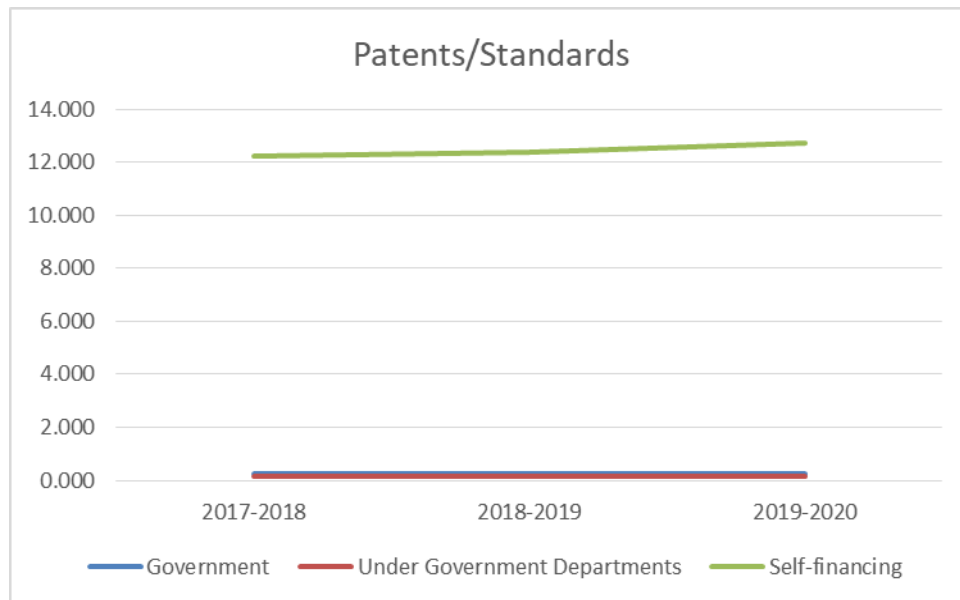


Figure 6
Growth of Print Resources (Newspapers) in NBA Accredited ECs' Libraries (Category-Wise)

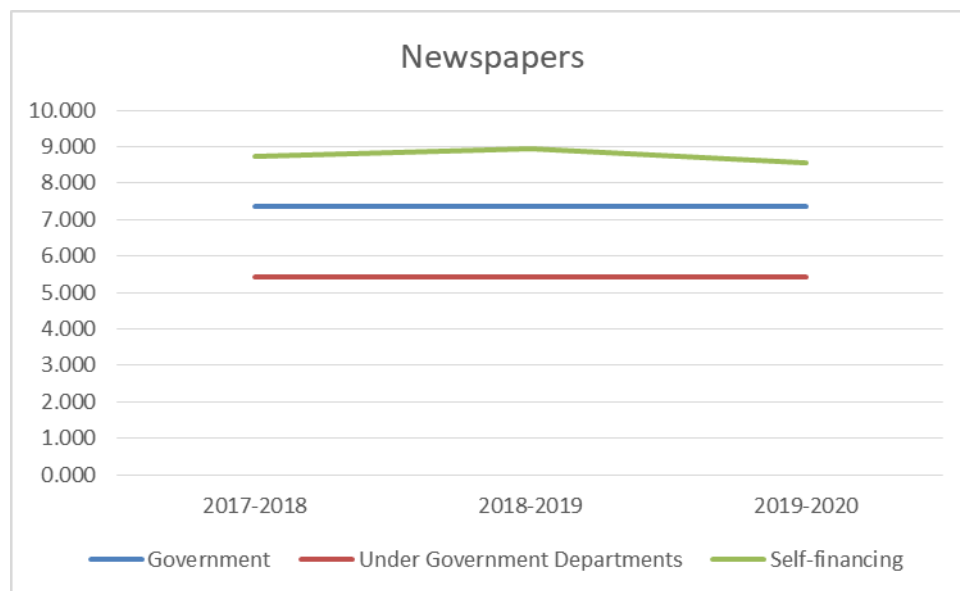


Table 27

Growth of Print Resources in the EC Libraries in Kerala (Accreditation-Wise)

Print Resources		NBA Accredited	Non-NBA Accredited	Total
Books				
Average number of books	2017-18	35866.44	16652.36	26259.40
	2018-19	37519.28	17756.88	27638.08
	2019-20	39206.08	18944.94	29075.51
Year to year growth rate	(2018-19) over (2017-18)	1652.84	1104.52	1378.68
	(2019-20) over (2018-19)	1686.80	1188.06	1437.43
Average annual growth		1669.82	1146.29	1408.06
Annual compound growth rate		0.0455	0.0666	0.0523
Journals				
Average number of journals	2017-18	85.72	55.56	70.64
	2018-19	87.03	54.95	70.99
	2019-20	88	54.7	71.35
Year to year growth rate	(2018-19) over (2017-18)	1.31	-0.61	0.35
	(2019-20) over (2018-19)	0.97	-0.25	0.36
Average annual growth		1.14	-0.43	0.35
Annual compound growth rate		0.0132	-0.0078	0.0050
Journals (Bound volumes)				
Average number of journals bound volumes	2017-18	377.82	87.66	232.74
	2018-19	392.82	101.95	247.39
	2019-20	413.29	117.63	265.46
Year to year growth rate	(2018-19) over (2017-18)	15	14.29	14.645
	(2019-20) over (2018-19)	20.47	15.68	18.075
Average annual growth		17.74	14.99	16.36
Annual compound growth rate		0.0459	0.1584	0.0680

Theses/Dissertations/Project Reports				
Average Number of theses/dissertations/project reports	2017-18	325.41	236.3	280.86
	2018-19	366.47	297.16	331.82
	2019-20	416.79	326.53	371.66
Year to year growth rate	(2018-19) over (2017-18)	41.06	60.86	50.96
	(2019-20) over (2018-19)	50.32	29.37	39.845
Average annual growth		45.69	45.12	45.40
Annual compound growth rate		0.1317	0.1755	0.1504
Patents/Standards				
Average Number of patents/standards	2017-18	6.4	4.7	5.55
	2018-19	6.49	5.24	5.87
	2019-20	6.66	5.75	6.21
Year to year growth rate	(2018-19) over (2017-18)	0.09	0.54	0.315
	(2019-20) over (2018-19)	0.17	0.51	0.34
Average annual growth		0.13	0.53	0.33
Annual compound growth rate		0.0201	0.1061	0.0574
Newspapers				
Average Number of newspaper	2017-18	7.67	6	6.84
	2018-19	7.78	6.08	6.93
	2019-20	7.58	5.92	6.75
Year to year growth rate	(2018-19) over (2017-18)	0.11	0.08	0.095
	(2019-20) over (2018-19)	-0.2	-0.16	-0.18
Average annual growth		-0.04	-0.04	-0.04
Annual compound growth rate		-0.0059	-0.0067	-0.0062

Table 27 shows the accreditation-wise growth of printed resources in EC libraries in Kerala. In accordance with the table, the average annual growth of books in the libraries of NBA accredited ECs are 1669.82 whereas it is noted as 1146.29 in the libraries of ECs which do not have the accredited programs of NBA. When annual growth of journals is reported as 1.14 in NBA accredited EC libraries, the average annual growth of the same is noted as low (-0.43) in non-NBA accredited EC libraries. In the meantime, by checking the average annual growth of bound volumes of journals, it is visible from the table that the average annual growth is 17.74 in the libraries of NBA accredited ECs and 14.99 in non-NBA accredited ECs. The average annual growth of theses/dissertations/project reports are recorded as 45.69 and 45.12 in NBA accredited and non-accredited EC libraries respectively. At the same time when the average annual growth of patents/standards are mentioned as 0.13 in the libraries of NBA accredited ECs, it is reported as 0.53 in the libraries of non-NBA accredited ECs. In the case of newspapers, the average annual growth shows a low level of growth in both categories of EC libraries.

Altogether it can be concluded from the data that as the libraries of ECs which have the accredited programs of NBA shows an increase in the average annual growth of books, journals and bound volumes of journals with the ECs which do not have the accredited programs of NBA, they do not show much difference in the average annual growth of theses/dissertations/project reports, patents/standards and newspapers with the non-NBA accredited ECs' libraries.

The graphical representation of growth of print resources that includes books, journals, journal bound volume, theses/dissertations/projects, patents/standards and newspapers in EC libraries in Kerala are depicted from figure 7, figure 8, figure 9, figure 10, figure 11, figure 12 respectively.

Figure 7

Growth of Print Resources (Books) in EC Libraries (Accreditation-Wise)

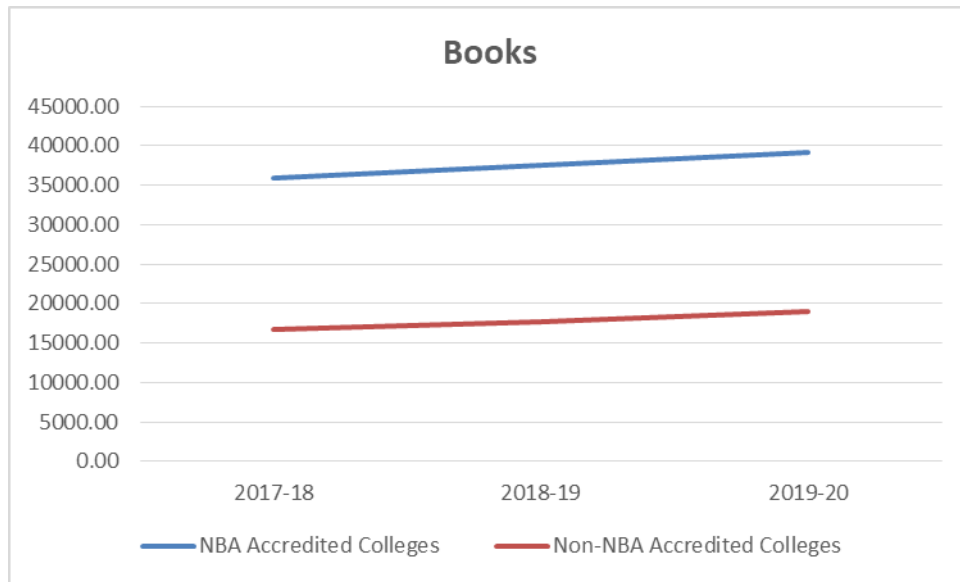


Figure 8

Growth of Print Resources (Journals) in EC Libraries (Accreditation-Wise)

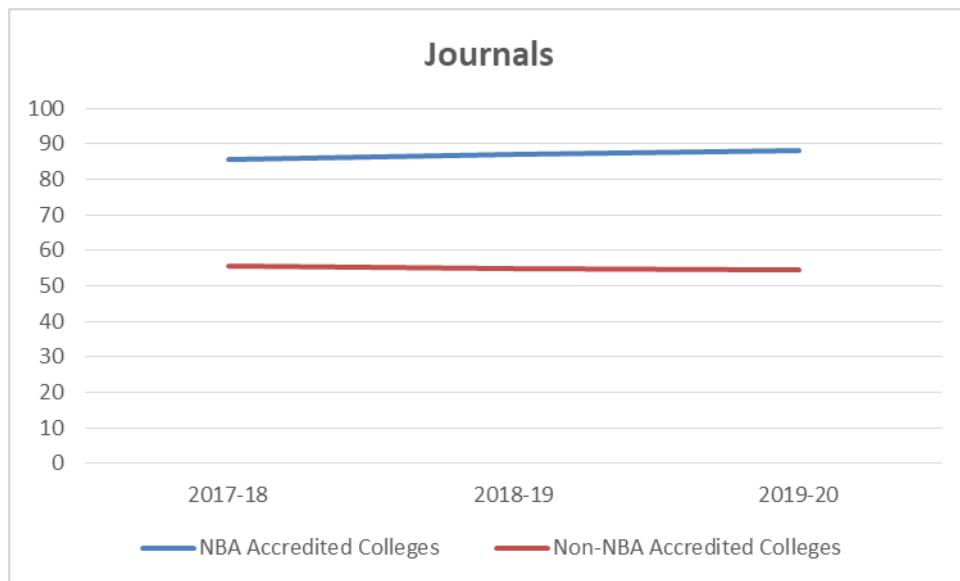


Figure 9

Growth of Print Resources (Journal Bound Volume) in EC Libraries (Accreditation-Wise)

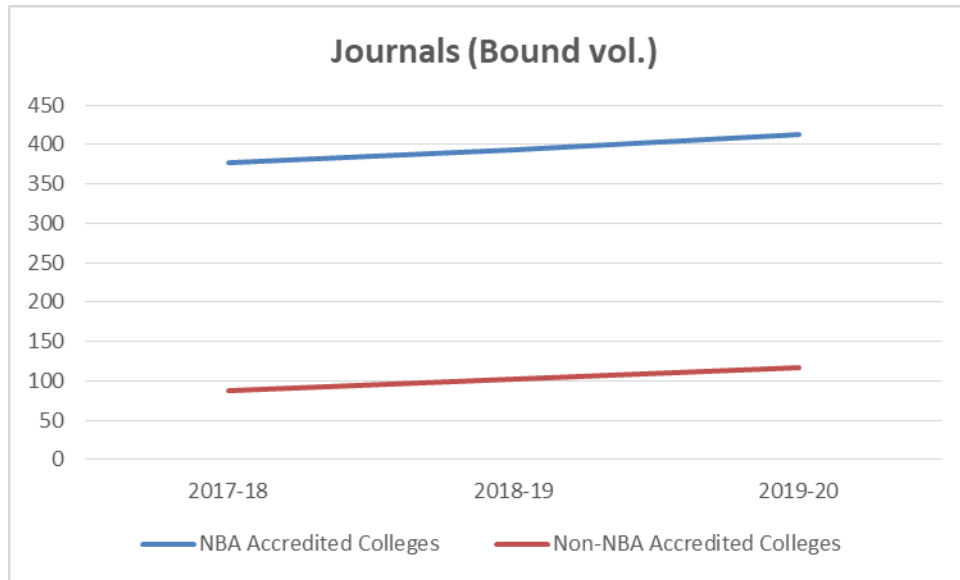


Figure 10

Growth of Print Resources (theses/Dissertations/Projects) in EC Libraries (Accreditation-Wise)

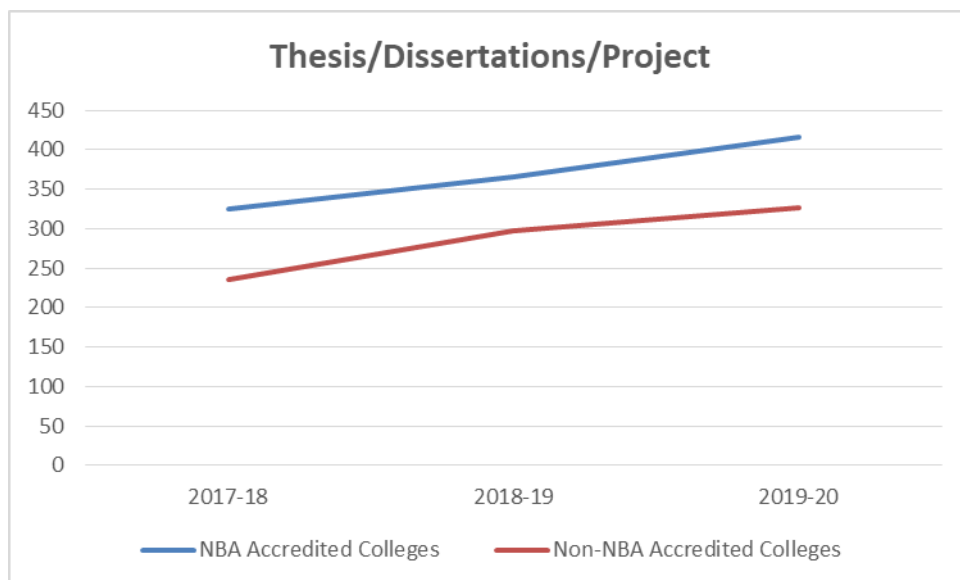


Figure 11
Growth of Print Resources (Patents/Standards) in EC Libraries
(Accreditation-Wise)

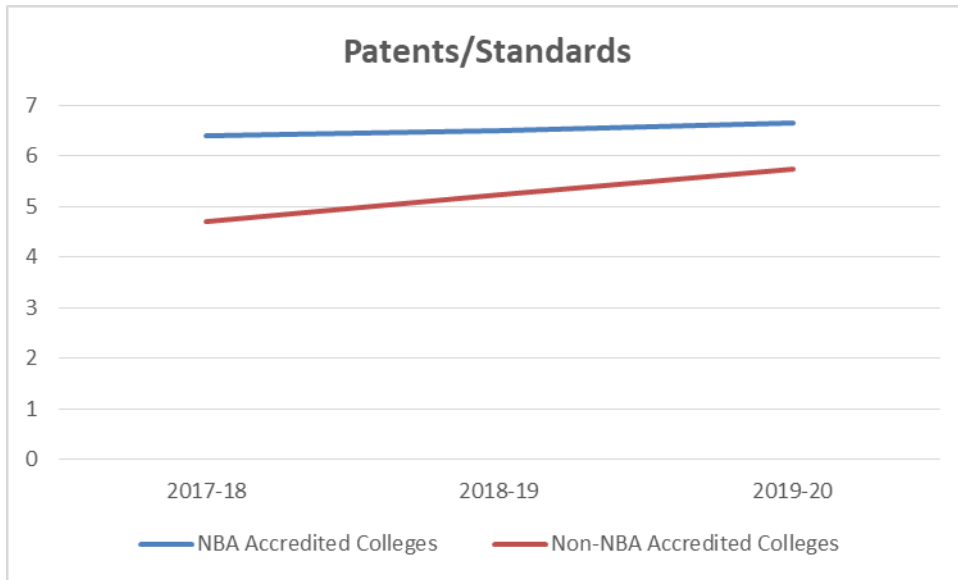
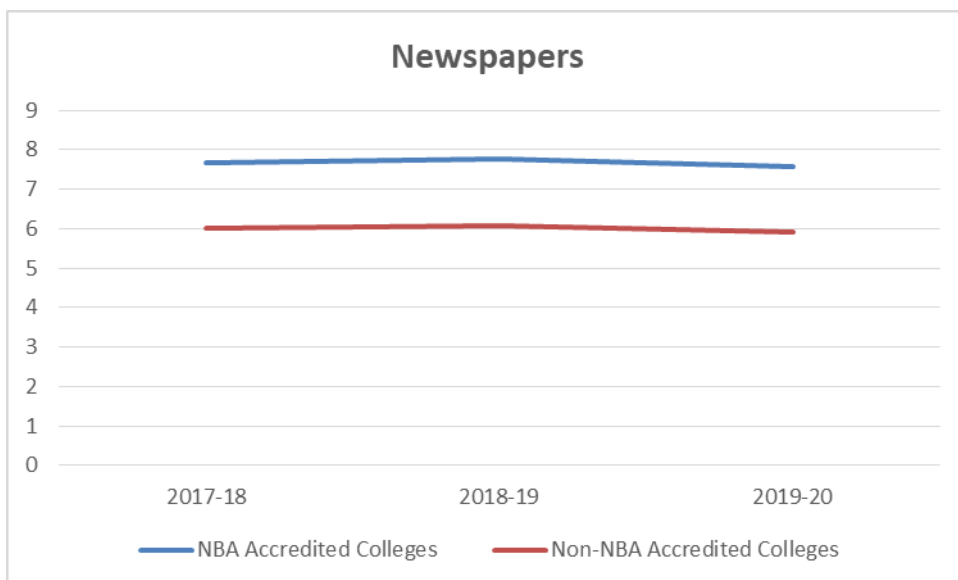


Figure 12
Growth of Print Resources (Newspapers) in EC Libraries
(Accreditation-Wise)



4.2.2.3 Type of E-resources in the Libraries

With the tremendous growth of information and skyrocketing price of the print resources, the library has resorted to e-resources collection development due to its easy accessibility and searchability, quick updation, flexibility and interactivity etc. In addition to it, most of the libraries are facing shortage of space to keep voluminous print resources. Furthermore, maintenance of the print resources is also a gigantic task for the library staff. Therefore, in order to avoid these problems and for the better management of the resources, most of the libraries have been increasingly interested in espousing E-resources collection. E-resources consist mostly of e-books, e-journals, e-project reports, e-dissertations, e-theses, e-faculty presentation, CD-ROM, multimedia materials etc (Patra, 2014). EC librarians were enquired about the type of E-resources available in their libraries and category-wise response from the libraries of ECs which have the accredited programs of NBA are presented in table 28 and table 29 whereas status of NBA accreditation-wise response from EC libraries in Kerala are presented in table 30 and table 31 respectively.

Table 28

Type of E-resources in NBA accredited ECs (Category-Wise)

Type of E-resources	Category		
	Govt .	Under Govt. Dept.	Self-Financing
E-books	11 (100%)	6 (85.71%)	16 (88.89%)
E-journals	10 (90.91%)	7 (100%)	16 (88.89%)
Online databases	11 (100%)	7 (100%)	18 (100%)
CD-ROM databases	5 (45.45%)	5 (71.43%)	15 (83.33%)
Multimedia Products	2 (18.18%)	0 (0.00%)	7 (38.89%)

Data from the table 28 reveals that all Government EC libraries report the availability of E-books and online databases, a large majority of them report the availability of E-journals (90.91%), nearly fifty percent of them report the availability of CD ROM databases and only few of them report the availability of multimedia products. At the same time all the EC libraries under Government departments record the availability of E-journals and online databases, a significant number of them

record the availability of E-books (85.71%) and CD ROM databases (71.43%). In the meantime all Self financing EC libraries report the availability of online databases, high percent of them report the availability of E-books (88.89%), E-journals (88.89%), CD ROM databases (83.33%) and a good number of Self financing EC libraries report the availability of multimedia products (38.89%).

The overall analysis of the data shows that there is not much difference among the three categories of NBA accredited ECs' libraries in the availability of types of E-resources except Self financing EC libraries shows an increase in the availability of the E-resources like CD-ROM databases and multimedia products.

Table 29

Availability of Type of E-resources in NBA accredited ECs (Category-Wise)

Availability of E-resources Type	Category		
	Govt.	Under Govt. Dept.	Self-Financing
Low	1 (9.09%)	1 (14.28%)	2 (11.11%)
Medium	8 (72.72%)	5 (71.42%)	9 (50%)
High	2 (18.28%)	1 (14.28%)	7 (38.8%)
Chi-square = 2.585**; p-value = 0.657			

**** Significant at 0.01 level**

The category-wise difference in the availability of types of E-resources among the libraries of NBA accredited ECs are analysed with Chi-square test and presented in table 29. Since the p-value is greater than the level of significance there is no significant difference among libraries of Government, under Government departments and Self financing ECs which have the accredited programs of NBA.

Table 30**Type of E-resources in EC Libraries in Kerala (Accreditation-Wise)**

Type of E-resources	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
E-books	33 (91.6%)	47 (73.44%)	80 (80%)
E-journals	33 (91.6%)	56 (87.50%)	89 (89%)
Online databases	36 (100%)	37 (57.81%)	73 (73%)
CD-ROM databases	25 (69.44%)	36 (56.25%)	61 (61%)
Multimedia Products	9 (25.0%)	18 (28.13%)	27 (27%)

It is observed from the table 30 that all the libraries of NBA accredited ECs have online databases, a large majority of them have E-books (91.6%) and E-journals (91.6%), nearly 70 percent of them possess CD-ROM databases (69.44%) and only one fourth of them report about the availability of multimedia products (25%). When checking the availability of E-resources in the libraries of non-NBA accredited ECs, it is reported that a best part of them possess E-journals (87.50%) and E-books (73.44%), nearly sixty percent of them report the availability of online databases (57.81%) and CD-ROM databases (56.25%) and more than twenty percent of them report about the availability of multimedia products (28.13%).

As a whole it can be concluded from the data that the majority of EC libraries in Kerala possess the E-resources like E-journals, E-books, online databases and CD ROM databases. The availability of the same seems to be something high in the libraries of ECs which have the accredited programs of NBA when compared to the ECs which do not have the accredited programs of NBA.

Table 31
Availability of Type of E-resources in EC Libraries in Kerala
(Accreditation-Wise)

E-resources Availability	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	4 (11.11%)	27 (42.18%)	31 (31.00%)
Medium	22 (61.11%)	19 (29.68%)	41 (41.00%)
High	10 (27.77%)	18 (28.12%)	28 (28.00%)
Chi-square = 12.798**; p-value 0.002			

**** Significant at 0.01 level**

The accreditation-wise difference in the availability of type of E-resources between the NBA accredited and non-accredited ECs are analysed by Chi-square test and displayed in table 31. Since the p-value is less than the level of significance it is clear that there exists significant differences between these libraries in the availability of E-resource types.

4.2.2.4 E-resource Packages in the Libraries

The currency of the content in printed sources are hindered by time and space factors. To overcome this barrier, electronic resources have emerged. Engineering colleges subscribed to E-resources mainly through database packages (Agrapu, 2013). The EC librarians were enquired about the availability of E-resource packages in their libraries and category-wise response from the libraries of ECs which have the accredited programs of NBA are presented in table 32 and table 33 whereas NBA accreditation-wise response from EC libraries in Kerala are presented in table 34 and table 35 respectively.

Table 32**E-resource Packages in the Libraries of NBA Accredited ECs (Category-Wise)**

E-resource Packages	Category		
	Govt.	Under Govt. Dept.	Self - Financing
IEEE	11 (100%)	5 (71.43%)	15 (83.33%)
ASME	11 (100%)	3 (42.86%)	8 (44.44%)
SPRINGER	6 (54.55%)	1 (14.29%)	4 (22.22%)
ASCE	11 (100%)	2 (28.57%)	8 (44.44%)
McGraw Hill	3 (27.27%)	0 (0.00%)	3 (16.67%)
ELSEVIER	9 (81.82%)	0 (0.00%)	5 (27.78%)
IETE	3 (27.27%)	1 (14.29%)	2 (11.11%)
ASTM DIGITAL LIBRARY	3 (27.27%)	0 (0.00%)	1 (5.56%)
JGate	4 (36.36%)	1 (14.29%)	6 (33.33%)
DELNET	3 (27.27%)	2 (28.57%)	12 (66.67%)
SCIENCEDIRECT	11 (100%)	1 (14.29%)	10 (55.56%)
ISO	2 (18.18%)	0 (0.00%)	0 (0.00%)
IEI	3 (27.27%)	0 (0.00%)	4 (22.22%)
IET	4 (36.36%)	0 (0.00%)	2 (11.11%)
National Digital Library (NDL)	8 (72.73%)	5 (71.43%)	16 (88.89%)
SWAYAM/NPTEL videos	5 (45.45%)	3 (42.86%)	16 (88.89%)

It can be observed from table 32 that all Government EC libraries have the availability of E-packages like IEEE, ASME, ASCE and Science Direct. A large majority of them disclose the availability of Elsevier (81.82%) and NDL (72.73%). More than 50 percent of them reveal the availability of Springer (54.55%) and more than forty percent of them report the availability of SWAYAM/NPTEL Videos. It is also noted from the table that more than 25 percent of Government EC libraries report the availability of IET (36.36%), JGate (36.36%) IEI (27.27%), DELNET (27.27%), ASTM digital library (27.27%), IETE (27.27%) and McGraw Hill (27.27%).

The best part of EC libraries under Government departments disclose the availability of E-packages like IEEE (71.43%) and NDL (71.43%). More than forty

percent of them record the availability of SWAYAM/NPTEL videos (42.86%) and ASME (42.86%). It is to be noted that only a few percent of EC libraries under Government departments report the availability of E-packages like ASCE, DELNET, ScienceDirect, JGate, IETE and Springer.

As far as the Self finance EC libraries are concern it can be observed that a lion's share of libraries report the availability of E-packages like NDL (88.89%), SWAYAM/NPTEL videos (88.89%), IEEE (88.89%) and DELNET. A good number of them have the availability of Sciencedirect (55.56%), ASME (44.44%) and ASCE (44.44%). It is to be noted that only a few Self financing EC libraries report the availability of E-packages like Springer, McGraw Hill, Elsevier, IET, IEI etc.

The overall analysis of the data from the table reveals that Government EC libraries show a high percent of availability of E-packages when compared to the other two categories of libraries.

Table 33

Availability of E-resource Packages in the Libraries of NBA Accredited ECs (Category-Wise)

E-Resource Packages Availability	Category		
	Govt.	Under Govt. Depts	Self - Financing
Low	3 (27.27%)	5 (71.42%)	10 (55.55%)
Medium	5 (45.45%)	1 (14.28%)	5 (27.77%)
High	3 (27.27%)	1 (14.28%)	3 (16.66%)
Chi-square = 3.812**; p-value 0.425			

** Significant at 0.01 level

The category-wise difference in the availability of E-resource packages among the libraries of NBA accredited ECs are analysed with Chi-square test and presented in table 33. Since the p-value is greater than the level of significance it can be concluded that there exists no significant difference among the Government, under Government department and Self-financing ECs in the availability of E-resource packages in their libraries.

Table 34**E-resource Packages in the EC Libraries in Kerala (Accreditation-Wise)**

E-resource Packages	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
IEEE	31 (86.11%)	26 (40.63%)	57 (57.00%)
ASME	22 (61.11%)	8 (12.50%)	30 (30.00%)
SPRINGER	11 (30.56%)	11 (17.19%)	22 (22.00%)
ASCE	21 (58.33%)	9 (14.06%)	30 (30.00%)
McGraw Hill	6 (16.67%)	5 (7.81%)	11 (11.00%)
ELSEVIER	14 (38.89%)	7 (10.94%)	21 (21.00%)
IETE	6 (16.67%)	4 (6.25%)	10 (10.00%)
ASTM DIGITAL LIBRARY	4 (11.11%)	8 (12.50%)	12 (12.00%)
JGate	11 (30.56%)	22 (34.38%)	33 (33.00%)
DELNET	17 (47.22%)	30 (46.88%)	47 (47.00%)
SCIENCEDIRECT	22 (61.11%)	10 (15.63%)	32 (32.00%)
ISO	2 (5.56%)	1 (1.56%)	3 (3.00%)
IEI	7 (19.44%)	4 (6.25%)	11 (11.00%)
IET	6 (16.67%)	1 (1.56%)	7 (7.00%)
National Digital Library (NDL)	29 (80.56%)	42 (65.63%)	71 (71.00%)
SWAYAM/NPTEL videos	24 (66.67%)	29 (45.31%)	53 (53.00%)

Table 34 highlights that a biggest share of NBA accredited EC libraries report the availability of E-resource packages like IEEE (86.11%) and National Digital Library (80.56%). Nearly two third of them possess the packages like SWAYAM/NPTEL videos (66.67%), Science Direct (61.11%), ASME (61.11%) and ASCE (58.33%). A good number of them have DELNET (47.22%), Elsevier (38.89%), Springer (30.56%), JGate (30.56%) and only a few libraries of NBA accredited ECs report the availability of the E-resource packages like IEI (19.44%), IET (16.67%), McGrawHill (16.67%), IETE (16.67%) etc.

When checking the availability of E-resources in the libraries of non-NBA accredited ECs, it is observed that majority of libraries have National Digital Library (65.63%). A good number of them have DELNET (46.88%), SWAYAM/NPTEL videos (45.31%), IEEE (40.63%) and J Gate (34.38%). It is also noted from the table that only a limited number of libraries from non-NBA accredited EC category report the availability of E-resource packages like Springer (17.19%), Science Direct (15.63%), ASCE (14.06%), ASTM digital library (12.50%) etc.

As a whole it can be concluded from the data that the E-resources like IEEE, SWAYAM/NPTEL videos are available in majority of EC libraries in Kerala and only low percent of libraries report the availability of IET, ISO, MCGraw Hill, ASTM digital library, IEI etc. The ECs which have the accredited programs of NBA show an increase in the availability of E-resource packages like IEEE, ASME, Springer, ASCE, Elsevier, ScienceDirect, National Digital Library and SWAYAM/NPTEL videos. As Varadaraju and Ramesh (2018) suggested in their study, it is a better option for engineering colleges to establish an ICT center to subscribe to all e resources proposed by AICTE and give access to them which would help the colleges to cut their huge expenditure on subscription of E- resources.

Table 35
Availability of E-resource Packages in EC Libraries in Kerala
(Accreditation-Wise)

E-resource Packages Availability	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	18 (50.00%)	53 (82.81%)	71 (71.00%)
Medium	11 (30.55%)	6 (9.37%)	17 (17.00%)
High	7 (19.44%)	5 (7.81%)	12 (12.00%)
Chi-square = 12.172 **; p-value =0.002			

*** Significant at 0.01 level*

The NBA accredited and non-accredited ECs were analysed with Chi-square to find out the accreditation-wise difference in the E-resource availability and presented in table 35. Since the p-value is less than the level of significance it is found

that there is significant difference between the EC libraries in the availability of E-resource packages.

4.2.3 Human Resources

The efficiency, effectiveness and the ultimate success of EC library as an agency for the diffusion of knowledge depends upon its staff. The staff forms the link between the user and the intellectual thought content hidden in documents that form the nerve centre of Engineering education (Agrapu, 2013).

The National Knowledge Commission (NKC) in 2007 in its Report “Libraries as Gateways to Knowledge: A Road Map for Revitalization” stated that “it is very essential to assess the manpower requirements for different types of libraries. It is especially required in the light of modernization of library management in order to offer proactive and relevant services to its users. Libraries should be so organized and the staff so trained that they become relevant to the user community in every respect. Though the manpower requirements for different types of libraries vary according to the mission and services provided by its parent organization it has to be reassessed to suit the strength of different types of libraries through innovative collaboration. There have been significant changes in the designations, job descriptions and the services offered especially in the light of hybrid, digital and electronic libraries.” (<http://www.knowledgecommission.gov.in/>)

The study categorised the library personnel into three categories as librarian who is known as scientific information officer in ECs, professional staff who qualified library science and non-professional staff who are not qualified library science. The section deals with qualification, experience and activities of librarian, general information of library staff and users, growth of library users, library working hours and average number of users in EC libraries.

4.2.3.1 Qualification of the Librarian in EC Libraries

A person heading the library must possess a minimum required academic as well as professional qualifications. Only then he/she can deliver the duty effectively (Tadasad, 1999). The EC librarians in Kerala were asked to indicate their qualification (in Library Science) and the category-wise response from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise response from EC libraries in Kerala were presented in table 36 and table 37 respectively.

Table 36

Qualification of the Librarians of NBA Accredited ECs (Category-Wise)

Category	Qualification of EC Librarians		
	PG	MPhil	PhD
Govt	10 (90.90%)	0 (0.00%)	1 (9.09%)
Under Govt. Dept.	7 (100%)	0 (0.00%)	0 (0.00%)
Self-Financing	12 (66.66%)	5 (27.77%)	1 (5.55%)

The table 36 shows that out of 36 NBA accredited EC libraries in Kerala, all librarians in ECs under Government Departments, 90.9 percent librarians in Government EC libraries and 66.66 percent librarians in Self-finance EC libraries possess post graduation degree in Library Science. It is also found that 27.77 percent Self-finance EC librarians possess MPhil in Library Science and only one librarian of Government and Self- financing ECs possess PhD in Library Science.

The overall analysis of the data shows that the highest percent of librarians from all categories of NBA accredited ECs possess post graduation in library science.

Table 37
Qualifications of the EC Librarians in Kerala (Accreditation-Wise)

Qualification of EC Librarian	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Degree	0 (0.00%)	4 (6.25%)	4 (4.00%)
PG	29 (80.55%)	51 (79.68%)	80 (80.00%)
M. Phil	5 (13.88%)	8 (12.5%)	13 (13.00%)
PhD	2 (5.55%)	1 (1.56%)	3 (3.00%)

Data from table 37 points out the qualification of the librarians of EC libraries in Kerala. According to the table a large majority of librarians from both categories of ECs qualified post graduation in library science that is MLISc, a low percent of them seem to be possessed MPhil in library science and it is also noted from the table that two librarians from NBA accredited ECs category and one librarian from non-NBA accredited EC category possess PhD in library science. Data from the table also shows four librarians from non-NBA accredited ECs category only possess a degree in library science that is BLISc.

The overall analysis of the data shows that a vast majority of EC librarians in Kerala possess the qualification of post graduation in library science.

4.2.3.2 Experience of the Librarian of EC Libraries

The librarian should have experience regarding different operations carried on in the library. In order to render effective and efficient services, it is essential for the librarian not only to have better academic and professional qualifications but also much experience (Kumar, 2011). The EC librarians in Kerala were asked about their years of experience and the category-wise response from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise response from EC libraries in Kerala were presented in table 38 and table 39 respectively.

Table 38**Experience of the Librarian in NBA Accredited ECs (Category-Wise)**

Category	Experience of EC Librarians (in Years)				
	Below 10	11-15	16-20	21-25	Above 25
Govt.	1 (9.09%)	1 (9.09%)	5 (45.45%)	3 (27.27%)	1 (9.09%)
Under Govt. Dept	1 (14.28%)	1 (14.28%)	3 (42.85%)	2 (28.57%)	0 (0.00%)
Self-financing	0 (0.00%)	4 (22.22%)	12 (66.66%)	2 (11.11%)	0 (0.00%)

It is evident from table 38 that a greater number of Self-financing EC librarians have an experience of 16 to 20 years (66.7%), 22.2 percent of librarians have an experience between 11 to 15 years and very few librarians have an experience between 21-25 years. At the same time, when the Government EC librarians are concerned, it can be seen that around 50 percent of librarians have an experience of between 16 to 20 years, more than 25 percent of librarians have an experience of between 21 to 25 years, two librarians have an experience of below 15 years and only one librarian has an experience of more than 25 years. It can also be evident from the table that more than 40 percent of EC librarians under Government departments have an experience between 16 to 20 years, more than 25 percent of EC librarians have an experience of 21 to 25 years and only two librarians have an experience of below 15 years.

The overall analysis of the data clears that a good number of librarians from three categories of EC libraries have the experience of sixteen to twenty years and librarians from Government category have more experience than that of other two category librarians.

Table 39
Experience of the Librarian in the EC Libraries in Kerala
(Accreditation -Wise)

Experience (in Years)	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Below 10	2 (5.55 %)	29 (45.31%)	31 (31.00%)
11-15	7 (19.44%)	16 (25.00%)	23 (23.00%)
16-20	19 (52.77%)	10 (15.62%)	29 (29.00%)
21-25	7 (19.44%)	3 (4.68%)	10 (10.00%)
Above 25	1 (2.77%)	6 (9.37%)	7 (7.00%)

The data regarding the experience of librarians in EC libraries in Kerala illustrated in table 39 indicates that more than 50 percent of librarians from NBA accredited ECs have an experience between 16 to 20 year, nearly one fifth of them have an experience of between 11 to 15 years followed by 21 years to 25 years. It is also noticed from the table that a very low number of them have an experience of below 10 years and above 25 years.

In the meanwhile nearly fifty percent of librarians from non-NBA accredited ECs report an experience of below 10 years, about one fourth of them have an experience of 11 to 15 years and only a few of them report their experience in between 16 to 20, 21 to 25 and above 25 years.

The overall analysis of the data shows that nearly one third of EC librarians in Kerala report an experience of below ten years in libraries. When more than 50 percent of librarians from NBA accredited ECs report an experience of between 16 to 20 years, nearly 50 percent of librarians from non-NBA accredited ECs report an

experience of below 10 years. The librarians from NBA accredited ECs seem to be more experienced than that of non-NBA accredited ECs.

4.2.3.3 Librarian Organising Workshops/Seminars/Conferences for Library Professional

The librarian beds very intensely to be excellent in the functioning and serving of its users. In view of this for efficient working and giving the best results, intelligent planning is to be worked out as making the existing staff flexible with the ability to switch from one job to another as needs arise but this demands the knowledge of those activities and one may not have it. To acquaint with the new developments in the field of library the training, workshops, seminars, conferences or refresher courses need to be arranged and the library professionals are required to take advantage of it too (Belsare, 2013). This will help them to broadens and improves their expertise, capabilities and caliber to meet changing needs and requirements of the user community (Agrapu, 2013). The EC librarians in Kerala were asked whether they organise any workshops/seminars/conferences for the library professionals and the category-wise response from the libraries of ECs which have the accredited programs of NBA and status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 40 and table 41 respectively.

Table 40

Librarian Organising Workshops/Seminars/Conferences for Library Professional in NBA Accredited ECs (Category-Wise)

Category	Response	
	Yes	No
Govt.	8 (72.72%)	3 (27.28%)
Under Govt. Dept.	2 (28.57%)	5 (71.43 %)
Self- Financing	8 (44.44%)	10 (55.55%)

Data shown in the table 40 indicates that a vast majority of Government EC librarians organise programs for library professionals, more than 40 percent of Self

finance EC librarians organise programs for library professionals and only few librarians under Government department ECs organise programs for the library professionals.

The overall analysis of the data clearly indicates that Government EC librarians are more active to organise programs for library professionals than other two category librarians.

Table 41

Librarian Organising Workshops/Seminars/Conferences for Library Professionals of EC Libraries in Kerala (Accreditation-Wise)

Response	Accreditation		Total
	NBA Accredited	Non-NBA Accredited	
Yes	18 (50.00%)	16 (25.00%)	34 (34.00%)
No	18 (50.00%)	48 (75.00%)	66 (66.00%)

Data from table 41 indicates librarians organising workshops/seminars/conferences for library professionals. It is mentioned that 50 percent of ECs which have the accredited programs of NBA and one fourth of ECs which do not have the accredited programs of NBA organises workshops/seminars/conferences for its professionals. It is to be noted from the table that 75 percent of ECs which do not have accredited programs of NBA did not organise any similar programs for its professionals.

Altogether it can be said that only 34 percent of ECs organise seminars/workshops/conferences like programs to the library professionals. When 50 percent of NBA accredited ECs organise programs for library professionals, only 25 percent of non-NBA accredited EC librarians organise any of such programs. As Jestin and Sornam (2019) in their study suggested, librarians must ensure that periodic refresher courses and training programs are arranged for library staff to make them aware of the new technologies in the field.

4.2.3.4 EC Librarians Attending Programs

Librarians should acquire technical skills, IT skills, managerial skills and communication skills to work in the digital environment of the library. In the era of networking and interactions, the experience and expertise of one person, benefits many. Hence it is essential that the librarian attends programmes like short term training programs, quality improvement programs, workshops, seminars, conferences etc. organised by Library Associations and other academic institutions so that they can get an idea of the task at hand (Janice, 2016). The EC librarians were asked about attending such programs and category-wise responses from the libraries of ECs which have the accredited programs of NBA are presented in table 42 and table 43 whereas NBA accreditation-wise responses from EC libraries in Kerala were presented in table 44 and table 45 respectively.

Table 42

Programs Attended by the Librarians of NBA Accredited ECs (Category-Wise)

Category	Programs						
	STT	QIP	Workshops	Seminars	Conferences	Book exhibition	Book talks
Govt.	8 (72.73%)	7 (3.64%)	9 (81.82%)	8 (72.73%)	6 (54.55%)	8 (72.73%)	2 (18.18%)
Under Govt. Dept.	4 (57.14%)	2 (28.57%)	6 (85.71%)	3 (42.86%)	1 (14.29%)	4 (57.14%)	1 (14.29%)
Self - Financing	10 (55.56%)	9 (50.00%)	13 (72.22%)	13 (72.22%)	7 (38.89%)	10 (55.56%)	1 (5.56%)

Table 42 reveals that a greater majority of Government EC librarians attend workshops (81.82%), short term training programs (72.73%), seminars (72.73%), book exhibitions (72.73%) and quality improvement programs (63.64%). More than fifty percent of them seem to be attending conferences (54.55%) and a few of them

seem to be attending book talks (18.18%) like activities. In the meantime, it is visible from the table that a large majority of Self financing EC librarians attend workshops (72.22%) and seminars (72.22%), more than fifty percent of them attend short term training programs (55.56%) and book exhibitions (55.56%), fifty percent of them attend quality improvement programs and only one librarian seem to be attending book talks (5.56%) like activities. While considering the matter of the librarians of ECs under Government departments, it highlights that a large number of librarians attend workshops (85.71%), around 60 percent of librarians attend short term training and book exhibitions, a good number of them attend seminars (42.86%), and a few of them seem to be attending quality improvement programs (28.57%), conferences (14.29%) and book talks (14.29%).

The overall analysis of the data points out that the librarians from Government EC librarians are more active for attending the programs like short term trainings, quality improvement programs, seminars, conferences etc. than that of the other two categories of EC librarians.

Table 43

**Number of Programs Attended by the Librarians of NBA Accredited ECs
(Category-Wise)**

Number of Programs	Category		
	Govt.	Under Govt. Dept.	Self - financing
Low	3 (27.27%)	4 (57.14%)	8 (44.44%)
Medium	6 (54.54%)	2 (28.57%)	9 (50.00%)
High	2 (18.18%)	1 (14.28%)	1 (5.55%)
Chi-square = 3.106**; p-value = 0.588			

**** Significant at 0.01 level**

Category-wise difference in the number of programs attended by the librarians from three category of NBA accredited ECs are analysed with Chi-square test and presented in table 43. Since the p-value is greater than the level of significance it can be concluded that there exists no significant difference among the Government, under

Government departments and Self-financing category of ECs in the number of programs attended by their librarians.

Table 44

Programs Attended by the EC Librarians in Kerala (Accreditation-Wise)

Accreditation Status	Programs						
	STT	QIP	Workshops	Seminars	conferences	Book exhibitions	Book talks
NBA Accredited	22 (61.11%)	18 (50.00%)	28 (77.77%)	24 (66.66%)	14 (38.88%)	22 (61.11%)	4 (11.11%)
Non-NBA Accredited	22 34.37%	20 31.25%	38 (59.37%)	37 (57.81%)	19 (29.68%)	33 (51.56%)	5 (7.81%)
Total	44 44.00%	38 (38.00%)	66 (66.00%)	61 (61.00%)	33 (33.00%)	55 (55.00%)	9 (9.00%)

Data from the table 44 highlights that majority of librarians from NBA accredited ECs attending workshops (77.78%), seminars (66.67%), short term training programs (61.11%), book exhibitions (61.11%), 50 percent of them attend quality improvement programs and a good number of them attend conferences. When checking the programs attended by the librarians of ECs which do not have NBA accredited programs, it is found that nearly 60 percent of them attend workshops (59.38%), seminars (57.81%), more than 50 percent of them attend book exhibitions (51.56%), nearly one third of them attend short term training programs (34.38%), quality improvement programs (31.25%) and conferences (29.69%).

As a whole, it can be concluded from the data that majority of EC librarians in Kerala mainly attend the programs like workshops, seminars and book exhibitions. When the majority of NBA accredited EC librarians attend the programs like workshops, seminars, short term training programs and book exhibitions, the non-NBA accredited EC librarians participation in this type of program seems to be something less at percent level.

Table 45
Number of Programs Attended by the EC Librarians in Kerala
(Accreditation-Wise)

Number of Programs	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	15 (41.66%)	42 (65.62%)	57 (57.00%)
Medium	17 (47.22%)	17 (26.56%)	34 (34.00%)
High	4 (11.11%)	5 (7.81%)	9 (9.00%)
Chi-square = 5.491 **; p-value 0.064			

**** Significant at 0.01 level**

The accreditation-wise difference in the programs attended by the EC librarians in Kerala were analysed by using Chi-square test and presented in table 45. Since the p-value is greater than the level of significance it is evident that there exists no significant difference between the NBA accredited and non-accredited ECs' librarians in the number of attending programs.

4.2.3.5 EC Librarians' Membership in Professional Bodies

Library development is dependent upon professional planning, foresight, understanding and involvement. These issues are managed in a better way by library professional bodies than by individual institutions. Hence, the solidarity of the profession is a prerequisite for working for a common cause and to achieve results. In fact, the strength and effectiveness of professional bodies reflect this solidarity. Library professional bodies, if they play their part well, it can ensure better library service. They, indeed; assist in clarifying concepts of libraries and library and information services; and also present appropriate proposals to the right quarters (Role of professional associations, n. d.). The EC librarians in Kerala were enquired about their membership in professional bodies and category-wise responses from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise responses from EC libraries in Kerala were presented in table 46 and table 47 respectively.

Table 46
NBA Accredited ECs' Librarians Membership in Professional Bodies
(Category-Wise)

Category	Membership in Professional Body		Name of the Professional Body			
	Yes	No	KLA	ALA	ILA	IASLIC
Govt.	7 (63.64%)	4 (36.36%)	7 (100%)	2 (28.57%)	0 (0.0%)	0 (0.00%)
Under Govt. Dept.	3 (42.86%)	4 (57.14%)	2 (66.67%)	0 (0.0%)	2 (66.67%)	0 (0.00%)
Self-financing	11 (61.11%)	7 (38.89%)	10 (90.91%)	2 (18.18%)	2 (18.18%)	1 (9.09%)

Data from table 46 depicts that more than 60 percent of librarians from Government ECs and Self financing ECs have membership in library professional bodies whereas more than 40 percent of librarians under Government department EC libraries have membership in the library professional bodies.

By analysing the data of the professional body in which the librarians have membership, it can be seen that all of the Government EC librarians have membership in KLA and 28.57 percent of them have membership in ALA. At the same time, when looking into the matter of the librarians of ECs under Government Departments, it is visible that majority of them have membership in KLA (66.67%) and ILA (66.67%). As far as the librarians of Self financing ECs are concerned, it can be observed that a vast majority of them have membership in KLA (90.91%) and a few of them have membership in ALA (18.18%), ILA (18.18%) and IASLIC (9.09%).

The overall analysis of the table shows that Government EC librarians have the highest percent of membership in professional bodies when compared to the other two categories of ECs and KLA is the main professional body in which the librarians from three categories of NBA accredited ECs have membership.

Table 47**EC Librarians' Membership in Professional Bodies (Accreditation-Wise)**

Accreditation Status	Membership in Professional Body		Name of the Professional Body				
	Yes	No	KLA	ALA	ILA	IASLIC	Others
NBA Accredited	21 (58.33%)	15 (41.67%)	19 (90.48%)	4 (19.05%)	4 (9.05%)	1 (4.76%)	0 (0.00%)
Non-NBA Accredited	23 (35.94%)	41 (64.06%)	18 (78.26%)	4 (17.39%)	2 (8.70%)	0 (0.00%)	7 (30.43%)
Total	44 (44.00%)	56 (56.00%)	37 (84.09%)	8 (18.18%)	6 (3.63%)	1 (2.27%)	7 (15.90%)

As far as table 47 is considered, it reveals that 58.33 percent of librarians from NBA accredited ECs have membership in library professional bodies whereas 35.94 percent of librarians from non-NBA accredited ECs have membership in library professional bodies. It is noted from the table that the majority of librarians from non-NBA accredited ECs are not found to have membership in library professional bodies.

It can also be seen from the data that a large majority of librarians from NBA accredited ECs and more than three fourth of librarians from non-NBA accredited ECs have membership in KLA and a low number of them report their membership in professional bodies like ALA ILA and IASLIC.

Altogether, it can be concluded from the data that only 44 percent of EC librarians in Kerala have membership in any of the professional bodies. When the majority of librarians from NBA accredited ECs report their membership in any professional bodies, the majority of librarians from non-NBA accredited ECs report that they do not have membership in any professional bodies. At the same time a vast majority of librarians from both categories of ECs, who have membership in any of the professional bodies said that they have membership in KLA, that is Kerala Library Association.

4.2.3.6 Information of Library Staff and Users

Library staff play a pivotal role for the successful organization, administration and utilization of its collection and services for the complete satisfaction of its users. Without the right staff the most luxurious building and extensive collection may have no effect. Thus EC libraries can render effective services only with the aid of adequate and efficient staff with highest competence and integrity (Agrapu, 2013). The section covers the general information of library staff and users, The proportion between the library staff and users, and growth of library staff and users in EC libraries in Kerala.

The EC librarians are asked about the information of staff and users in their libraries. category-wise responses of the availability of library staff and users from the libraries of ECs which have the accredited programs of NBA are presented in table 48 and table 50 respectively whereas the accreditation-wise responses in the availability of staff and users from EC libraries in Kerala were presented in table 49 and table 51 respectively.

Table 48

Information of Library Staff in NBA Accredited ECs (Category-Wise)

Availability of Library Staff	Category		
	Govt.	Under Govt. Dept.	Self - Financing
Professional Staff			
1-3	7 (63.63%)	4 (57.14%)	10 (55.55%)
4-6	3 (27.27%)	2 (28.57%)	7 (38.88%)
7-9	1 (9.09%)	1 (14.28%)	1 (5.55%)
Mean (SD)	3.09 (1.57)	3.43 (1.40)	3.78 (1.96)
Chi-square = 1.503**; p-value = 0.912			
Non-Professional Staff			
0-2	5 (45.45%)	5 (71.42%)	16 (88.88%)
3-4	3 (27.27%)	1 (14.28%)	1 (5.55%)
5-6	3 (27.27%)	1 (14.28%)	1 (5.55%)
Mean (SD)	2.73 (2.20)	1.14 (1.46)	1.11 (1.57)
Chi-square = 6.475**; p-value = 0.114			
Total Staff			
1-4	2 (18.18%)	5 (71.42%)	9 (50%)
5-8	8 (72.72%)	1 (14.28%)	7 (38.88%)
9-12	1 (9.09%)	1 (14.28%)	2 (11.11%)
Mean (SD)	5.82 (2.44)	4.57 (2.07)	4.89 (2.52)
Chi-square = 6.746**; p-value = 0.115			

** Significant at 0.01 level

The category-wise response of the availability of staff from the ECs which have the accredited programs of NBA displayed in table 48 indicates that the average number of professional staff is highest in Self financing EC libraries (3.78) followed by the EC libraries under Government departments (3.43) and Government EC libraries (3.09). When considering the average number of non-professional staff in the libraries it is observed that the average number of non-professional staff are highest in Government EC libraries (2.73) followed by the EC libraries under Government departments (1.14) and Self-financing EC libraries (1.11). As far as the total number of library staff in EC libraries are concern it can be interpreted from the table that the average number of library staff seems to be highest in Government EC libraries (5.82), followed by Self-financing EC libraries (4.89) and the libraries of ECs under Government departments (4.57%).

The overall analysis of the data shows that when the average number of professional staff are highest in Self-financing EC libraries, the average number of non-professional staff and total number of library staff seem to be highest in Government EC libraries.

The category-wise difference in the availability of staff among the libraries of NBA accredited ECs are analysed with Chi-square test. Since the p-value is greater than the level of significance it can conclude that, there exists no significant difference in the availability of staff among the libraries of Government, under Government department and Self-financing ECs.

Table 49

Information of Library Staff in EC Libraries in Kerala (Accreditation-Wise)

Number of Library Staff	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Professional Staff			
Below 3	21 (53.33%)	58 (90.62%)	79 (79.00%)
4-6	12 (33.33%)	5 (7.81%)	17 (17.00%)
7-9	3 (8.33%)	1 (1.56%)	4 (4.00%)
Mean (SD)	3.50 (1.73)	1.75 (1.14)	2.63 (1.61)
Chi-square = 13.837**; p-value = 0.001			
Non-professional staff			
Below 2	26 (72.22%)	59 (92.18%)	85 (85.00%)
3-4	5 (13.88%)	4 (6.25%)	9 (9.00%)
5-6	5 (13.88%)	1 (1.56%)	6 (6.00%)
Mean (SD)	1.61 (1.87)	0.88 (0.98)	1.24 (1.41)
Chi-square = 7.938**; p-value = 0.012			
Total library staff			
Below 4	16 (44.44%)	55 (85.93%)	71 (71.00%)
5-8	16 (44.44%)	8 (12.5%)	24 (24.00%)
9-12	4 (11.11%)	1 (1.56%)	5 (5.00%)
Mean (SD)	5.11 (2.40)	2.63 (1.63)	3.87 (2.27)
Chi-square = 18.878**; p-value = 0.000			

** Significant at 0.01 level

The accreditation-wise response of the availability of library staff in EC libraries in Kerala illustrated in table 49 explained that the average number of professional staff is 3.50 in NBA accredited ECs whereas it seems to be 1.75 in non-NBA accredited ECs. At the same, time the average number of non-professional staff in NBA accredited ECs found to be 1.61 and 0.88 in non-NBA accredited ECs. In the meanwhile the average number of library staff in NBA accredited ECs is 5.11 and it appears to be 2.63 in non-NBA accredited ECs.

As a whole, it can be concluded from the data that a difference is clearly visible in the case of average number of professional staff, non-professional staff and total library staff between the EC libraries in Kerala. The ECs which have the accredited programs of NBA show an increase in the average number of professional staff, non-professional staff and total library staff with the ECs which do not have the accredited programs of NBA.

The accreditation-wise difference in the availability of staff between the EC libraries in Kerala is analysed with Chi-square test. Since the p-value is less than the level of significance it can conclude that there is significant difference in the availability of library staff between the NBA accredited and non-NBA accredited ECs in Kerala.

Table 50
Information of Users in the Libraries of NBA Accredited ECs
(Category-Wise)

Number of Library Users	Category		
	Govt.	Under Govt. Dept.	Self - financing
Students			
500-1400	5 (45.45%)	5 (71.42%)	7 (38.88%)
1401-2300	3 (27.27%)	1 (14.28%)	5 (27.77%)
2301-3300	3 (27.27%)	1 (14.28%)	6 (33.33%)
Chi-square = 2.054**; p-value = 0.732			
Teaching Staff			
35-160	7 (63.63%)	5 (71.42%)	9 (50.00%)
161-285	3 (27.27%)	1 (14.28%)	8 (44.44%)
286-420	1 (9.09%)	1 (14.28%)	1 (5.55%)
Chi-square = 2.889**; p-value = 0.607			
Non-teaching Staff			
10-70	7 (63.63%)	5 (71.42%)	8 (44.44%)
71-140	2 (18.18%)	1 (14.28%)	9 (50.00%)
141-220	2 (18.18%)	1 (14.28v)	1 (5.55%)
Chi-square = 4.917**; p-value = 0.287			
Total Users			
500-1500	2 (18.18%)	5 (71.42%)	4 (22.22%)
1500-2500	5 (45.45%)	1 (14.28%)	8 (44.44%)
2500-3600	4 (36.36%)	1 (14.28v)	6 (33.33%)
Mean (SD)	2068.64 (698.80)	1124.29 (475.42)	2110.5 (779.22)
Chi-square = 5.797**; p-value = 0.212			

** Significant at 0.01 level

The library users in three categories of ECs which have the accredited programs of NBA are illustrated in table 50. It can be seen from the table that the average number of users are highest in the case of Self financing EC libraries (2110.5) followed by Government EC libraries (2068.64) and the EC libraries under Government departments (1124.29).

The category-wise difference in the number of users among the libraries of NBA accredited ECs are analysed with Chi-square test. Since the p-value is greater than the level of significance it can conclude that, there exists no significant difference in the number of users among the libraries of Government, under Government department and Self-financing ECs.

Table 51

Information of Users in EC Libraries in Kerala (Accreditation-Wise)

Number of Library Users	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Students			
500-1400	17 (47.22%)	58 (90.62%)	75 (75.00%)
1401-2300	9 (25.00%)	5 (7.81%)	14 (14.00%)
2301-3300	10 (27.77%)	1 (1.56%)	11 (11.00%)
Chi-square = 25.043**; p-value = 0.000			
Teaching Staff			
Below 100	10 (27.77%)	52 (81.25%)	62 (62.00%)
101-200	20 (55.55%)	11 (17.18%)	31 (31.00%)
201-300	6 (16.66%)	1 (1.56%)	7 (7.00%)
Chi-square = 28.859**; p-value = 0.000			
Non-teaching staff			
10-70	20 (55.55%)	55 (85.93%)	75 (75.00%)
71-140	12 (33.33%)	8 (12.5%)	20 (20.00%)
141-220	4 (11.11%)	1 (1.56%)	5 (5.00%)
Chi-square = 11.484**; p-value = 0.002			
Total Users			
Below 500	11 (30.55%)	57 (89.06%)	68 (68.00%)
1501-2500	14 (38.88%)	6 (9.37%)	20 (20.00%)
2501-3500	11 (30.55%)	1 (1.56%)	12 (12.00%)
Mean (SD)	1905.94 (790.71)	852.81 (392.15)	1379.38 (759.61)
Chi-square = 37.772**; p-value = 0.000			

** Significant at 0.01 level

Table 51 indicates the availability of users including students, teachers, non-teaching staff in NBA and non-NBA accredited ECs in Kerala. According to the table, when the average number of users in NBA accredited ECs are 1905.94 it seems to be 852.81 in non-NBA accredited ECs.

The accreditation-wise analysis of users in EC libraries in Kerala are further analysed with Chi-square test. Since the p-value is less than the level of significance it can conclude that, there is significant difference in the availability of users between the libraries of NBA accredited and non-NBA accredited ECs.

4.2.3.7 Proportion between Library Staff and Users

Staff and library users are two important components of any library. Both are complementary and supplementary to each other (Patra, 2014). From the data collected from the EC librarians in Kerala regarding the number of users, professional staff and non-professional staff, the researcher tried to understand the ratio between the library staff and users in EC libraries in Kerala. The category-wise report from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise report from EC libraries in Kerala were presented in table 52 and table 53 respectively.

Table 52

Proportion between Library Staff and Users in the Libraries of NBA Accredited ECs (Category-Wise)

Category	Total number of staffs in Library: Average (SD)	% of Professional staff to total staff	% of Non-Professional staff to total staff	Average number of library users	Library users to Professional staff ratio	Library users to total staff ratio
Govt.	5.82 (2.44)	71.54	28.46	2011.36	575.11	381.56
Under Govt. Dept.	4.57 (2.07)	88.09	11.91	1436.14	637.48	554.54
Self-Financing	4.89 (2.52)	69.73	30.27	2024	796.97	469.06

Data illustrated in table 52 reveals that the average number of library staff seems to be highest in Government EC libraries (5.82) followed by Self financing EC libraries (4.89) and ECs under Government departments (4.57). When checking the percent of professional staff to total library staff, the table indicates that it seems to be highest in the libraries of ECs under Government departments (88.09) after that come Government EC libraries (71.54) and Self financing EC libraries (69.73). The data regarding the percent of non-professional staff to total library staff in NBA accredited ECs reveals that Self financing EC libraries are in highest position (30.27) after that comes Government EC libraries (28.46) and the libraries of ECs under Government departments (11.91).

When checking the number of library users to the ratio of professional staff, it is visible from the table that the ratio is highest in Self financing EC libraries (796.97) following that comes ECs under Government department libraries (637.48) and Government EC libraries (575.11). At the same time when examine the number of library users to the total number of library staff it is clear from the table that the ratio seem to be highest in the libraries of ECs under Government departments (554.54) after that comes Self financing EC libraries (469.06) and Government EC libraries (381.56).

The overall analysis of proportion between the library staff and users reveals that the average number of library staff is highest in Government EC libraries. The ratio of professional staff to total library staff and the ratio of library users to total library staff seems to be highest in the libraries of ECs under Government departments. The ratio of non-professional staff to total library staff, average number of library users and ratio of library users to professional staff of the library are find to be highest in Self financing EC libraries.

Table 53
Proportion between Library Staff and Users in EC Libraries in Kerala
(Accreditation-Wise)

Accreditation Status	Total Staff Average (SD)	% of Professional staff to total staff	% of Non-Professional staff to total staff	Average number of library users	Library users to Professional staff ratio	Library users to total staff ratio
NBA Accredited	5.11 (2.4)	73.73	26.27	1905.94	698.17	458.94
Non-NBA Accredited	2.63 (1.63)	75.91	24.09	852.81	539.14	393.08
Total	3.87 (2.27)	74.82	25.18	1379.38	618.66	426.01

Table 53 shows the proportion of library staff and users in EC libraries in Kerala. It displays that the ratio of professional staff to total staff in NBA accredited ECs is 73.73 whereas the ratio in non-NBA accredited ECs seems to be 75.91. When checking the ratio of non-professional staff to total library staff it can observe from the table that in the case of NBA accredited ECs, it is 26.27 whereas in non-NBA accredited ECs it is 24.09. At the same time the ratio of library users to professional staff seems to be 698.17 whereas for non-NBA accredited ECs it is recorded as 539.14. In the meanwhile the ratio of library users to total number of library staff is noted as 458.94 and the same ratio in non-NBA accredited ECs reported it as 393.08.

As a whole, it can be concluded from the table that even though there is no much difference seen in between EC libraries in Kerala in the ratio of professional staff to total staff and ratio of non-professional staff to total staff, it can see that the ECs which have the accredited programs of NBA shows a slight increase in the case of proportion between library users to professional staff and library users to total staff to the ECs which do not have the accredited programs of NBA.

4.2.3.8 Growth of Library Users in EC Libraries

Library is a growing organism. Growth did not mean only in terms of collection of libraries but also the number of library users. In the study, the library users are classified into students, teaching staff and non-teaching staff. The researcher tries to understand the growth of library users in three consecutive years in EC libraries in Kerala and category-wise reports from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise reports from EC libraries in Kerala were presented in table 54 and table 55 respectively.

Table 54

Growth of Users in the Libraries of NBA Accredited ECs (Category-wise)

Users		Category		
		Govt	Under Govt. Dept.	Self-Financing
Students				
Average number of students	2017-18	1761.64	1108.43	1953.5
	2018-19	1786.09	1053.14	1923.17
	2019-20	1816.18	1024.14	1875.83
Year to year growth rate	(2018-19) over (2017-18)	24.45	-55.29	-30.33
	(2019-20) over (2018-19)	30.09	-29	-47.34
Average annual growth		27.27	-42.15	-38.84
Annual compound growth rate		0.0154	-0.0388	-0.0201
Teaching staff				
Average number of teaching staff	2017-18	149.91	78	168.06
	2018-19	152.82	78	165.67
	2019-20	158.64	73.43	164.33
Year to year growth rate	(2018-19) over (2017-18)	2.91	0	-2.39
	(2019-20) over (2018-19)	5.82	-4.57	-1.34
Average annual growth		4.36	-2.29	-1.86
Annual compound growth rate		0.0287	-0.0297	-0.0112

Non-teaching Staff				
Average Number of Non-teaching staff	2017-18	86.09	29	70.33
	2018-19	90.91	27.71	70.39
	2019-20	93.82	26.71	70.33
Year to year growth rate	(2018-19) over (2017-18)	4.82	-1.29	0.06
	(2019-20) over (2018-19)	2.91	-1	-0.06
Average annual growth		3.86	-1.15	0.00
Annual compound growth rate		0.0439	-0.0403	0.0000
Total number of users				
Average Number of total number of users	2017-18	1997.64	1215.43	2191.89
	2018-19	2029.82	1158.86	2159.22
	2019-20	2068.64	1124.29	2110.5
Year to year growth rate	(2018-19) over (2017-18)	32.18	-56.57	-32.67
	(2019-20) over (2018-19)	38.82	-34.57	-48.72
Average annual growth		35.50	-45.57	-40.69
Annual compound growth rate		0.0176	-0.0382	-0.0187

It is observed from table 54 that in the libraries of NBA accredited Government ECs annual growth rate is high in case of students, teaching staff, non-teaching staff and total number of users whereas it shows a less growth in the libraries of Self financing ECs followed by ECs under Government departments.

The graphical representation of growth of students, teaching staff, non-teaching staff and total staff in the libraries of NBA Accredited ECs are depicted in figure 13, figure 14, figure 15 and figure 16 respectively.

Figure 13

Growth of Library Users (Students) in Libraries of NBA Accredited ECs (Category-Wise)

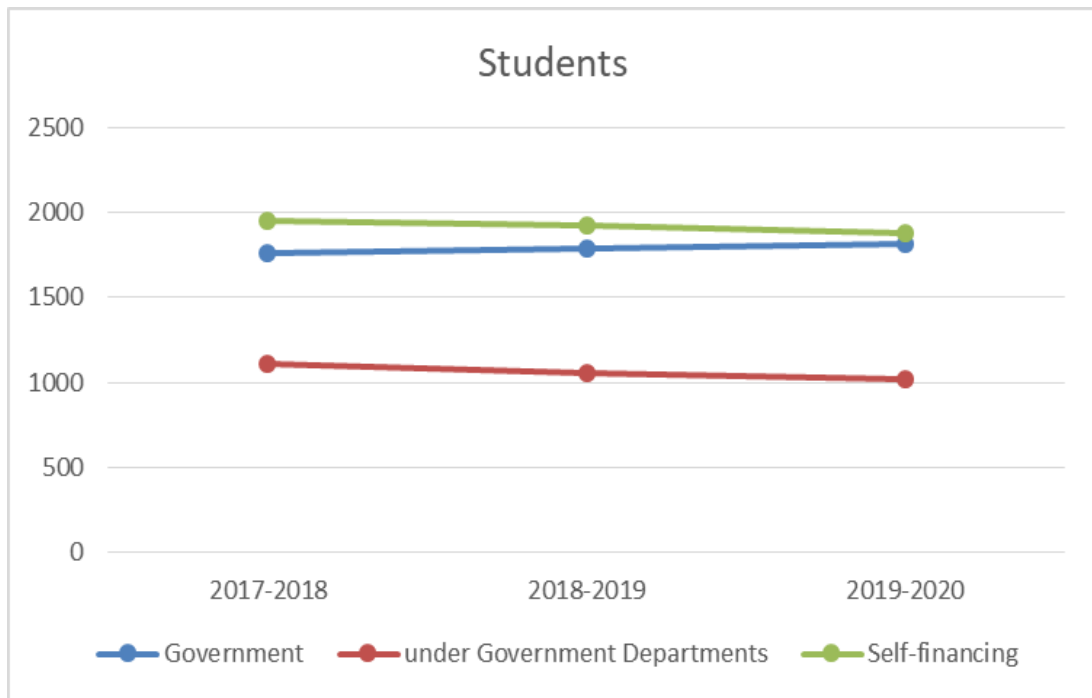


Figure 14

Growth of Library Users (Teaching Staff) in Libraries of NBA Accredited ECs (Category-Wise)

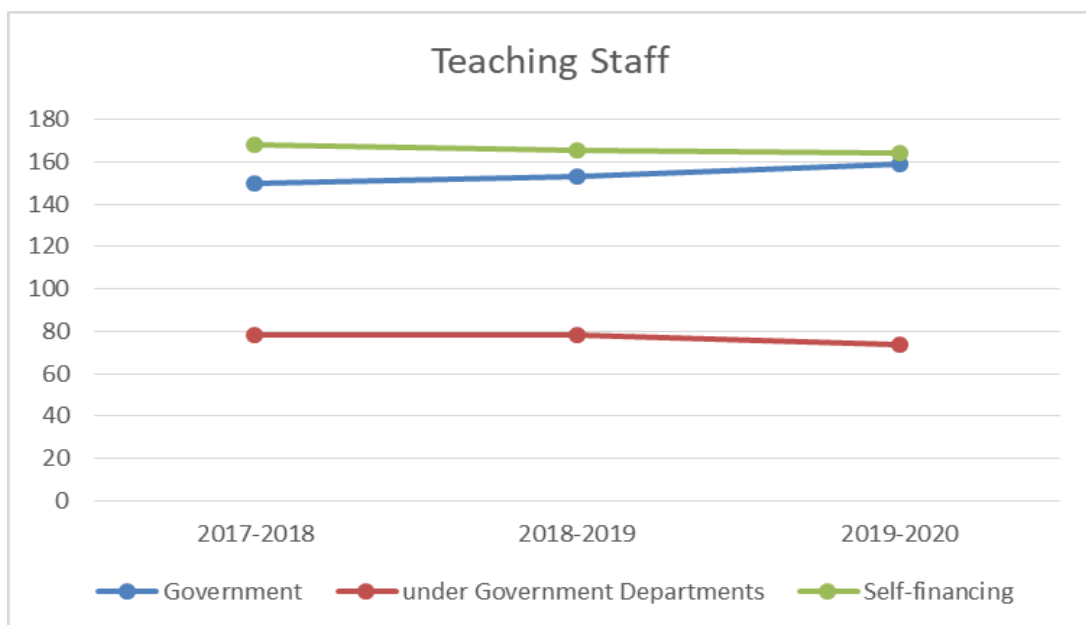


Figure 15

Growth of Library Users (Non- teaching staff) in Libraries of NBA Accredited ECs (Category-Wise)

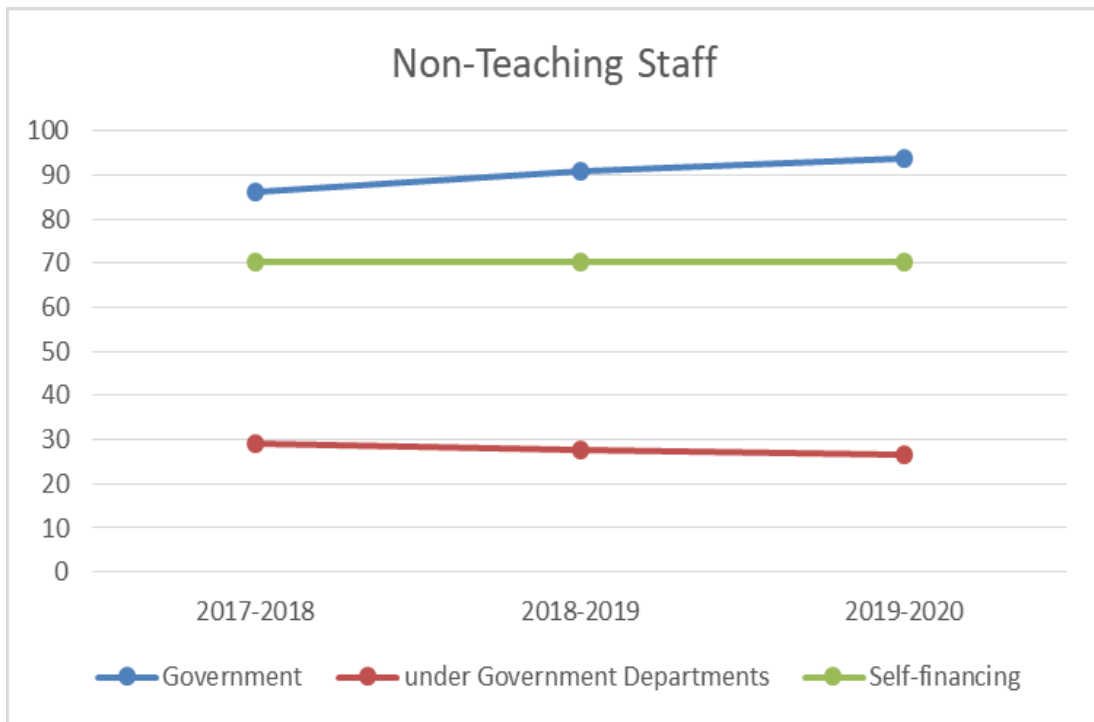


Figure 16

Growth of Total Users in Libraries of NBA Accredited ECs (Category-Wise)

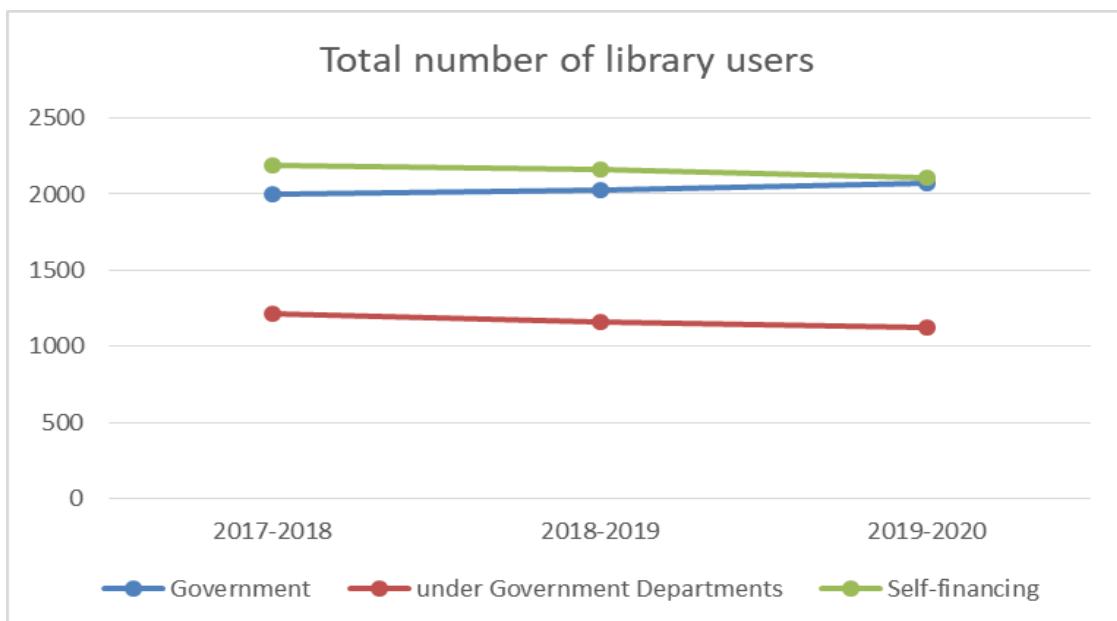


Table 55

Growth of Library Users in EC Libraries in Kerala (Accreditation-Wise)

Users		Accreditation Status		
		NBA Accredited	Non-NBA Accredited	Total
Students				
Average number of students	2017-18	1730.56	860.23	1295.39
	2018-19	1712.11	780.81	1246.46
	2019-20	1692.00	731.56	1211.78
Year to year growth rate	(2018-19) over (2017-18)	-18.44	-79.42	-48.93
	(2019-20) over (2018-19)	-20.11	-49.25	-34.68
Average annual growth		-19.28	-64.34	-41.81
Annual compound growth rate		-0.0112	-0.0778	-0.0328
Teaching staff				
Average number of teaching staff	2017-18	145.00	91.47	118.24
	2018-19	144.69	93.34	119.02
	2019-20	144.92	80.84	112.88
Year to year growth rate	(2018-19) over (2017-18)	-0.31	1.87	0.78
	(2019-20) over (2018-19)	0.22	-12.50	-6.14
Average annual growth		-0.04	-5.32	-2.68
Annual compound growth rate		-0.0003	-0.0599	-0.0229
Non-teaching Staff				
Average Number of Non-teaching staff	2017-18	67.11	31.78	49.45
	2018-19	68.36	33.19	50.78
	2019-20	69.03	40.41	54.72
Year to year growth rate	(2018-19) over (2017-18)	1.25	1.41	1.33
	(2019-20) over (2018-19)	0.67	7.22	3.945
Average annual growth		0.96	4.32	2.64
Annual compound growth rate		0.0142	0.1276	0.0520

Total number of users				
Average Number of total number of users	2017-18	1942.67	983.48	1463.07
	2018-19	1925.17	907.34	1416.25
	2019-20	1905.95	852.81	1379.38
Year to year growth rate	(2018-19) over (2017-18)	-17.50	-76.14	-46.82
	(2019-20) over (2018-19)	-19.22	-54.53	-36.87
Average annual growth		-18.36	-65.34	-41.85
Annual compound growth rate		-0.0095	-0.0688	-0.0290

Table 55 highlights the growth of library users in EC libraries in Kerala. As per the table 55, NBA accredited EC libraries show low average annual growth in the case of students (-19.28), teaching staff (-0.04) and total number of users (-18.36) except the non-teaching staff which shows high growth rate (0.96). When have a look on the matter of non-NBA accredited ECs, it also shows a low average annual growth in the case of students (-64.34), teaching staff (-5.32) and total number of users (-65.34) except non-teaching staff which shows high growth rate (4.32) just like NBA accredited ECS.

As a whole, it can be understood from the data that difference can be seen between the libraries of NBA and non-NBA accredited ECs in terms of their annual growth rate and it is interesting to note that even though the non-NBA accredited ECs are something behind in the average growth of students, teaching staff and total staff to NBA accredited ECs, they show a high average annual growth rate in the case of non-teaching staff.

The graphical representation of growth of students, teaching staff, non-teaching staff and total staff in EC libraries in Kerala are depicted in figure 17, figure 18, figure 19 and figure 20 respectively.

Figure 17
Growth of Library Users (Students) in EC Libraries in Kerala
(Accreditation-Wise)

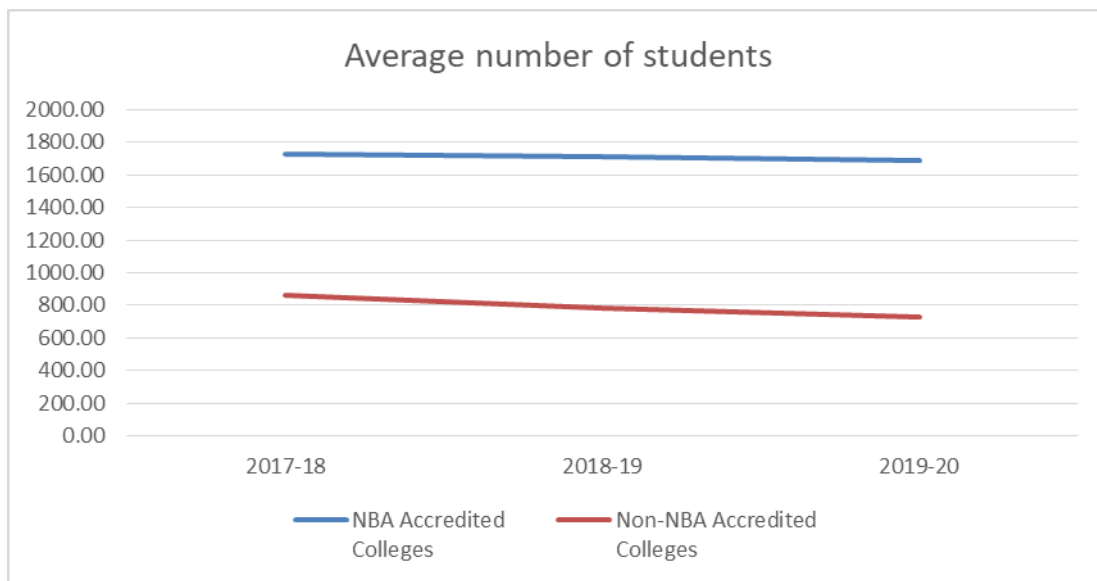


Figure 18
Growth of Library Users (Teaching Staff)) in EC Libraries in Kerala
(Accreditation Wise)

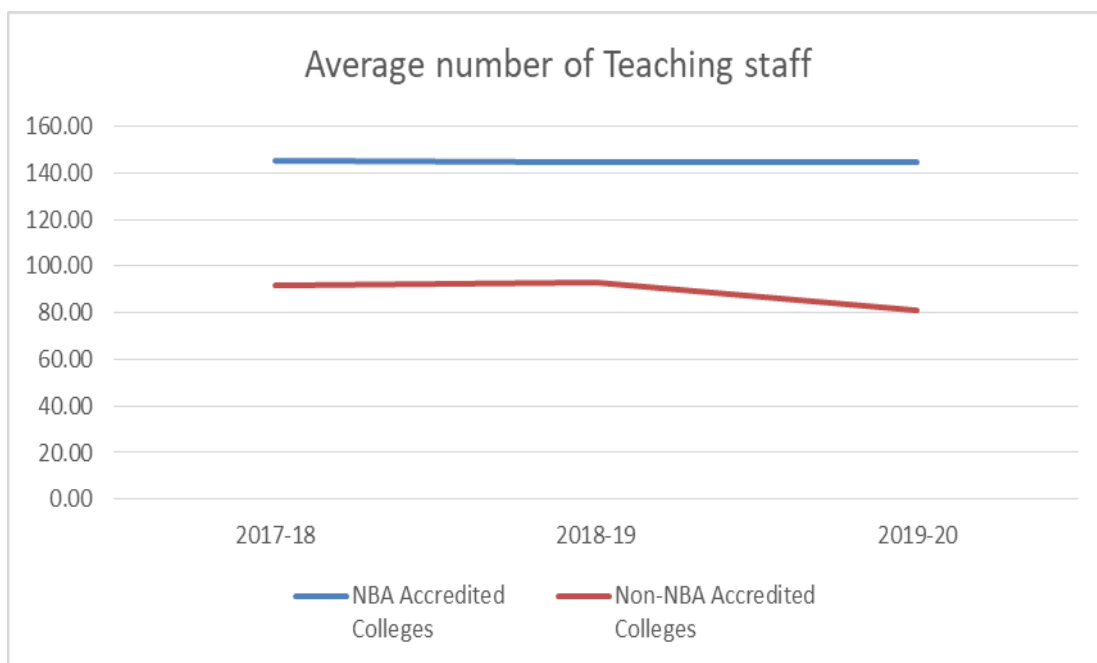


Figure 19
Growth of Library Users (Non-Teaching Staff) in EC Libraries in Kerala
(Accreditation-Wise)

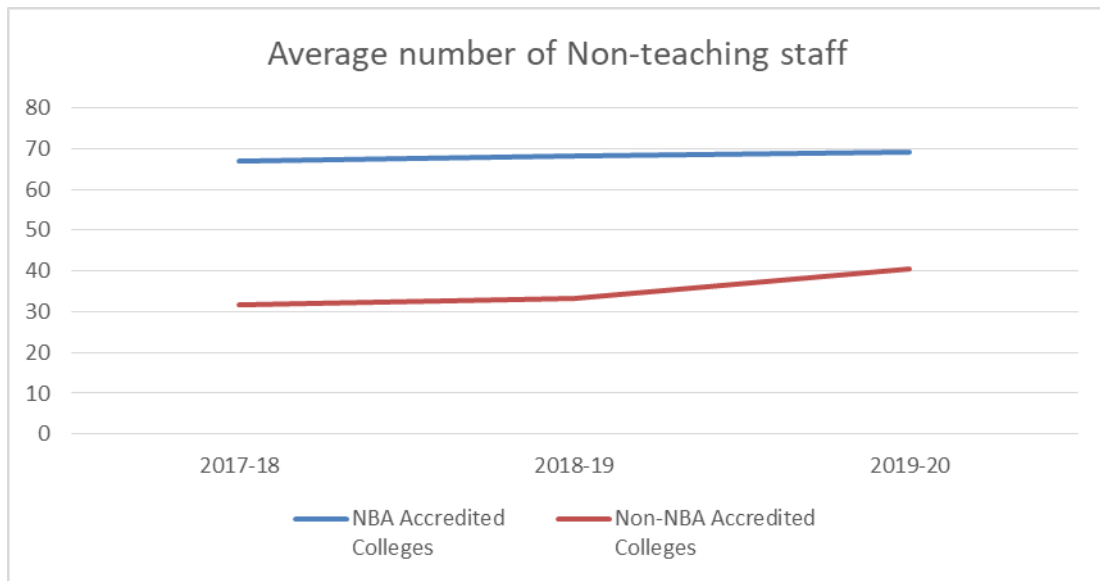
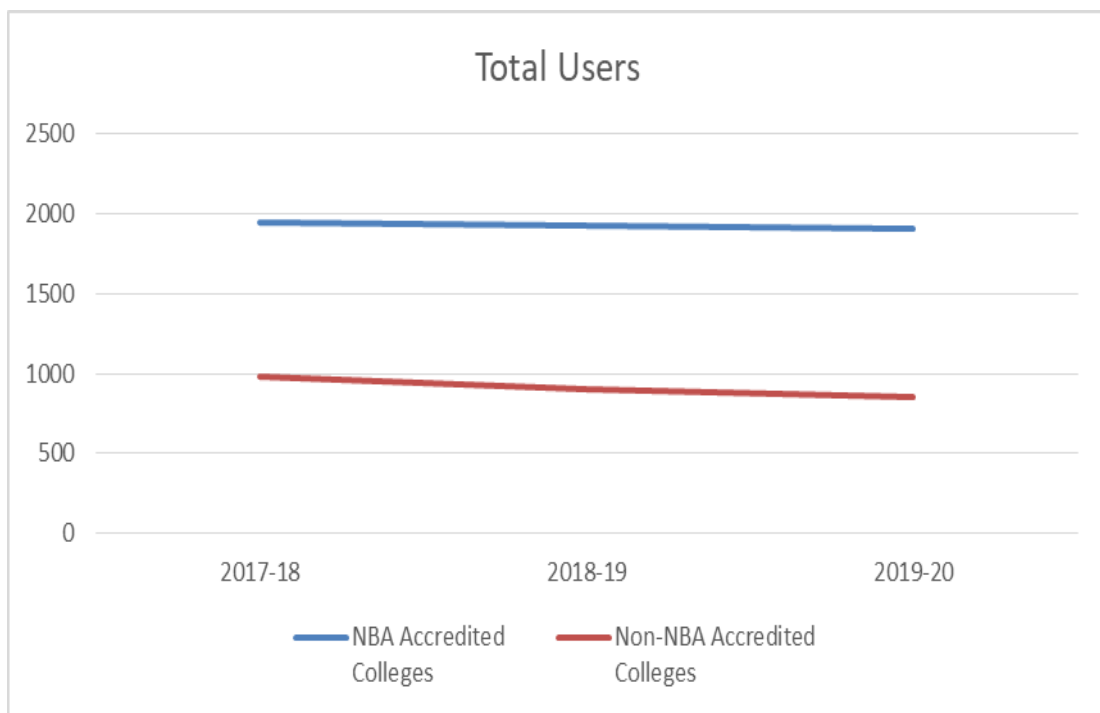


Figure 20
Growth of Total Library Users in EC Libraries in Kerala
(Accreditation-Wise)



4.2.4 Financial Resources

The finance is of immense importance as it is one factor which decides the success in EC libraries. It is essential for efficient and effective management of a library. Adequate funds are necessary to build up library collections, purchase and maintenance of equipment, to meet salaries and to provide services. The objectives of the parent institution cannot be achieved unless adequate funds are granted and judiciously distributed amongst the various segments of a library (Agrapu, 2013). The section covers the sources of finance of the EC libraries, information of budget allocation of EC libraries and growth of budget allocation to print resources, E-resources, Furniture and their maintenance in EC libraries in Kerala.

4.2.4.1 Sources of Finance in the Libraries

The libraries are considered to be non-profit organisations. Hence they require some source of finance to meet their expenditure. According to the category of ECs they receive finance from various sources like management, Government, UGC/AICTE, donations, reprography, overdue charges etc. The EC librarians were enquired about the sources of finance of the libraries and the category-wise response from the libraries of ECs which have the accredited programs of NBA and status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 56 and table 57 respectively.

Table 56

Sources of Finance of the Libraries of NBA Accredited ECs (Category-Wise)

Sources of finance	Category		
	Government	Under Govt. Dept.	Self-financing
Management	0 (0.00%)	6 (85.7%)	18 (100%)
Government	11 (100%)	4 (57.14%)	0 (0.0%)
UGC/AICTE	7 (63.6%)	1 (14.3%)	1 (5.6%)
Donations	2 (18.18%)	2 (28.6%)	0 (0.0%)
Overdue charges	5 (45.45%)	3 (42.86%)	6 (33.33%)
Reprography	4 (36.4%)	1 (14.3%)	3 (16.7%)
Student fee	3 (27.3%)	0 (0.0%)	4 (22.2%)
Document delivery	2 (18.18%)	0 (0.0%)	1 (5.6%)

It can be observed from table 56 that libraries of all Government ECs which have accredited programs of NBA reports that funds from the Government is the main

source of their finance. Majority of them reports their source of finance as UGC/AICTE, a good number of them reports overdue charges (45.45%), reprography (36.4%) and a few of them report their source of finance as student fee (27.3%), donations (18.18%) and document delivery charges (18.18%).

Data illustrated in the table also reveals that a vast majority of ECs under Government departments disclose that their source of finance as management, more than 50 percent of them reveals it as Government (57.14%), a good number of them stated their source of finance as overdue charges and a limited number of them expressed their source of finance as donations (28.6%), UGC/AICTE (14.3%) and reprography (14.1%). Considering the sources of finance of Self financing EC libraries, it is visible from the table that management of ECs as the main source of finance, a good number of them report it as overdue charges (33.33%) whereas a very low number of them report their sources of finance as student fee (22.2%) and reprography charges (16.7%).

The overall analysis of the table uncovers that when Government ECs major source of finance is the fund from Government and UGC/AICTE, the Self-financing EC libraries source of finance seem to be Management and a majority of ECs under Government departments reported management and Government as their source of finance.

Table 57

Sources of Finance of EC Libraries in Kerala (Accreditation-Wise)

Source	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Management	27 (75.00%)	56 (87.50%)	83 (83.00%)
Government	15 (41.67%)	9 (14.06%)	24 (24.00%)
UGC/AICTE	9 (25.00%)	2 (3.13%)	11 (11.00%)
Donations	4 (11.11%)	2 (3.13%)	6 (6.00%)
Overdue charges	14 (38.89%)	26 (40.63%)	40 (40.00%)
Reprography	8 (22.22%)	23 (35.94%)	31 (31.00%)
Student fee	7 (19.44%)	18 (28.13%)	25 (25.00%)
Document delivery	3 (8.33%)	0 (0.00%)	3 (3.00%)

Data regarding the sources of finance of EC libraries in Kerala illustrated in table 57 shows that three fourth of NBA accredited ECs main source of finance is

management (75%). A good number of libraries among them report Government funds (41.67%) and overdue charges (38.89%) as sources of finance and one fourth of them respond to grants from UGC/AICTE as their sources of finance. Only a limited number of ECs which have the accredited programs of NBA report the source of finance of their libraries as reprography charge (22.22%), student fees (19.44%), donation (11.11%) etc.

Coming to the financial sources of ECs which do not have accredited programs of NBA, it is visible that a lion's share of them report that the fund from their management (87.50%) as the main source of finance of their libraries. A good number of them report overdue charges (40.63%), reprography charges (35.94%) and more than 25 percent of them respond to student fee (28.13%) as their source of finance. It is also noted from the table that other financial sources like funds from the Government, grants from UGC/AICTE and donations are reported by a limited number of libraries of ECs which do not have the accredited programs of NBA.

Altogether it can be concluded from the analysis that the major source of finance of EC libraries in Kerala are funds from their management and library overdue charges.

4.2.4.2 Information on the Budget Allocated for the Libraries

Budget for print collection is an important part of collection development and a mechanism for tracking effectiveness of library collection. A good budget for print collection, especially books reflects the goals of the parent organization. It serves as a technique to show the library's commitment to its goals in concrete fiscal terms and monitor progress towards those goals. The importance of electronic information resources in our day to day lives continues to grow. EC libraries are giving preference to E-resources and they are adding new E-resources and services while maintaining a balance with the old traditional resources. As new technologies are welcomed they are posing many challenges to the library management in general and to the library budgets in particular. Each EC library has to perform certain business functions like the maintenance of library infrastructure and equipment to support its operations and services. Further, a certain amount is allocated for repair, maintenance of computers, and binding costs (Agrapu, 2013).

The EC librarians were enquired about the budget allocation for print resources, E-resources, furniture, equipment and maintenance. The category-wise response from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise response from EC libraries in Kerala were presented in table 58 and table 59 respectively.

Table 58

Availability of Budget in the Libraries of NBA Accredited ECs (Category-Wise)

Budget Allocation	Category		
	Govt.	Under Govt. Dept.	Self - Financing
Print Resources			
100000-800000	5 (45.45%)	5 (71.42%)	11 (61.11%)
800001-1600000	5 (45.45%)	1 (14.28%)	6 (33.33%)
1600001-2500000	1 (9.09%)	1 (14.28%)	1 (5.55%)
Mean (SD)	929074.73 (592073.92)	428571.43 (260795.49)	748450.39 (481195.96)
Chi-square = 2.756**; p-value = 0.617			
E-resources			
Below 1000000	6 (54.54%)	5 (71.42%)	7 (38.88%)
1000001-2000000	3 (27.27%)	1 (14.28%)	9 (50.00%)
2000001-3000000	2 (18.18%)	1 (14.28%)	2 (11.11%)
Mean (SD)	1242976.91 (765659.45)	705714.29 (369091.55)	1324763.72 (856654.16)
Chi-square = 3.586**; p-value = 0.462			
Furniture, Equipment and Maintenance			
Below 250000	6 (54.54%)	5 (71.42%)	9 (50.00%)
250001-500000	4 (36.36%)	1 (14.28%)	1 (5.55%)
500001-800000	1 (9.09%)	1 (14.28%)	8 (44.44%)
Mean (SD)	263636.36 (268412.84)	198000.00 (172147.22)	127356.39 (195770.52)
Chi-square = 7.126**; p-value = 0.108			
Total			
100000-1700000	4 (36.36%)	5 (71.42%)	6 (33.33%)
1700001-3400000	6 (54.54%)	1 (14.28%)	6 (33.33%)
3400001-5000000	1 (9.09%)	1 (14.28%)	6 (33.33%)
Mean (SD)	2162142.55 (1273875.35)	1396571.43 (838352.92)	2474459.39 (1474979.50)
Chi-square = 5.190**; p-value = 0.262			

** Significant at 0.01 level

It is evident from the table 58 that the average amount of budget allocated to print resources is highest in the libraries of Government ECs (929074.73) which have NBA accredited programs and it is followed by the libraries of Self financing ECs (748450.39) and ECs under Government department libraries (428571.43). In the meantime, the average budget allocated for E-resources in the libraries ECs in Kerala which have accredited programs of NBA sounds highest in the case of Self financing ECs (1324763.72) and soon after come Government EC libraries (1242976.91) and ECs under Government departments (705714.29). The average budget allocated for furniture, equipment and maintenance of libraries are showing the highest amount in Government ECs (263636.36) next to that of ECs under Government departments (198000) and Self financing ECs (127356.3). When checking the average total budget allocated for these EC libraries, it displays that the budget is highest in Self financing ECs (2474459.39), Government ECs (2162142.55) and ECs under Government departments.

The overall analysis of average budget allocated for the libraries of NBA accredited ECs indicates that the budget allocated to print resources and furniture, equipment, maintenance is highest in Government ECs whereas the average budget allocated for E-resources and as a whole seem to be highest in Self financing EC libraries.

The category difference in the availability of budget allocated to the EC libraries which have the accredited programs of NBA is analysed with Chi-square test. Since the p-value is greater than the level of significance it can conclude that, there is no significant difference among the libraries of Government, under Government department and Self-financing ECs in their budget allocation.

Table 59
Availability of Budget in EC Libraries in Kerala (Accreditation-Wise)

Budget Allocation	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
print			
Below 800000	21 (53.33%)	61 (95.31%)	82 (82.00%)
800001-1700000	12 (33.33%)	2 (3.12%)	14 (14.00%)
1700001-2500000	3 (8.33%)	1 (1.56%)	4 (4.00%)
Mean (SD)	702032.18 (473586.42)	254154.89 (262479.21)	429578.42 (435014.75)
Chi-square = 20.632**; p-value = 0.000			
E-resource			
Below 1000000	18 (50.00%)	59 (92.18%)	77 (77.00%)
1000000-2000000	13 (36.11%)	4 (6.25%)	17 (17.00%)
2000001-3000000	5 (13.88%)	1 (1.56%)	6 (6.00%)
Mean (SD)	1091151.64 (739792.89)	319890.89 (447047.39)	629315.10 (716066.76)
Chi-square = 22.195**; p-value = 0.000			
Furniture, Equipment and Maintenance			
Below 400000	28 (77.77%)	62 (96.87%)	90 (90.00%)
400001-800000	7 (19.44%)	1 (1.56%)	8 (8.00%)
800001-1100000	1 (2.77%)	1 (1.56%)	2 (2.00%)
Mean (SD)	196330.92 (1280950.48)	54039.06 (140540.74)	100369.15 (182701.06)
Chi-square = 9.957**; p-value = 0.002			
Total			
Below 1600000	14 (38.88%)	54 (84.37%)	68 (68.00%)
1600001-3200000	15 (41.66%)	7 (10.93%)	22 (22.00%)
3200001-5000000	7 (19.44%)	3 (4.68%)	10 (10.00%)
Mean (SD)	2011057.79 (1280950.48)	820033.28 (1050209.87)	1305819.67 (1328493.07)
Chi-square = 21.917**; p-value = 0.000			

** Significant at 0.01 level

The availability of budget for print resources, E-resources, furniture, equipment and maintenance allocated by EC libraries in Kerala are depicted in table 59. It is observed from the table that the average budget allocation for print resources

in the libraries of NBA accredited ECs are 702032.18 whereas in the libraries of non-NBA accredited ECs are 254154.89. The average budget allocated for E-resources in the libraries of NBA accredited ECs is 1091151.64 while in the libraries of non-NBA accredited ECs, it is 319890.89. In the case of the budget allocated for furniture, equipment and maintenance, it is clear from the table that in the libraries of NBA accredited ECs the average budget is 196330.92 and in non-NBA accredited ECs it is 54039.06. The total allocation of average budget in the libraries of NBA accredited ECs seems to be 2011057.79 whereas it seems to be 820033.28 in the libraries of non-NBA accredited ECs.

As a whole it can be assumed from the data that the average budget allocation of print resources, E-resources and furniture, equipment, maintenance in EC libraries in Kerala are 429578.42, 629315.10, 1305819.67 respectively. The ECs which have the accredited programs of NBA show a higher increase in the budget allocation of their libraries than that of ECs which do not have the accredited programs of NBA.

The accreditation-wise difference in the availability of budget between the EC libraries in Kerala is analysed with Chi-square test. Since the p-value is less than the level of significance it can conclude that there exists a significant difference between the budget allocated to the libraries of NBA accredited and non-NBA accredited ECs.

4.2.4.3 Growth of Budget in the Libraries

The researcher tries to understand the growth of the budget allocated to EC libraries in Kerala and the data regarding the budget allocated to the libraries for three consecutive years were collected. The category-wise reports from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise response from EC libraries in Kerala were presented in table 60 and table 61 respectively.

Table 60

Growth of Budget in the Libraries of NBA Accredited ECs (Category-Wise)

Resources		Category		
		Govt	Under Govt. Dept.	Self-financing
Print resources				
Average amount of budget allocated	2017-18	660001.82	588571.43	961453.83
	2018-19	639761.00	372857.14	719546.83
	2019-20	929074.73	428571.43	748450.39
Year to year growth rate	(2018-19) over (2017-18)	-20240.81	-215714.28	-241907
	(2019-20) over (2018-19)	289313.73	55714.29	28903.56
Average annual growth		134536.45	-80000.00	-106501.72
Annual compound growth rate		0.1865	-0.1467	-0.1177
E-Resources				
Average amount of budget allocated	2017-18	1121704.00	850000.00	1482402.61
	2018-19	1255750.36	855714.29	1484766.61
	2019-20	1242976.91	705714.29	1324763.72
Year to year growth rate	(2018-19) over (2017-18)	134046.36	5714.29	2364.00
	(2019-20) over (2018-19)	-12773.45	-150000.00	-160002.89
Average annual growth		60636.45	-72142.86	-78819.44
Annual compound growth rate		0.0527	-0.0888	-0.0547
Furniture, equipments and its maintenance				
Average amount of budget allocated	2017-18	202946.64	206214.29	117523.06
	2018-19	254218.73	235714.29	112245.28
	2019-20	263636.36	198000.00	127356.39
Year to year growth rate	(2018-19) over (2017-18)	51272.09	29500.00	-5277.78
	(2019-20) over (2018-19)	9417.64	-37714.29	15111.11
Average annual growth		30344.86	-4107.14	4916.67
Annual compound growth rate		0.1398	-0.0201	0.0410

Total Amount of Budget				
Average amount of budget allocated for Library	2017-18	1893743.36	1784785.71	2526101.72
	2018-19	1968821.00	1617142.86	2552669.83
	2019-20	2162142.55	1396571.43	2474459.39
Year to year growth rate	(2018-19) over (2017-18)	75077.64	-167642.86	26568.11
	(2019-20) over (2018-19)	193321.55	-220571.43	-78210.44
Average annual growth		134199.59	-194107.14	-25821.17
Annual compound growth rate		0.0685	-0.1154	-0.0103

By analysing the average annual growth of budget allocated to the libraries of ECs which have accredited programs of NBA, table 60 shows a positive growth in Government ECs in the case of print resources and at the same time shows less growth in other two categories of EC libraries. The same average annual growth is visible in the matter of budget allocation to E-resources - when Government EC libraries show positive growth other two categories of EC libraries show less growth. But a change has been seen when checking the average annual growth of budget allocation to furniture, equipment and other maintenance works followed in these libraries. When it shows positive growth in both Government and Self financing ECs it still shows low in the case of ECs under Government departments. The average annual growth of total budget allocated to the libraries of ECs which have NBA accreditation also once again shows positive growth in Government ECs whereas it seems low in the libraries of Self financing and ECs under Government departments.

As a whole it can be concluded from the data that except Government ECs which have NBA accredited programs, the libraries of other two categories of ECs show low growth when checking the average annual growth of budget allocated to them.

The graphical representation of growth of budget allocated to print resources, E-resources, furniture, equipment, maintenance and total budget in the libraries of NBA accredited ECs are presented on figure 21, figure 22, figure 23 and figure 24 respectively.

Figure 21

Growth of Budget (Print Resources) in the Libraries of NBA Accredited ECs (Category-Wise)

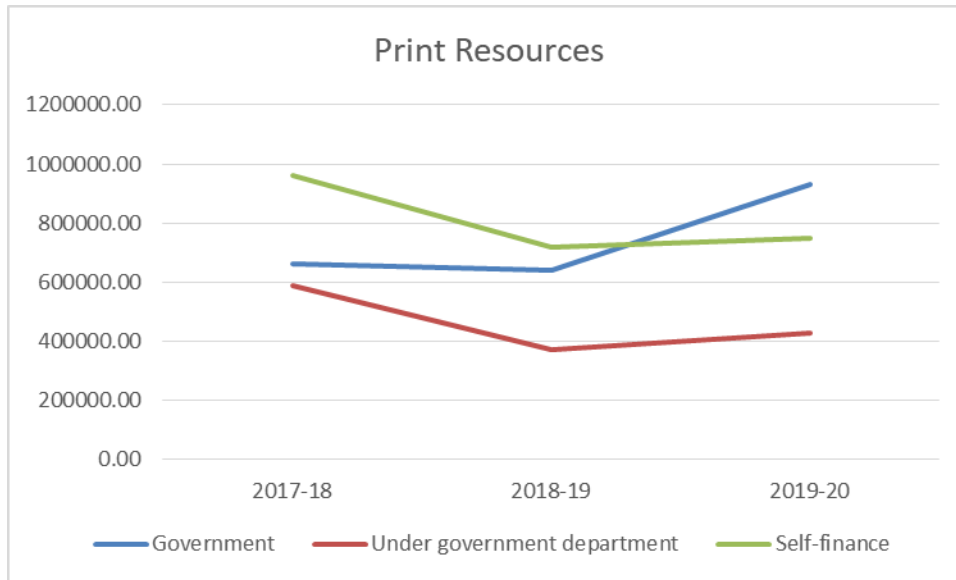


Figure 22

Growth of Budget (E-resources) in the Libraries of NBA Accredited ECs (Category-Wise)

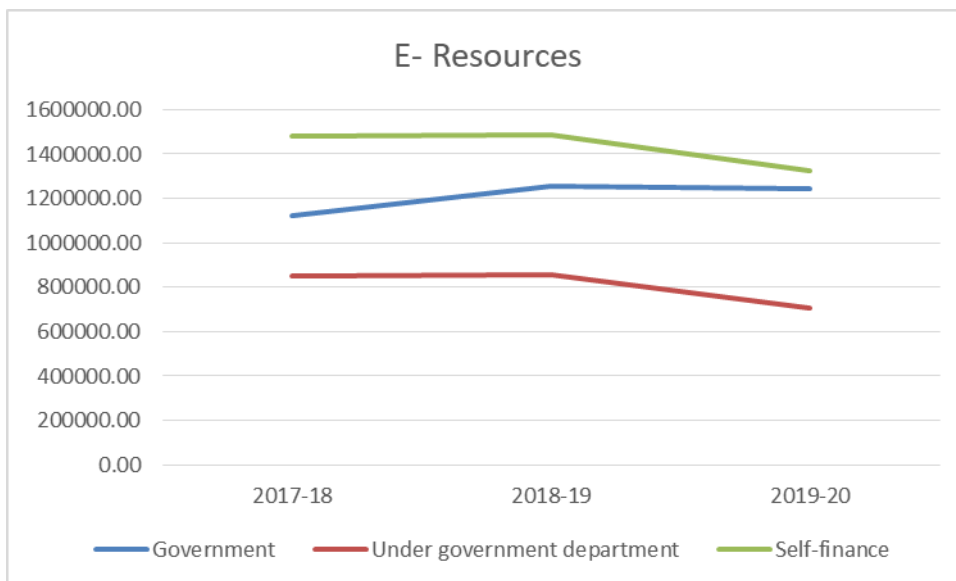


Figure 23

Growth of Budget (Furniture, Equipment and Maintenance) in the Libraries of NBA Accredited ECs (Category-Wise)

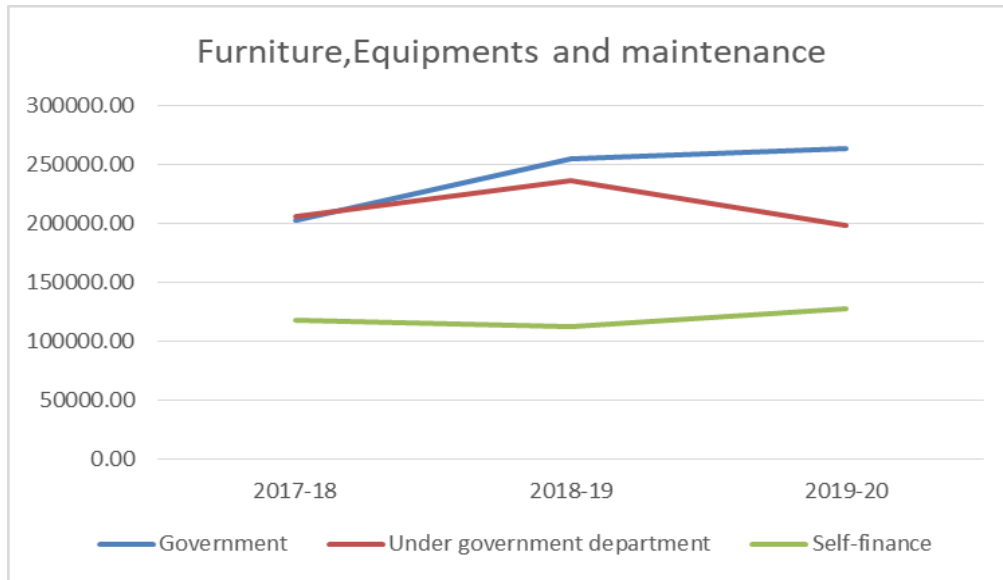


Figure 24

Growth of Total Budget in the Libraries of NBA Accredited ECs (Category-Wise)

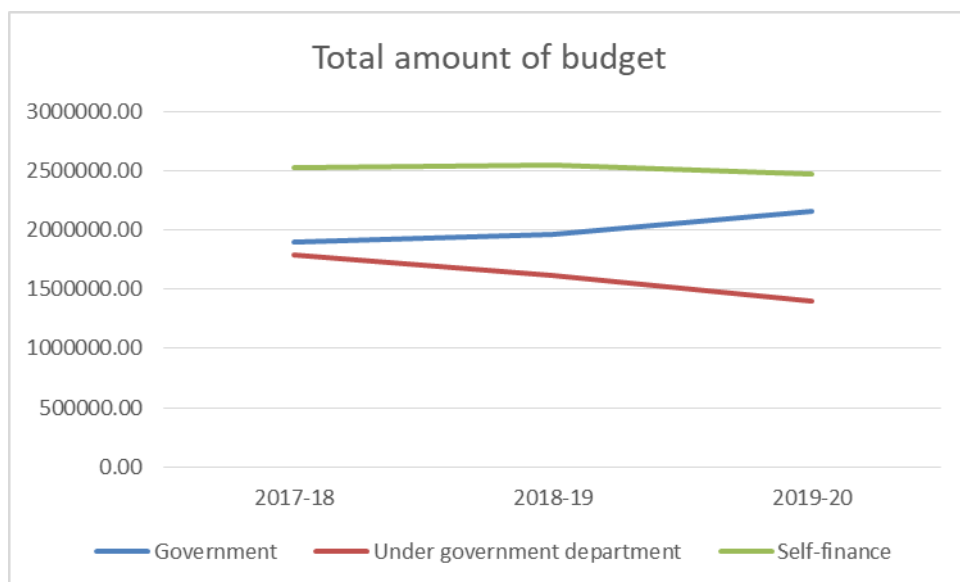


Table 61
Growth of Budget in the EC Libraries in Kerala (Accreditation-Wise)

Resources	Accreditation Status		Total	
	NBA Accredited	Non-NBA Accredited		
Print resources				
Average budget allocated for Printed resources	2017-18	796838.58	260897.20	528867.89
	2018-19	627755.94	251780.78	439768.36
	2019-20	741442.47	254154.89	497798.68
Year to year growth rate	(2018-19) over (2017-18)	-169082.64	-9116.42	-89099.53
	(2019-20) over (2018-19)	113686.53	2374.11	58030.32
Average annual growth		-27698.06	-3371.16	-15534.61
Annual compound growth rate		-0.0354	-0.0130	-0.0298
E-Resources				
Average budget allocated for E-resources	2017-18	1249221.97	329329.22	789275.60
	2018-19	1292473.69	347580.38	820027.03
	2019-20	1179402.58	319890.89	749646.74
Year to year growth rate	(2018-19) over (2017-18)	43251.72	18251.16	30751.44
	(2019-20) over (2018-19)	-113071.11	-27689.48	-70380.30
Average annual growth		-34909.69	-4719.16	-19814.43
Annual compound growth rate		-0.0283	-0.0144	-0.0254
Furniture, equipments and its maintenance				
Average budget allocated for furniture, equipments and its maintenance	2017-18	160870.22	50002.73	105436.48
	2018-19	179633.92	47139.84	113386.88
	2019-20	182733.75	54039.06	118386.41
Year to year growth rate	(2018-19) over (2017-18)	18763.69444	-2862.890625	7950.40191
	(2019-20) over (2018-19)	3099.833333	6899.21875	4999.52604
Average annual growth		10931.76	2018.16	6474.96
Annual compound growth rate		0.0658	0.0396	0.0596

Total Amount of Budget				
Average of total budget allocation	2017-18	2188736.33	640229.16	1414482.74
	2018-19	2192363.56	646501.00	1419432.28
	2019-20	2169439.92	628084.84	1398762.38
Year to year growth rate	(2018-19) over (2017-18)	3627.22	6271.84	4949.53
	(2019-20) over (2018-19)	-22923.64	-18416.16	-20669.90
Average annual growth		-9648.21	-6072.16	-7860.18
Annual compound growth rate		-0.0044	-0.0095	-0.0056

Table 61 indicating the growth of budget allocation of EC libraries in Kerala shows that the average budget allocated for print resources in the libraries of NBA accredited ECs decreased from the year 2017-18 to 2018-19 but it shows an increase from the year 2018-19 to 2019-20. In the case of average budget allocated for the print resources in the libraries of non-NBA accredited ECs, it also shows a decrease from the year 2017-18 to 2018-19 but shows a slight increase from the year 2018-19 to 2019-20. The average annual growth in the budget allocation of print resources shows less growth in both categories of EC libraries.

In the case of E-resources in EC libraries in Kerala, the average budget allocation in the libraries of NBA accredited ECs shows a slight increase from the year 2017-18 to 2018-19 and it shows a decrease from the year 2018-19 to 2019-20. The average annual growth in the budget allocation of E-resources shows less growth in both categories of EC libraries.

The average budget allocated for furniture, equipment and its maintenance in the libraries of NBA accredited ECs seem to be increased in the consecutive years but in the libraries of non-NBA accredited ECs it is decreased from the year 2017-18 to 2018-19 but it shows an increase from the year 2018-19 to 2019-20. The average annual budget allocation shows a positive growth in both categories of ECs and the

growth seems to high in the libraries of NBA accredited ECs when compared to the non-accredited category.

When checking the total average budget allocation, it is visible that both categories of EC libraries show a slight increase followed by decrease in the consecutive years and it is also clear that both categories of EC libraries show less growth in the average annual growth of budget allocation.

The overall analysis of the data indicates that the EC libraries in Kerala show low level average annual growth in the budget allocated to them and the libraries of NBA accredited ECs show a very low level of average annual growth when compared to the engineering colleges which do not have the accreditation of NBA. As in the case of print and E-resources they show low level growth, a positive growth can be seen in the budget allocated for furniture, equipment and its maintenance and it seems to be high in ECs which have the accredited programs of NBA.

The graphical representation of growth of budget allocated to print resources, E-resources, furniture, equipment and maintenance and growth of total budget in EC libraries are presented on figure 25, figure 26, figure 27 and figure 28 respectively.

Figure 25

Growth of Budget (Print Resource) in the EC Libraries in Kerala (Accreditation-Wise)

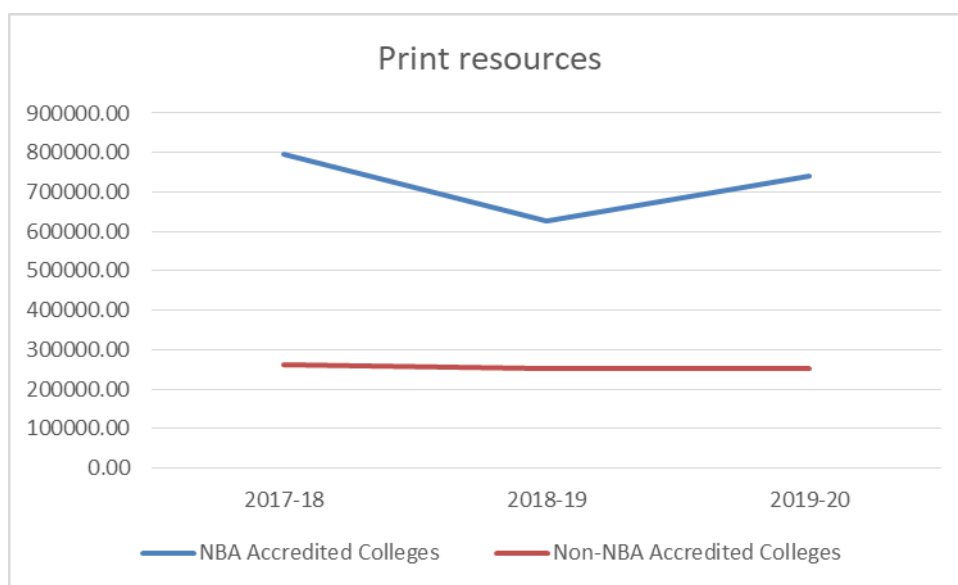


Figure 26

Growth of Budget (E-resource) in the EC Libraries in Kerala (Accreditation-Wise)

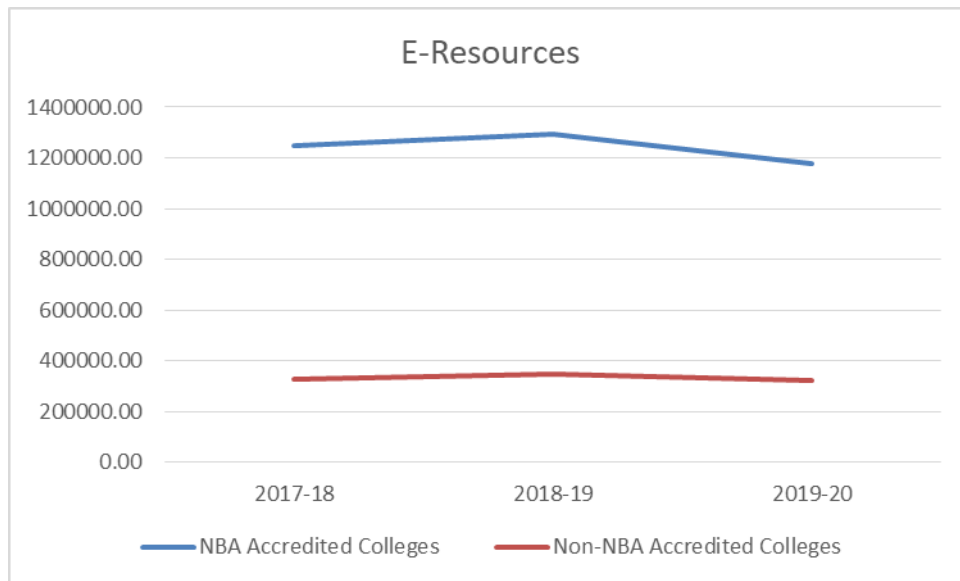


Figure 27

Growth of Budget (Furniture, Equipment and Maintenance)) in the EC Libraries in Kerala (Accreditation-Wise)

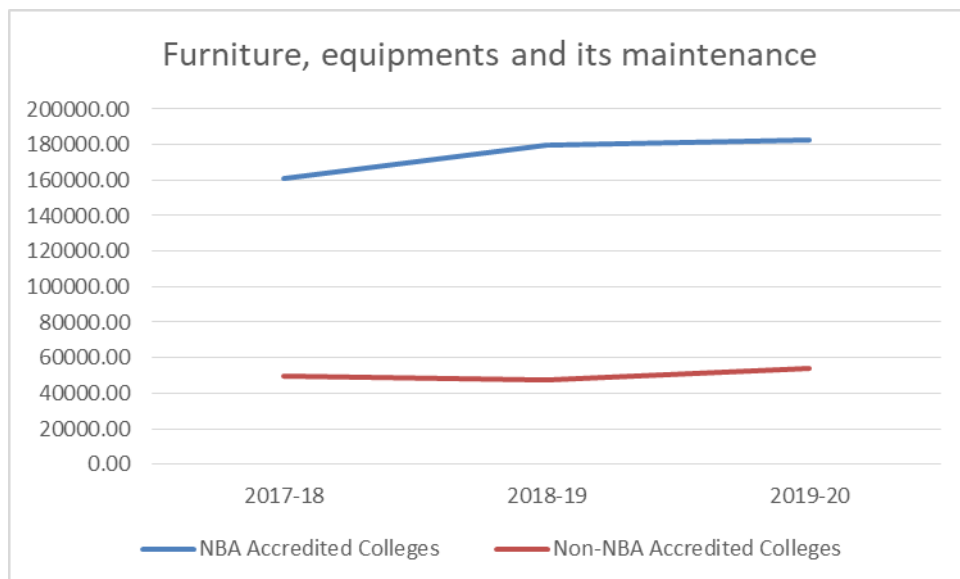
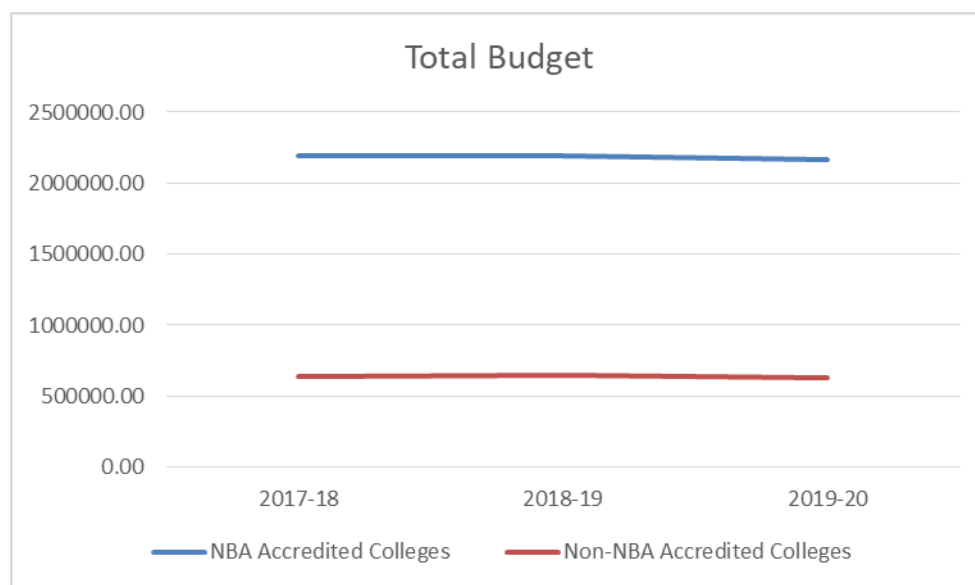


Figure 28**Growth of Total Budget in the EC Libraries in Kerala (Accreditation-Wise)****4.2.5 Information Services**

For a good and making more useful users and students oriented library, the EC libraries are expected to have some services such as reference services, current awareness service (CAS), selective dissemination information (SDI), newspaper clipping, photocopy, translation service, indexing service, abstracting service, referral service etc. These are the allied technical services; they can also be referred to as desirable services and match with the present day demands of the libraries (Belsare, 2013).

The EC librarians were enquired about the services available in their libraries and the category-wise response from the libraries of ECs which have the accredited programs of NBA are presented in table 62 and table 63 whereas NBA accreditation-wise response from EC libraries in Kerala were presented in table 64 and table 65 respectively.

Table 62**Services Provided by the Libraries of NBA Accredited ECs (Category-Wise)**

Services	Category		
	Govt	Under Govt. Dept.	Self-financing
Lending Services	11 (100%)	7 (100%)	18 (100%)
Reference Services	11 (100%)	7 (100%)	16 (88.89%)
CAS	8 (72.73%)	4 (57.14%)	16 (88.89%)
SDI	5 (45.45%)	2 (28.57%)	11 (61.11%)
Newspapers Clippings	6 (54.55%)	5 (71.43%)	14 (77.78%)
User Awareness/ Orientation Programs	10 (90.91%)	6 (85.71%)	14 (77.78%)
Photocopy Services	10 (90.91%)	5 (71.43%)	18 (100%)
Printing Facility	9 (81.82%)	3 (42.86%)	15 (83.33%)
Scanning Facility	7 (63.64%)	2 (28.57%)	14 (77.78%)
Translation Service	2 (18.18%)	0 (0.00%)	0 (0.00%)
Indexing Service	3 (27.27%)	0 (0.00%)	0 (0.00%)
Abstracting Service	4 (36.36%)	0 (0.00%)	0 (0.00%)
Referral Service	6 (54.55%)	1 (14.29%)	9 (50.00%)
InterLibrary Loan	5 (45.45%)	0 (0.00%)	12 (66.67%)
Bibliography Services	5 (45.45%)	1 (14.29%)	6 (33.33%)
Reservation Books	10 (90.91%)	7 (100%)	16 (88.89%)
Book Bank	11 (100%)	6 (85.71%)	10 (55.56%)

Data regarding the services provided by NBA accredited ECs presented in table 62 discloses that all Government EC libraries provide the services like lending, reference and book bank. A greater part of them provide the services like user awareness/orientation programs (90.91%), reservation of books (90.91%), photocopy (90.91%), printing (81.82%), CAS (72.73%) and scanning facility (63.64%). A good number of Government EC libraries provide the services like referral (54.55%), newspaper clipping (54.55%), bibliography (45.45%), interlibrary loan (45.45%) and SDI (45.45%). It is interesting to note that a few Government EC libraries provide the services like translation, indexing and abstracting which are not provided by other two categories of libraries.

As far as the EC libraries under Government departments are concerned, it is noticed that all libraries provide the services like lending, reference and reservation of books. A great number of them provide services like book bank (85.71%), user awareness/orientation programs (85.71%), newspaper clippings (71.43%) and photocopy services (71.43%). A good part of libraries provide services like CAS (57.14%) and printing facility (42.86%). Only a few EC libraries under Government departments provide the services like SDI, scanning, referral and bibliography services.

At the same time the Self financing EC libraries reports that all of them provide lending and photocopy services. A great majority of them provide services like reference (88.89%), CAS (88.89%), reservation of books (88.89%), printing (83.33%), newspaper clipping (77.78%), user awareness/orientation programs (77.78%), scanning facility (77.78%) and interlibrary loan (66.67%). A good part of them provide the services like SDI (61.11%), book bank (55.56%) and referral service (50%).

The overall analysis of the services provided by the libraries of NBA accredited ECs shows that Government EC libraries provide higher percent of library services than other two categories of libraries.

Table 63

**Availability of Services Provided by the Libraries of NBA Accredited ECs
(Category-Wise)**

Availability of Services	Category		
	Govt	Under Govt. Dept.	Self-financing
Low	1 (9.09%)	2 (28.57%)	3 (16.66%)
Medium	5 (45.45%)	4 (57.14%)	5 (27.77%)
High	5 (45.45%)	1 (14.28%)	10 (55.55%)
Chi-square = 4.410**; p-value = 0.363			

** Significant at 0.01 level

Category-wise differences in the availability of services provided by the NBA accredited ECs' libraries were analysed with Chi-square test and presented in table

63. Since the p-value is greater than the level of significance, it is clear that there exists no significant difference among the Government, under Government departments and Self financing libraries in the availability of services.

Table 64
Services Provided by EC Libraries in Kerala (Accreditation-Wise)

Services	Accreditation status		Total
	NBA Accredited	Non-NBA Accredited	
Lending Services	36 (100%)	64 (100%)	100 (100%)
Reference Services	34 (94.44%)	56 (87.50%)	90 (90.00%)
CAS	28 (77.78%)	38 (59.38%)	66 (66.00%)
SDI	18 (50.00%)	19 (29.69%)	37 (37.00%)
Newspapers Clippings	25 (69.44%)	42 (65.63%)	67 (67.00%)
User Awareness/ Orientation Programs	30 (83.33%)	36 (56.25%)	66 (66.00%)
Photocopy Services	33 (91.67%)	55 (85.94%)	88 (88.00%)
Printing Facility	27 (75.00%)	38 (59.38%)	65 (65.00%)
Scanning Facility	23 (63.89%)	43 (67.19%)	66 (66.00%)
Translation Service	2 (5.56%)	3 (4.69%)	5 (5.00%)
Indexing Service	3 (8.33%)	14 (21.88%)	17 (17.00%)
Abstracting Service	4 (11.11%)	4 (6.25%)	8 (8.00%)
Referral Service	16 (44.44%)	28 (43.75%)	44 (44.00%)
InterLibrary Loan	17 (47.22%)	8 (12.50%)	25 (25.00%)
Bibliography Services	12 (33.33%)	10 (15.63%)	22 (22.00%)
Reservation Books	33 (91.67%)	55 (85.94%)	88 (88.00%)
Book Bank	27 (75.00%)	25 (39.06%)	52 (52.00%)

According to table 64 all the libraries of ECs which have the accredited programs of NBA provide lending service. A biggest share of them provide services like reference (94.44%), photocopy (91.67%), reservation of books (91.67%), user awareness/orientation programs (83.33%), current awareness services (77.78%), book bank facility (75%) and printing facility (75%). More than fifty percent of them provide services like newspaper clippings (69.44%) and scanning facilities (63.89%). Fifty percent of them offer selective dissemination of information and a good number of them provide interlibrary loan service (47.22%), referral service (44.44%) and bibliography service (33.33%). It is noted from the table that only a limited number of ECs which have the accredited programs of NBA provide the services like abstracting, indexing and translation service in their libraries.

When considering the services provided by the libraries of non-NBA accredited ECs, it is clear that all libraries offer lending service, a major part of them offer reference service (87.50%), photocopy service (85.94%) and reservation of books (85.94%). Around two third of them provide services like scanning (67.19%), newspaper clipping (67.63%), printing (59.38%), current awareness service (59.38%), user awareness/orientation programs (56.25%). A good number of them offer referral service (43.75%) and book bank facilities (39.06%). It is also recorded from the table that only a low percent of libraries reports the services like indexing, inter library loan, bibliography service, abstracting service etc in their libraries

Altogether it can be assumed from the table that all EC libraries in Kerala provide lending services and most of them provide the services like reference, photocopy and reservation of books. The services like bibliography, indexing, abstracting and translating services seem to be very low in these libraries. The libraries of ECs which have the accredited programs of NBA shows an increase in providing the services like current awareness service, selective dissemination of information, user awareness/orientation programs, printing, interlibrary loan, reservation of books and book bank facility. As Satheesha and Vaddankere (2018) suggested in their study, if the authorities provide constant financial support, trained professional staff and better infrastructure, libraries can improve their services more effectively.

Table 65
Availability of Services Provided by EC Libraries in Kerala
(Accreditation-Wise)

Availability of Services	Accreditation status		Total
	NBA Accredited	Non-NBA Accredited	
Low	6 (16.66%)	22 (34.37%)	28 (28.00%)
Medium	14 (38.38%)	23 (35.93%)	37 (37.00%)
High	16 (44.44%)	19 (29.68%)	35 (35.00%)
Chi-square = 4.068 **; p-value = 0.131			

** Significant at 0.01 level

Accreditation-wise differences in the availability of services provided by EC libraries in Kerala were analysed with Chi-square test and presented in table 65. Since the p-value is greater than the level of significance it can be concluded that there is no significant difference between the NBA accredited and non-accredited ECs.

4.2.5.1 Web based Services provided by the Libraries

The first and foremost function of the library is to provide quality information service in order to satisfy their users with the right information at the right time. Web based library service is a trend. Although we actively transfer library services, our central purpose remains the same, to serve and teach users to find, evaluate and use information effectively. To meet these challenges, the librarians may play a leadership role in providing better web based library services to their techno savvy users. The librarians have to join the learning community as coaches and collaborators, guide the students, teach them how to search effectively and help them judge the quality and usefulness of the information that they meet with (Gavit, 2019). The EC librarians were enquired about the web based services available in their libraries and the category-wise response from the libraries of ECs which have the accredited programs of NBA is presented in table 66 and table 67 whereas status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 68 and table 69 respectively.

Table 66
Web based Services provided by the Libraries of NBA Accredited ECs
(Category-Wise)

Web based Services	Category		
	Govt.	Under Govt. Dept.	Self-financing
OPAC/ Web OPAC	11 (100%)	7 (100%)	18 (100%)
Online reference service	8 (72.73%)	2 (28.57%)	8 (44.44%)
Electronic document delivery service	4 (36.36%)	2 (28.57%)	8 (44.44%)
Virtual reference desk/ Ask-a-librarian	4 (36.36%)	0 (0.00%)	9 (50.00%)
Electronic CAS	4 (36.36%)	2 (28.57%)	3 (16.67%)
Electronic SDI service	4 (36.36%)	1 (14.29%)	3 (16.67%)
Online interlibrary loan service	3 (27.27%)	0 (0.00%)	7 (38.89%)
Online library news	4 (36.36%)	2 (28.57%)	7 (38.89%)
Email based services	8 (72.73%)	2 (28.57%)	14 (77.78%)
Online contact address	6 (54.55%)	0 (0.00%)	4 (22.22%)
Web based library tutorials	3 (27.27%)	0 (0.00%)	4 (22.22%)
Online library chat	3 (27.27%)	0 (0.00%)	2 (11.11%)
Online library holidays list	4 (36.36%)	2 (28.57%)	2 (11.11%)
Web based user education	4 (36.36%)	1 (14.29%)	4 (22.22%)
Online map of the library	3 (27.27%)	2 (28.57%)	2 (11.11%)
Information about special exhibits	3 (27.27%)	1 (14.29%)	3 (16.67%)
Online in-house library bulletins	3 (27.27%)	1 (14.29%)	3 (16.67%)
Online general library policies	3 (27.27%)	3 (42.86%)	5 (27.78%)
Online staff list	7 (63.64%)	3 (42.86%)	7 (38.89%)
Change password online	7 (63.64%)	2 (28.57%)	4 (22.22%)
Online mailboxes for user comment or suggestions	4 (36.36%)	2 (28.57%)	4 (22.22%)
Internet browsing	8 (72.73%)	5 (71.43%)	11 (61.11%)

It can be understood from table 66 that all Government EC libraries provide OPAC/WebOPAC. A large majority of Government ECs provide the web based services like internet browsing (72.73%), Email based services (72.73%), online reference service (72.73%), changing password online (63.64%), online staff list (63.64%) and online contact list (54.55%). A good number of them provide the web based services like online mailboxes for user comment (36.36%), web based user education (36.36%), online library holidays list (36.36%), online library news (36.36%), Electronic SDI service (36.36%), Electronic CAS (36.36%), virtual reference desk (36.36%) and online document delivery services (36.36%). It is noted that only a few Government EC libraries provide the services like online general library policies, online in-house library bulletins, information about special exhibits, online library chat etc.

At the same time, all the EC libraries under Government departments seem to provide OPAC service. A great number of them provide internet browsing (71.43%), a good number of them provide web based services like online staff list (42.86%) and online general library policies (42.86%). It can also be clear from the table that only a few libraries provide the services like online mail boxes for user comments, changing password online, online library holidays list, Email based services etc.

Data from the table also reveals that all self financing EC libraries provide OPAC service. The best part of them provide Email based services (77.78%), internet browsing (61.11%) and ask a librarian service (50%). A good number of them provide the services like online reference (44.44%), online document delivery (44.44%), interlibrary loan (38.89%), online library news (38.89%) and online staff list (38.89%). It can be also observed that a few Self financing EC libraries provide web based services like online contact list, online general library policies, changing password online, online contact address etc.

The overall analysis of the data shows that libraries of Government ECs which have NBA accredited programs provide high percent of online library services to the users when compared to the other two categories of EC libraries.

Table 67

Availability of Web based Services provided by the Libraries of NBA Accredited ECs (Category-Wise)

Availability of Web based Services	Category		
	Govt.	Under Govt. Dept.	Self-financing
Low	6 (54.54%)	5 (71.42%)	11 (61.11%)
Medium	1 (9.09%)	1 (14.28%)	3 (16.66%)
High	4 (36.36%)	1 (14.28%)	4 (22.22%)
Chi-square = 1.559**; p-value = 0.892			

** *Significant at 0.01 level*

Category-wise differences in the availability of web based services provided by the NBA accredited ECs' libraries were analysed with Chi-square test and presented in table 67. Since the p-value is greater than the level of significance it can be concluded that there exists no significant difference among the Government, under Government departments and Self financing EC libraries in the number of services provided by them.

Table 68
Web based Services provided by the EC Libraries in Kerala
(Accreditation-Wise)

Web based Services	Accreditation Stats		Total
	NBA Accredited	Non-NBA Accredited	
OPAC/Web OPAC	36 (100%)	55 (85.94%)	91 (91.00%)
Online reference service	18 (50.00%)	19 (29.69%)	37 (37.00%)
Electronic document delivery service	14 (38.89%)	17 (26.56%)	31 (31.00%)
Virtual reference desk/ Ask-a-librarian	13 (36.11%)	11 (17.19%)	24 (24.00%)
Electronic current awareness service	9 (25.00%)	17 (26.56%)	26 (26.00%)
Electronic SDI service	8 (22.22%)	6 (9.38%)	14 (14.00%)
Online interlibrary loan service	10 (27.78%)	5 (7.81%)	15 (15.00%)
Online library news	13 (36.11%)	14 (21.88%)	27 (27.00%)
Email based services	24 (66.67%)	22 (34.38%)	46 (46.00%)
Online contact address	10 (27.78%)	7 (10.94%)	17 (17.00%)
Web based library tutorials	7 (19.44%)	5 (7.81%)	12 (12.00%)
Online library chat	5 (13.89%)	4 (6.25%)	9 (9.00%)
Online library holidays list	8 (22.22%)	5 (7.81%)	13 (13.00%)
Web based user education	9 (25.00%)	7 (10.94%)	16 (16.00%)
Online map of the library	7 (19.44%)	4 (6.25%)	11 (11.00%)
Information about special exhibits	7 (19.44%)	6 (9.38%)	13 (13.00%)
Online in-house library bulletins	7 (19.44%)	3 (4.69%)	10 (10.00%)
Online general library policies	11 (30.56%)	9 (14.06%)	20 (20.00%)
Online staff list	17 (47.22%)	12 (18.75%)	29 (29.00%)
Change password online	13 (36.11%)	4 (6.25%)	17 (17.00%)
Online mailboxes for user comment or suggestions	10 (27.78%)	6 (9.38%)	16 (16.00%)
Internet Browsing	24 (66.67%)	37 (57.81%)	61 (61.00%)

Web based services provided by EC libraries in Kerala illustrated in table 68 shows that all the libraries of NBA accredited ECs offer OPAC/WebOPAC services. Majority of them provide online services like internet browsing (66.67%), Email based services (66.67%) and online reference service (50%). A good number of them offer online staff list (47.22%) electronic document delivery service (38.89%), virtual reference desk/ask a librarian service (36.11%), change password online (36.11%), online library news (36.11%) and online general library policies (30.56%). Nearly one third of them offer online inter library loan (27.78%), online contact address of the library staff (27.78%), online mail boxes for user comment (27.78%), web based user education (25%) and electronic current awareness service (25%). It is noted that a very limited number of NBA accredited ECs' libraries provide the online library services like online map of the library (19.44%), web based library tutorials (19.44%), online library chat (13.89%) etc.

Considering the online services provided by the libraries of non-NBA accredited ECs, data from the table reveals that most of the libraries under study provide OPAC service. More than fifty percent of them offer internet browsing (57.81%) and more than one fourth of them provide email based services (34.38%), online reference services (29.69%), electronic document delivery services (26.56%) and electronic current awareness service (26.56%). It is also reported that only very few percent of them provide other services like online staff list (18.75%), online general library policies (14.06%), web based user education (10.94%), online contact address (10.94%) etc.

The overall analysis of the data shows that OPAC services and internet browsing are the main online based services provided by EC libraries in Kerala. The services like web based library tutorials, online library chat, online mail boxes for user comments etc are provided by a limited number of EC libraries in Kerala. The ECs which have the accredited programs of NBA show an increase in providing most of the online services in their libraries when compared to the ECs which do not have the accredited programs of NBA. The table revealed that majority of engineering college libraries in Kerala provide low level web based services to their users. As Rahman,

Choudhury, and Barooah (2018) suggested in their study, libraries' authority, librarian and faculty should share the responsibility of developing the services of the library. They should adopt the knowledge about modern technologies and must apply to library functions to develop the web based library services more effectively.

Table 69

Availability of Web based Services provided by the EC Libraries in Kerala (Accreditation-Wise)

Availability of Web based Services	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	22 (61.11%)	52 (81.25%)	74 (74.00%)
Medium	5 (13.88%)	6 (9.37%)	11 (11.00%)
High	9 (25.00%)	6 (9.37%)	15 (15.00%)
Chi-square = 5.440**; p-value = 0.066			

** Significant at 0.01 level

Accreditation-wise difference in the availability of web based services provided by EC libraries in Kerala were analysed with Chi-square test and presented in table 69. Since the p-value is greater than the level of significance it can be concluded that there exists no significant difference between the NBA accredited and non-accredited ECs in the availability of web based services.

4.3 ICT and Network Infrastructure Facilities in Libraries

Information and Communication Technology (ICT) makes a tremendous impact on library's operations, services, users and staff. In broad terms the ICT consists of all modern technical means used to store and handle information, its communication through computer and related hardware, communication networks technology and necessary software etc. ICT is significant to the libraries to achieve its goals for management of information, effective services and extension of boundaries from the four-walls to the globe. ICT presents an opportunity to libraries to provide value-added information services and access to a wide variety of digital-based

information sources to their clients. Libraries are using modern ICT to automate their core functions, implement efficient and effective library cooperation and resource sharing through networks. They use ICT to implement the management information systems (MIS), develop institutional repositories (IR) of digital local content, and digital libraries. The section covers the availability of ICT tools, status of automation, digital library, institutional repository, consortia membership and availability of network infrastructure facilities of EC libraries in Kerala.

4.3.1 Availability of ICT Tools

The modern libraries are using ICT based tools and services for enhancement of their services such as library automation, digital archives, library 2.0 and mobile phones etc. The use of these technologies differs in different libraries considering the scope, objectives and funds available and it has some distinguished qualities in every stage of development. There is a symbiotic relationship between the library and ICT, such that any development in ICT accelerates the development of the library. In the same vein, any development in the library today can only be through the development of ICT. In this modern era, libraries are totally dependent on ICT based tools and services to fulfil the 'HI-TECH' users need. (Duragannavar & Manjunath, 2018). The EC librarians were enquired about the availability of ICT tools in their libraries. The category-wise response from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise response from EC libraries in Kerala were presented in table 70 and table 71 respectively.

Table 70
Availability of ICT Tools in the libraries of NBA accredited ECs
(Category-Wise)

ICT Tools	Category					
	Govt.		Under Govt. Dept.		Self-financing	
	Availability	Average Availability	Availability	Average Availability	Availability	Average Availability
Computer	11 (100%)	16.55	7 (100%)	14.71	18 (100%)	39.94
Laptop	6 (54.55%)	0.45	3 (42.86%)	0.43	4 (22.22%)	0.28
Scanner	9 (81.82%)	1.09	4 (57.14%)	0.57	16 (88.89%)	1.28
Barcode scanner	11 (100%)	2.55	7 (100%)	2.43	17 (94.44%)	2.83
Printer	11 (100%)	2	7 (100%)	1.71	18 (100%)	2.11
Webcamera	4 (36.36%)	0.18	2 (28.57%)	0.43	9 (50%)	3.39
DVD/VCD	7 (63.64%)	134.18	2 (28.57%)	340	11 (61.11%)	971.5
Microphone	2 (18.18%)	0.18	0 (0.00%)	0	8 (44.44%)	4.17
LCD Projector	2 (18.18%)	0.18	1 (14.29%)	0.14	6 (33.33%)	0.39
Ipods	1 (9.09%)	0.09	0 (0.00%)	0	0 (0.00%)	0
speakers	4 (36.36%)	1.27	3 (42.86%)	0.71	9 (50%)	3.89
RFID Reader	4 (36.36%)	0.45	0 (0.00%)	0	2 (11.11%)	0.44
Backup Devices	9 (81.82%)	2.18	6 (85.71%)	1.14	13 (72.22%)	1.67

The data from table 70 reveals that all NBA accredited ECs' libraries have the availability of computers and the average availability of computer is high in the libraries of Self financing ECs (39.94) When compared to Government and Under Government department EC libraries which average availability of computers are 16.55 and 14.71 respectively. At the same time the laptops are available in more than 50 percent of Government EC libraries (54.55%) and it is also available in more than 40 percent of EC libraries under Government departments (42.86%) and more than 20 percent of Self financing libraries (22.22%). When checking the average availability of laptops, it is visible from the table that the Government EC libraries are high (0.45) followed by the EC libraries under Government departments (0.43) and Self financing (0.28). In the meantime the scanners are available in a vast majority of Self financing

EC libraries (88.89%), Government EC libraries (81.82%) and around 60 percent of EC libraries under Government departments (57.14%). The average availability of scanners seems to be high in Self financing EC libraries (1.28) followed by Government and EC libraries under Government departments as 1.09 and 0.57 respectively. The barcode scanners are available in all Government and EC libraries under Government departments and it seems to be available in a large majority of Self financing EC libraries (94.44%). The average availability of barcode scanners are high in Self financing EC libraries (2.83) followed by Government EC libraries (2.55) and libraries under Government departments (2.43).

When checking the availability of printers in the libraries of NBA accredited ECs, it is observed that the printers are available in all three categories of libraries. The average availability of printers seems to be high in Self financing EC libraries (2.11) followed by Government (2) and EC libraries under Government departments (1.71). The availability of web camera seems to be available in 50 percent of Self financing ECs, a good number of other two category EC libraries also possess the web camera. The average availability of web camera is found to be high in Self financing EC libraries (3.39) followed by EC libraries under Government departments (0.43) and Government EC libraries (0.18). The DVD/VCD collections are available above 60 percent of Government and Self financing libraries whereas only two libraries under Government departments (28.57%) report the availability of the same. When considering the average availability of DVD/VCD collections it indicates that the Self financing EC libraries are high (971.5) than that of other two category of libraries. The microphone is available in a good number of Self financing EC libraries (44.44%) and a few Government EC libraries. The average availability of microphone is also high (4.17) in Self financing EC libraries.

A good number of Self financing EC libraries report the availability of LCD projector (33.33%) whereas only a few percent of Government (18.18%) and EC libraries under Government departments (14.29%) report the availability of the same. The average availability of LCD projector also seems to be high in the libraries of Self financing EC libraries (0.39) when compared to other two categories of libraries. Fifty percent of Self financing ECs report the availability of speakers whereas a good number of EC libraries under Government departments (42.86%) and Government EC libraries (36.36%) report the availability of the same. When checking the average

availability of speakers it can be seen that Self financing EC libraries are high (3.89) when compared to other categories of libraries. A good number of Government ECs (36.36%) and a few self financing ECs (11.11%) noted the availability of RFID reader in their libraries and average availability of RFID reader seems to be high in Government EC libraries (0.45). A vast majority of EC libraries under Government departments (85.71%), Government (81.82%) and Self financing (72.22%) libraries record the availability of backup devices and the average availability of the same comes to be high in Government EC libraries (2.18).

The overall analysis of the data from the table reveals that the availability and average availability of ICT tools are high in Self financing EC libraries when compared to other two categories of libraries.

Table 71

Availability of ICT Tools in EC Libraries in Kerala (Accreditation-Wise)

ICT Tools	Accreditation Status				Total	
	NBA Accredited		Non-NBA Accredited			
	Availability	Average Availability	Availability	Average Availability	Availability	Average Availability
Computers	36 (100%)	23.73	64 (100%)	12.76	100 (100%)	18.25
Laptop	13 (36.11%)	0.39	11 (17.19%)	0.83	24 (24.00%)	0.61
Scanners	29 (80.56%)	0.98	43 (67.19%)	1.06	72 (72.00%)	1.02
Barcode Scanners	35 (97.22%)	2.60	55 (85.94%)	1.91	90 (90.00%)	2.26
Printers	36 (100%)	1.94	58 (90.63%)	1.53	94 (94.00%)	1.74
Web Camera	15 (41.67%)	1.33	11 (17.19%)	4.92	26 (26.00%)	3.13
DVD/ VCD	20 (55.56%)	481.89	20 (31.25%)	339.23	40 (40.00%)	410.56
Microphone	10 (27.78%)	1.45	8 (12.50%)	9.86	18 (18.00%)	5.66
LCD Projectors	9 (25.00%)	0.24	8 (12.50%)	1.00	17 (17.00%)	0.62
I Pods	1 (2.78%)	0.03	2 (3.13%)	0.00	3 (3.00%)	0.02
Speakers	17 (47.22%)	1.96	21 (32.81%)	2.57	38 (38.00%)	2.27
RFID Reader	6 (16.67%)	0.30	5 (7.81%)	0.60	11 (11.00%)	0.45
Backup devices	28 (77.78%)	1.66	38 (59.38%)	2.14	66 (66.00%)	1.90

Table 71 displays the availability and average availability of ICT tools in EC libraries in Kerala. It clears that all EC libraries in Kerala possess computers and the average availability of computers in NBA accredited ECs are high (23.73) when compared to non-NBA accredited ECs. A good number of NBA accredited ECs' libraries have laptops (36.11%) whereas a limited number of non-NBA accredited ECs' libraries report the availability of laptops (17.19%) in their libraries. The average availability of laptops seems to be high in the libraries of non-NBA accredited ECs (0.83). Scanners are available in majority of ECs and the average availability of scanners are higher in non-NBA accredited ECs (1.06). In the case of barcode scanners the table displays that it is available in a large majority of EC libraries in Kerala. The average availability of barcode scanners seems to be high in NBA accredited EC libraries (2.60). Printers are available in all NBA accredited and a large majority of non-NBA accredited ECs. The average availability of printers seems to be high in the libraries of NBA accredited ECs (1.94). Web Camera is available in a good number of NBA accredited ECs libraries (41.67%) whereas it is available in a limited number of libraries of non-NBA accredited ECs (17.19%). The average availability of web camera is high in non-NBA accredited EC libraries (4.92). DVD/VCD collections are when available in more than 50 percent of NBA accredited ECs' libraries (55.56%) it seem to be available only more than 30 percent of non-NBA accredited ECs' libraries (31.25%). The average availability of DVD/VCD collection appear to be high in the libraries of NBA accredited ECs (481.89). When checking the availability of microphone in EC libraries in Kerala, it is noted that microphone is available in more than one fourth of NBA accredited ECs' libraries; it seems to be available in a low number of non-NBA accredited ECs' libraries (12.50%). The average availability of microphone is high in the libraries of non-NBA accredited ECs (9.86). The LCD projector is available in 25 percent of NBA accredited ECs whereas it is available in a limited number of non-NBA accredited ECs (12.50%). The average availability of LCD projector seems to be high in non-NBA accredited EC libraries (1.00). The speaker is available in a good number of EC libraries and its average availability is reported to be high in non-NBA accredited ECs' libraries (2.57). The availability of RFID reader is noted in a limited number of EC libraries in Kerala and availability of backup devices like pen drive and external hard disc are reported in the majority of EC libraries and its average availability is reported as high in the libraries of non-NBA accredited ECs (2.14).

As a whole it can be concluded from the table that there is difference visible in the availability and average availability of ICT tools in between the libraries of NBA accredited and non-accredited ECs in Kerala. When checking the availability of ICT tools at percent level, the libraries of NBA accredited ECs are high whereas by checking the average availability of ICT tools the libraries of non-NBA accredited ECs come first than the other category of ECs. As Kannappanavar and Manjunatha (2011) suggested in their study that as computers and communication infrastructures are the prerequisites of the present era, libraries are to provide more funds and trained manpower to maintain and extend better service to the engineering college library users.

4.3.2 Availability of ICT Facilities

Libraries are now being required to perform functions that are specifically targeted to users in the context of automation, computerization, instant retrieval, prompt dissemination and online feedback. Computers have become an essential part of modern libraries in order to keep up with the current need of information. Thus, automation and digitization has become an essential requirement for achieving total quality in libraries. So many internet facilities are provided in the library. Automation is the technique of mechanization of library house-keeping operations predominantly by computers so as to provide software's like KOHA, SOUL, LIBSYS, LIB SOFT etc. This software has been designed to computerize and handle all types of libraries. Library software is able to run issues, returns magazine / newspaper subscription, fine and balance of payments fine from members, cataloguing / OPAC / powerful web based such facility, various information for documents keeping and review purposes, according to end user requirements (Belsare, 2013). An Institutional Repository is an intellectual output of the Institution in the form of digital collections. The institutional repositories improve scholarly communication and disseminate the research outputs of organizations to the community. IR could be a student's theses and project reports; faculty's publications, lecture notes and presentation etc (Patra, 2014). A library consortium is a gathering of libraries who accomplice to facilitate exercises, share assets, and consolidate ability. Consortia are constituted for frequently being helpful for building up a formal structure in regards to asset offering to formal assertion by every member library. A library Consortium arrangement can be at the nearby, territorial, state, national and institutional level (Duragannavar & Manjunath, 2018).

The EC librarians were enquired about the ICT facilities available in their libraries. The category-wise response from the libraries of ECs which have the accredited programs of NBA and status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 72 and table 73 respectively.

Table 72

**Availability of ICT Facilities in the Libraries of NBA accredited ECs
(Category-Wise)**

ICT Facilities	Category		
	Govt.	Under Govt. Dept.	Self-financing
Status of Automation			
Fully Automated	9 (81.82%)	4 (57.14%)	13 (72.22%)
Partially Automated	2 (18.18%)	3 (42.86%)	5 (27.78%)
Automation Software Used			
Koha	8 (72.73%)	7 (100%)	5 (27.78%)
Bookmagic	3 (27.27%)	0	1 (5.56%)
Autolib	0 (0.00%)	0	3 (16.67%)
Soul	0 (0.00%)	0	1 (5.56%)
Others	0 (0.00%)	0	8 (44.44%)
Availability of Digital Library			
Yes	11 (100%)	7 (100%)	18 (100%)
Digital Library Software Used			
Dspace	7 (63.63%)	5 (71.43%)	13 (72.22%)
Other	4 (36.36%)	2 (28.57%)	5 (27.78%)
Availability of Institutional Repository			
Yes	4 (36.36%)	0	9 (50.00%)
No	7 (63.34%)	7 (100%)	9 (50.00%)
Have you digitized any of the library collection			
Yes	3 (27.27%)	3 (42.85%)	14 (77.78%)
No	2 (18.18%)	1 (14.29%)	0
No, but plan for future	6 (54.55%)	3 (42.86%)	4 (22.22%)
Digitalised resources available in Institutional repositories			
	N=3	N=3	N=14
Books	2 (66.67%)	1 (33.33%)	3 (21.43%)
Journals	2 (66.67%)	2 (66.67%)	5 (35.71%)
Theses/Dissertations/Project Reports	3 (100%)	2 (66.67%)	7 (50%)
Exam Question Papers	3 (100%)	3 (100%)	14 (100%)
Membership in any Consortia			
Yes	6 (54.55%)	5 (71.43%)	12 (66.67%)
No	5 (45.45%)	2 (28.57%)	6 (33.33%)

Category-wise analysis of the status of automation in the libraries of NBA accredited ECs displays in the table 72 reveals that a greater part of Government EC libraries fully automated (81.82%) their libraries whereas a few number of them automate their library partially (18.18%). It can be interpreted from the table that the best part of Self financing EC libraries completely automated (72.72%) their libraries and one fourth of them seem to be partially automated (27.78%) their libraries. In the meanwhile, it is observed that 57.14 percent of EC libraries under Government departments have automated their libraries completely and 42.86 percent of them have automated the libraries partially. The overall analysis of the table results that more percent of Government EC libraries seem to be fully automated than that of other two categories of libraries.

It is evident from the table 72 which describes the category-wise analysis of automation software used by the libraries of NBA accredited ECs that a large portion of Government EC libraries automate their libraries with Koha (72.73%) and around one fourth of them automate their libraries with Book Magic (27.27%) software. It is interesting to note that all EC libraries under Government departments automate their libraries with the open source software Koha. At the same time when considering the software used by the libraries of Self financing ECs, it can be observed that a good number of them used locally developed softwares (44.44%), one fourth of them used Koha (27.78%) and a small portion of them used the automation software like Autolib (16.67%), Book Magic (5.56%) and Soul (5.56%). From the overall analysis of the data it is interesting to record that all the libraries of ECs under Government departments and a best part of Government EC libraries used the open source software Koha for their automation and suggest the self financing ECs to use Koha for automation of their libraries instead of using commercial softwares.

The table 72 indicates that the digital library is available in all category of NBA accredited ECs and a great majority of them used the software Dspace in their digital library. It is also noted that a good number of Government (36.36%) and around one fourth of EC libraries under Government departments (28.57%) and Self

financing EC libraries (27.78%) use other locally developed software in their digital library.

It is clear from table 72 that out of 36 NBA accredited ECs under study, a good number of Government EC libraries (36.36%), and 50 percent of Self financing EC libraries report the availability of institutional repositories. It is also reported from the table that all libraries belongs to ECs under Government departments, majority of Government EC libraries (63.34%) and 50 percent of Self financing EC libraries do not have the availability of institutional repositories.

The EC librarians enquire whether they are digitising their resources and if they are doing what are the resources which they digitize in their libraries. It is clear from table 72 that the best part of Self financing ECs (77.78%), a good number of ECs under Government departments (42.85%) and a few Government ECs (27.27%) are digitizing their resources. More than fifty percent of Government ECs (54.55%), nearly fifty percent of ECs under Government departments (42.86%) and a few Self financing EC libraries (22.22%) report that they are planning for digitization of their resources in the future. It is also visible from the table that all Government EC libraries which has reported of starting digitization of their library resources have the collection of exam question papers and theses/dissertations / project works, majority of them reports the availability of digitised copy of books (66.67%) and journals (66.67%). When considering the matter of ECs under Government departments, it is observed that all libraries have the collection of digitalised question papers and majority of them have theses/dissertations/project works (66.67%) and journal collection, only few of them have digitised collection of books (33.33%). At the same time all Self financing EC libraries report the availability of exam question papers, 50 percent of them have theses/dissertations/project works, a good number of them report the availability of digitalised journals (35.71%) and few of them report the availability of digitised copy of books (21.43%). The overall analysis of the table interprets that compared to other two categories of EC libraries, Self financing EC libraries are doing the digitization work of their resources more and all the three category of libraries have digitised collection of question papers and theses/dissertations/ project reports.

Category-wise analysis of NBA accredited ECs' libraries membership in any consortia explained in table 72 implies that around two third of EC libraries under

Government departments (71.43%), Self financing EC libraries (66.67%) and more than 50 percent of Government EC libraries (54.55%) have the membership in any of the library consortia.

Table 73

Availability of ICT Facilities in EC Libraries in Kerala (Accreditation-Wise)

ICT Facilities	Accreditation Status				Total	
	NBA Accredited		Non-NBA Accredited			
Status of Automation						
Fully Automated	26	(72.22%)	38	(59.38%)	64	(64.00%)
Partially Automated	10	(27.78%)	26	(40.62%)	36	(36.00%)
Not Automated	0	0	0	0	0	0
Automation Software Used						
Koha	20	(55.56%)	31	(48.44%)	51	(51.00%)
Bookmagic	4	(11.11%)	10	(15.63%)	14	14.00%
Autolib	3	(8.33%)	1	(.56%)	4	(4.00%)
Soul	1	(2.78%)	3	(4.69%)	4	(4.00%)
Libsoft	0	0	9	(14.06%)	9	9.00%
Others	8	(22.22%)	10	(15.62%)	18	18.00%
Availability of Digital Library						
Yes	36	(100%)	38	(59.38%)	74	(74.00%)
No	0	0	26	(40.62%)	26	26.00%
Digital Library Software Used						
Dspace	25	(69.44%)	31	(81.58%)	56	(75.68%)
Other	11	(30.56%)	7	(18.42%)	18	(24.32%)
Availability of Institutional Repository						
Yes	13	(36.11%)	10	(15.63%)	23	(23.00%)
No	23	(63.89%)	54	(84.38%)	77	77.00%
Have you digitized any of the library collection						
Yes	20	(55.56%)	24	(37.50%)	44	44.00%
No	3	(8.33%)	11	(17.19%)	14	14.00%
No, but plan for future	13	(36.11%)	29	(45.31%)	42	42.00%
Availability of digitized resources						
	N=20		N=24		N=44	
Books	6	(30.00%)	10	(41.67%)	16	36.36%
Journals	9	(.00%)	11	(45.83%)	20	(45.45%)
Theses/Dissertation/Project Reports	12	(60.00%)	13	(54.17%)	25	56.82%
Exam Question Papers	20	(100%)	20	(83.33%)	40	(90.91%)
Membership in any Consortia						
Yes	23	(63.89%)	18	(28.13%)	41	(41.00%)
No	13	(36.11%)	46	(71.88%)	59	59.00%

NBA accreditation-wise analysis of status of automation in EC libraries in Kerala illustrated in table 73 explains that nearly three fourth of libraries of ECs which have the NBA accredited programs fully automated (72.22%) their libraries and more than 25 percent of them automate their libraries partially (27.78%). In the meantime the libraries of ECs which do not have NBA accredited programs reported that nearly three fifth of them automated their libraries completely (59.38%) whereas nearly 50 percent of them automated their libraries partially (40.63%). As a whole it can be concluded from the table that the majority of EC libraries in Kerala fully automated their libraries and a good number of them automated their libraries partially. A high majority of libraries from NBA accredited ECs automated their libraries fully when compared to the libraries which are not accredited by NBA.

Table 73 which displays the NBA accreditation-wise analysis of automation software used by EC libraries in Kerala reveals that more than 50 percent of NBA accredited ECs use Koha software (55.56%) for automation in their libraries. A limited number of them use software like Bookmagic, Autolib and Soul. It is also noticed from the table that more than 20 percent of NBA accredited EC libraries use software like Campusbook, Linways, Topscorer etc. When checking the case of the libraries of non-NBA accredited ECs, it is visible that nearly 50 percent of them use Koha software (48.44%) for automation, 10 libraries among them use Bookmagic (15.63%), 9 libraries among them use the software Libsoft (14.06%) and a limited number of them use the automation software like Soul, Autolib, Linways and other locally developed software in their libraries. Altogether it can be assumed from the table that more than 50 percent of EC libraries use the software Koha to automate their libraries and there is not much difference visible in the case of automation software used in the libraries of NBA accredited and not accredited ECs in Kerala.

Data from table 73 indicates that all NBA accredited ECs and nearly 60 percent of non-NBA accredited ECs have digital libraries and 69.44 percent of NBA accredited and 81.58 percent of non-NBA accredited ECs used Dspace software in their digital library. It is also noted from the table that a good number of NBA

accredited (30.56%) and a limited number of non-NBA accredited (18.42%) ECs use other locally developed software in their digital library. As a whole it can be understood from the table that majority of ECs in Kerala have digital library. When all NBA accredited ECs report the availability of digital libraries, a good number of libraries from non-NBA accredited ECs report the unavailability of digital library. Dspace is reported as the commonly used digital library software by majority of libraries from both category of ECs.

The availability of institutional repositories in EC libraries in Kerala illustrated in table 73 highlights that a good number of ECs which have the accredited programs of NBA have the availability of institutional repository (36.11%) in their library. While checking the availability of Institutional repositories in ECs which do not have the accredited programs of NBA, it conveys that only a limited number of them have institutional repositories (15.63%) in their libraries and a large majority of them report that they didn't have institutional repositories (84.38%) in their libraries. As a whole, it can be concluded from the table that more than three fourth of EC libraries in kerala do not have institutional repositories. When a good number of ECs which have the accredited programs of NBA report that they have institutional repositories in their libraries, only a limited number of ECs which do not have accredited programs of NBA report the availability of institutional repositories in their libraries.

NBA accreditation-wise analysis of status of digitized resources in EC libraries in Kerala illustrated in table 73 reported that more than 50 percent of ECs which have the accredited programs of NBA doing digitization of their resources (55.56%), a good number of them report that they have plan for starting digitization of their resources soon (36.11%) and very few among them respond that they are not doing digitization of any of their resources (8.33%). ECs which have the accredited programs of NBA further asked about the resources they digitized in their libraries and they respond that all of them digitize the question papers (100%), majority of them digitize theses/dissertations/project reports (60%) and a good number of them digitize journals (45%) and books (30%). At the same time a good number of ECs

which do not have the accredited programs of NBA disclose that they are doing digitization of their information resources (37.50%), nearly 50 percent of them announce that they have plan for digitizing resources in future (45.31%) and a limited number of them report that they are not doing digitization of any of their resources (17.19%). The ECs which do not have the accredited programs of NBA further asked about the resources that they digitized in their libraries and a large majority of them respond that they digitize the question papers (83.33%), more than 50 percent of them report that they digitize theses/dissertations/project reports (54.17%) and a good number of them disclose that they digitize journals (45.83%) and books (41.67%).

Overall analysis of data shows that when high percent of ECs which have the accredited programs of NBA are digitizing their resources, high percent of ECs which do not have the accredited programs of NBA have the plan for digitization of resources in their libraries. It is also noted that the EC libraries in Kerala mainly digitize the resources like question papers and theses/dissertations/project reports.

NBA accreditation-wise data regarding the EC libraries membership in any consortia illustrates in table 73 conveys that more than 50 percent of ECs which have the accredited programs of NBA have membership in any consortia. At the same time ECs which do not have the accredited programs of NBA disclose that nearly 30 percent of them have membership in any consortia (28.13%). Overall analysis shows that nearly sixty percent of EC libraries in Kerala do not have membership in any consortia. When the majority of ECs which have the accredited programs of NBA report that they have membership in any consortia, majority of ECs which do not have the accredited programs of NBA respond that they do not have membership in any consortia.

4.3.3 Network Infrastructure of the Libraries

Network is a common pool. One can easily exchange, transfer and provide information through a network. The trend of networks is evolving much more globally. The availability of network infrastructure today is more affordable than it

was at its outset. Therefore, the majority of EC libraries build network infrastructure (both wired and wireless) in order to extract maximum outcome. It is an essential element for building a library system on which the library resources and services can be actively circulated and distributed. Libraries are trusted for producing and providing authoritative, reliable information to users in a wide variety of disciplines through a network. It provides access not only to library databases, a variety of online full-text and abstract databases, locally-produced reference databases, document delivery services but also provides e-publishing, e-learning, alert, blog and wiki services. By using network infrastructure facilities, the user (faculty, students, researchers and staff) is able to get benefitted by sharing resources, expertise, experiences etc. An equipped and effective network infrastructure facilities in the library is not only attracting a wider audience to access, search and retrieve resources but also reducing their cost, time and replication works. It increases the institutional productivity and improves the visibility (Rao & Choudhury, 2010).

The EC librarians were enquired about the network infrastructure facilities available in their libraries and the category-wise response from the libraries of ECs which have the accredited programs of NBA and status of NBA accreditation -wise response from EC libraries in Kerala were presented in table 74 and table 75 respectively.

Table 74
Network Infrastructure Facilities in the Libraries of NBA Accredited ECs
(Category-Wise)

Network Infrastructure Facilities		Category		
		Govt.	Under Govt. Depts.	Self-financing
Availability of LAN facility	Yes	11 (100%)	7 (100%)	18 (100%)
	No	0 (0.0%)	0 (0.0%)	0 (0.0%)
Network in the library	Independent	0 (0.0%)	0 (0.0%)	0 (0.0%)
	Part of Institution	11 (100%)	7 (100%)	18 (100%)
Transmission media used as part of library	Wired	7 (63.6%)	1 (14.3%)	1 (5.6%)
	Wireless	0 (0.0%)	0 (0.0%)	0 (0.0%)
	Both	4 (36.4)	6 (85.7%)	17 (94.4%)
Type of internet connection in the library	Leased line	3 (27.3%)	2 (28.6%)	7 (38.9%)
	Broadband/other cable networks	8 (72.7%)	5 (71.4%)	11 (61.1%)
Internet Service Provider (ISP)	BSNL	11 (100%)	6 (85.7%)	10 (55.6%)
	Reliance	0 (0.0%)	0 (0.0%)	3 (16.7%)
	Asianet	0 (0.0%)	0 (0.0%)	4 (22.2%)
	Airtel	0 (0.0%)	0 (0.0%)	1 (5.6%)
	Railtel	0 (0.0%)	1 (14.3%)	0 (0.0%)
Access speed (Bandwidth) of internet	1-25Mb	0 (0.0%)	0 (0.0%)	0 (0.0%)
	26-50 Mb	1 (9.1%)	0 (0.0%)	3 (16.7%)
	51-75 Mb	2 (18.2%)	2 (28.6%)	0 (0.0%)
	76-100 Mb	8 (72.7%)	5 (71.4%)	12 (66.7%)
	above 100 Mb	0 (0.0%)	0 (0.0%)	3 (16.7%)
Personnel supervising internet/networking section in your library	LIS professional	1 (9.1%)	2 (28.6%)	3 (16.7%)
	Computer Science Expert	10 (90.9%)	4 (57.1%)	15 (83.3%)
	Outsourcing	0 (0.0%)	1 (14.3%)	0 (0.0%)

The data from table 74 indicates that all categories from NBA accredited ECs' libraries have LAN facilities and all libraries work under part of its institutional network. Transmission media used as part of a library may be wired, wireless or both. The data of category-wise analysis of the NBA accredited ECs' illustrated in table 74 reveals that a vast majority of Self financing (94.4%) and ECs under Government

departments (85.7%) and a good number of Government Libraries (36.4%) used both wired and wireless media for transmission. It is also noted that the transmission media used in majority of Government EC libraries are wired (63.6%) and one college from the other two categories of libraries use only wired connection as transmission media.

It can be seen from table 74 that a major part of EC libraries from Government (72.7%), Under Government departments (71.4%) and Self financing (61.1%) use broadband/other cable networks for internet connection. In the meanwhile it can also be seen that a good number of Self financing EC libraries (38.9%), a few number of EC libraries under Government departments (28.6%) and Government libraries (27.3%) used leased line for internet connection.

The data from table 74 discloses that all Government, a wide majority of EC libraries under Government departments (85.7%) and above 50 percent of Self financing EC libraries (55.6%) consider BSNL as their Internet Service Provider. It is also clear from the table that the Internet Service Providers like Reliance, Asianet and Airtel were used by only a few number of Self financing EC libraries.

From the category-wise analysis of the NBA accredited ECs' libraries, it is obviously clear from table 74 that a significant proportion of Government (72.7%), libraries under Government departments (71.4%) and Self financing EC libraries (66.7%) have internet bandwidth in between 76 to 100 Mbps. A very low number of EC libraries from three categories report the bandwidth of between 26 to 75 Mbps. It is interesting to note from the table that 16.7 percent of Self financing EC libraries have an internet bandwidth of above 100 Mbps.

Category-wise analysis of the data from table 74 highlights that in a major part of Government (90.9%), Self financing (83.3%) and nearly 60 percent of EC libraries under Government departments, it is the computer science expert who supervises the internet / networking section. It is also interesting to note that in a few libraries from three categories of ECs the LIS professional themselves supervises the internet/network connection. A major part of all categories of libraries have a bandwidth in between 76 to 100 Mbps.

Table 75
Network Infrastructure Facilities in EC Libraries in Kerala
(Accreditation-Wise)

Network Infrastructure Facilities		Accreditation Status		Total
		NBA Accredited	Non-NBA Accredited	
Availability of LAN Facility	Yes	36 (100%)	64 (100%)	100 (100%)
Network in the library	Independent	0 (0.00%)	9 (14.06%)	9 (9.00%)
	Part of Institution	36 (100%)	55 (85.94%)	91 (91.00%)
Transmission media used as part of the library	Wired	9 (25.00%)	47 (73.44%)	56 (56.00%)
	Wireless	0 (0.00%)	0 (0.00%)	0 (0.00%)
	Both	27 (75.00%)	17 (26.56%)	44 (44.00%)
Type of internet connection in the library	Leased line	12 (33.33%)	13 (20.31%)	25 (25.00%)
	VPN (KSWAN	0 (0.00%)	2 (3.13%)	2 (2.00%)
	Broadband/other cable networks	24 (66.67%)	49 (76.56%)	73 (73.00%)
Internet Service Provider (ISP)	BSNL	27 (75.00%)	58 (90.63%)	85 (85.00%)
	Jio	3 (8.33%)	3 (3.13%)	4 (4.00%)
	Asianet	4 (11.11%)	3 (4.69%)	7 (7.00%)
	Airtel	1 (2.78%)	0 (0.00%)	1 (1.00%)
	Railtel	1 (2.78%)	0 (0.00%)	1 (1.00%)
Access speed (Bandwidth) of internet	1-25Mb	0 (0.00%)	8 (12.50%)	8 (8.00%)
	26-50 Mb	4 (11.11%)	18 (28.13%)	22 (22.00%)
	51-75 Mb	4 (11.11%)	10 (15.63%)	14 (14.00%)
	76-100 Mb	25 (69.44%)	14 (21.88%)	39 (39.00%)
	Above 100 Mb	3 (8.33%)	14 (21.88%)	17 (17.00%)
Personnel supervising internet/networking section in the library	LIS professional	6 (16.67%)	4 (6.25%)	10 (10.00%)
	Computer Science Expert	29 (80.56%)	54 (84.38%)	83 (83.00%)
	Outsourcing	1 (2.78%)	4 (6.25%)	5 (5.00%)
	System administrator	0 (0.00%)	2 (3.13%)	2 (2.00%)

It is visible from table 75 that LAN facility is available in all EC libraries in Kerala and the library network of all ECs which have the accredited programs of NBA and most of the ECs which do not have the accredited programs of NBA working as part of its parent institution.

It is observed from table 75 which reveals the accreditation-wise analysis of ECs usage of transmission media in their libraries that three fourth of ECs which have the accredited programs of NBA used both (75%) wired and wireless media for transmission in their libraries and one fourth of them used wired media (25%) for transmission. When considering the transmission media used as part of the libraries of ECs which do not have the accredited programs of NBA, it appears that nearly three fourth of them used wired media (73.44%) for transmission and more than one fourth of them adopt both (26.56%) wired and wireless media for transmission in their libraries. Overall analysis of transmission media used as part of libraries in ECs in Kerala clears that more than fifty percent of libraries use wired media for transmission. When most of the ECs which have the accredited programs of NBA used both wired and wireless media for transmission the main part of ECs which do not have accredited programs of NBA used only wired media for transmission in their libraries.

NBA accreditation-wise analysis of the EC libraries displayed in table 75 reveals that the majority of ECs which have and do not have the accredited programs of NBA used broadband/other cable networks for internet connection in their libraries. It is also noted from the table that 33.33 percent of ECs which have the accredited programs of NBA and 20.31 ECs which do not have the accredited programs of NBA used leased line for internet connection in their libraries.

Accreditation-wise analysis of the data regarding the internet service provider in EC libraries in Kerala illustrated in table 75 affirms that three fourth of ECs which have the accredited programs of NBA and most of the ECs which do not have the accredited programs of NBA used BSNL as their internet service provider. A limited number of libraries from both categories of ECs considered other internet service providers like Asianet, Jio, Airtel etc.

Accreditation-wise analysis of the access speed of internet available in EC libraries in Kerala depicted in table 75 expresses that majority of ECs which have the accredited programs of NBA have the availability of bandwidth of internet in between 75-100 Mb (69.44%) and a very limited number of them report of having an internet bandwidth of 26-50 Mb (11.11%), 51.75 Mb (11.11%) and above 100 Mb (8.33%).

In the case of ECs which do not have the accredited programs of NBA more than one fourth of libraries respond the availability of internet bandwidth in between 26-50 Mb (11.11%) and a limited number of them report an internet bandwidth in between 76-100 Mb (21.88%), more than 100 Mb (21.88%), 51-75 Mb (15.63%) and 1-25 Mb (12.50%). Overall analysis shows that a good number of ECs in Kerala have an internet bandwidth between 76-100 Mb. When the majority of ECs which have the accredited programs of NBA report an internet bandwidth between 76-100 Mb, a main part of ECs which do not have the accredited programs of NBA report an internet bandwidth in between 26-50 Mb.

It is revealed from table 75 that most of the libraries of ECs in Kerala belong to NBA accredited (80.56%) and non-accredited NBA (84.38%) computer professionals are the personnel who supervise the internet/networking section. Only a few libraries report LIS professionals and outsource persons as the personnel who supervise the internet / networking section of the libraries. As a whole it is clear that computer science experts are the main personnel who supervise the internet /networking section of EC libraries in Kerala.

4.4 Collection Development of Library Resources

Collection development activities in a particular library are the backbone of the entire operations of the library. The efficiency of the library fully depends upon the collections and the efficient staff of the library. The library collections range from books to non-book materials such as online databases, e-journal and so on. It is necessary to establish the theoretical aspects - the concepts of collection development as the initial phases of the library information activities. Thus, the collection development can be defined as a process that permits the selection, acquisition and processing of library materials in varied formats, meant for users' current needs and their future requirements. (Rajendran, 2007).

A well defined long term Collection Development Policy (CDP) is needed to accomplish the task of developing a need based, balanced, representative and up to date collection. This policy minimizes the possibility of personal bias or preference in doing document selection (Agrapu, 2013). E-resources 'collection development' in libraries has been increasing significantly to meet the demand of the users, to face the competitiveness and to attract students, faculties and for better management (Patra,

2014). Collection development of E-resources is the process of planning, selecting, acquiring a balanced collection of library materials in a variety of electronic formats such as E-books, E-journals, media and online resources. It involves selection and deselection of current and retrospective E-resources based on user needs, planning strategies for continuing acquisition of E-resources looking into financial constraints and their usage and valuation of E-resources collections to determine how it serves users' needs (Mansur, 2012). The section discusses different methods used for selection and acquisition of library resources followed by evaluation and criteria/methods adopted for renewal/cancellation.

4.4.1 Status of Collection Development Policy

For systematic and effective development of library collections, a library always needs a policy document reflecting the objectives, nature, scope and purpose of the collection to be developed and managed. The guidelines in the form of policy documents assist the librarian in developing value added collections (Sasikala, Nagaratnamani & Dhanraju, 2014). The EC librarians were enquired about the status of collection development policy of their libraries and the category-wise response from the libraries of ECs which have the accredited programs of NBA and status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 76 and table 77 respectively.

Table 76

Status of Collection Development Policy in the Libraries of NBA Accredited ECs (Category-Wise)

Category	Status of CDP					
	Existence of CDP		Status of CDP		Separate policy for E-resource	
	Yes	No	Written	Unwritten	Yes	No
Government	10 (90.90%)	1 (9.09%)	9 (0.00%)	1 (10.00%)	9 (90.00%)	1 (10.00%)
Under Govt. Dept.	6 (85.71%)	1 (4.28%)	5 (83.33%)	1 (16.67%)	4 (66.67%)	2 (33.33%)
Self financing	16 (88.89%)	2 (11.11%)	11 (8.75%)	5 (31.25%)	10 (62.5%)	6 (37.5%)

The data from table 76 reveals that out of thirty six NBA accredited ECs, 90.9 percent of Government libraries, 88.89 percent of Self-financing libraries and 85.71 percent of EC libraries under Government departments report the existence of collection development policy. It is also noted from the ECs which reported the existence of collection development policy in their library that 90 percent of Government libraries, 83.33 percent of libraries under Government departments and 68.75 percent of Self financing EC libraries have written collection development policy. The ECs were asked about the existence of separate collection development policy for E-resources and the responses were recorded as 90 percent of Government, 66.67 percent of ECs under Government departments and 62.5 percent of Self financing EC libraries have separate collection development policy for E-resources.

The overall analysis of the status of collection development policy in the libraries of NBA accredited ECs show that most of the libraries from three category of ECs have written collection development policy and a better part of them have separate collection development policy for E-resources, Government EC libraries seem to be something high than other category of ECs at percent level.

Table 77

**Status of Collection Development Policy in the EC Libraries in Kerala
(Accreditation-Wise)**

Accreditation Status	Status of CDP					
	Existence of CDP		Status of CDP		Separate policy for E-resources	
	Yes	No	Written	Unwritten	Yes	No
NBA Accredited	32 (88.89%)	4 (11.11%)	25 (78.13%)	7 (21.88%)	23 (71.88%)	9 (28.13%)
Non-NBA Accredited	54 (85.71%)	10 (14.28%)	30 (55.56%)	24 (44.44%)	34 (62.96%)	20 (37.04%)
Total	86 (86.0%)	16 (16.0%)	55 (63.95%)	31 (36.05%)	57 (66.28%)	6 (33.72%)

It is perceived from table 77 that the best part of ECs which have the accredited programs of NBA have collection development policy (88.89%) in their libraries and most of their collection development policy is written (78.13%). It is also reported

that nearly three fourth of EC libraries have separate collection development policy (71.88%) for non-book materials/E-resources. When the ECs which do not have the accredited programs of NBA are concerned, it is observed that a biggest share of them have collection development policy (85.71%) in their libraries and more than 50 percent of their collection development policy is written (55.56%). It is also noticed that more than three fifths of them have separate collection development policy for non-book materials / E-resources.

As a whole it can be understood from the table that a large majority of EC libraries in Kerala have collection development policy, more than three fourth of their policy is written and the same percent of them have separate collection development policy for non-book materials/E-resources. There is not much difference between the libraries of NBA accredited and non accredited ECs in the existence of collection development policy.

4.4.2 Authorities Responsible for Selecting Library Resources

The Library Committee or the Book Selection Committee plays a pivotal role in the acquisition process. It consists of the head of the departments/ member representatives from departments, student representatives, principal and sometimes the library staff in the organization. They recommend the important documents to be procured in the library. The efficiency of book selection is reflected in selecting books on demand and putting them to right use. Dr S. R. Ranganathan's 2nd Law prescribes "Every reader his or her book". This law has an implication on book selection. The EC librarians were enquired about the authorities responsible for selecting documents in their libraries and category-wise response from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise response from EC libraries in Kerala were presented in table 78 and table 79 respectively.

Table 78**Authorities Responsible for Selecting Resources in the Libraries of NBA Accredited ECs (Category-Wise)**

Category	Principal	Dept. Head/ Faculty	Librarian	Student Representatives
Government	9 (81.82%)	9 (81.82%)	11 (100.0%)	8 (72.73%)
Under Govt. Dept.	5 (71.43%)	6 (85.71%)	7 (100.0%)	2 (28.57%)
Self-finance	14 (77.78%)	18 (100.0%)	18 (100.0%)	12 (66.67%)

From the data presented in table 78 it is evident that the librarian is included in all libraries of Government ECs for selecting documents, a high percentage of them report that the principal (81.82%), department head/faculty (81.82%) and student representatives (72.73%) also involved in the document selection process of libraries. When the libraries of ECs under Government departments are concern it is visible from the table that like Government ECs, librarian from all ECs, department head/faculty (85.71%) and principal (71.43%) from a vast majority of ECs take part in document selection but only limited number of students representatives (28.57%) are seem to be involved in selection of documents. Considering the matter of Self financing EC libraries it is observed that the librarian and department head/faculty from all ECs, principals (77.78%) from above three fourth of ECs and student representatives (66.67%) from majority of ECs take part in the document selection process of the libraries.

Overall analysis of data from the table shows that librarians, department heads/faculty and principals from all three categories of NBA accredited ECs have a major role in the document selection process of their libraries.

Table 79**Authorities Responsible for Selecting Resources in EC Libraries in Kerala (Accreditation-Wise)**

Authorities	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Principal	28 (77.78%)	41 (64.06%)	69 (69.00%)
Dept. Head/Faculty	33 (91.67%)	56 (87.50%)	89 (89.00%)
Librarian	36 (100%)	63 (98.44%)	99 (99.00%)
Student Representatives	22 (61.11%)	22 (34.38%)	44 (44.00%)
Others	4 (11.11%)	1 (1.56%)	5 (5.00%)

Data regarding the authorities responsible for selection of library resources in EC libraries in Kerala illustrated in table 79 explains that in all the libraries of NBA accredited ECs, the librarians are involved in the document selection process. Most of the libraries report the involvement of department head/faculty (91.67%) and majority of them report the participation of principal (77.78%) and student representatives (61.11%) in the selection process of documents to their library. In the meantime, the ECs which do not have the accredited programs of NBA reports that librarian (98.44%) and department head/faculty (87.50%) are involved in the process of document selection in a large majority of libraries. It is also identified from the table that more than 60 percent of non-NBA accredited ECs respond to the involvement of principal (64.06%) and a good number of them report the involvement of student representatives in the document selection process of their libraries.

The overall analysis of the table indicates that in almost all EC libraries in Kerala the librarian and in a large majority of ECs the department head/faculty have the main role of selecting documents to their library. As Shivakumaraswamy (2015) in a study of collection development practices in engineering college libraries of Mysore region commented that to satisfy the users the library professional must involve faculty members and other users in the selection of books and other resources in their library.

4.4.3 Tools/Sources used for Selection of Library Resources in EC Libraries

While marking decisions on selection of various titles, different selection tools will be consulted by the librarian and the staff (Sasikala, Nagaratnamani & Dhanraju, 2014). To ensure a consistent approach with regards to print resources, selection of e-resources for inclusion into collection is an important role for librarians (Patra, 2014). The section covers the tools used for selection of print and e-resources in EC libraries in Kerala.

4.4.3.1 Tools/Sources used for Selection of Print Resources in the Libraries

The EC librarians were enquired about the tools used for selection of print resources in their libraries and category-wise responses from the libraries of ECs which have the accredited programs of NBA is presented in table 80 and table 81 whereas NBA accreditation-wise responses from EC libraries in Kerala were presented in table 82 and table 83 respectively.

Table 80

Tools/Sources used for Selection of Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)

Tools	Category		
	Govt.	Under Govt. Dept.	Self-financing
Publisher catalogue through vendors	11 (100%)	7 (100%)	18 (100%)
Syllabus	11 (100%)	7 (100%)	18 (100%)
Book Reviews	7 (63.64%)	4 (57.14%)	13 (72.22%)
Reviews in Electronic Periodicals	8 (72.73%)	2 (28.57%)	8 (44.44%)
Vendor Websites	3 (27.27%)	3 (42.86%)	7 (38.89%)
Discussion Lists	7 (63.64%)	3 (42.86%)	9 (50.00%)
Observation of other college libraries websites	7 (63.64%)	5 (71.43%)	4 (22.22%)
User recommendations/suggestions	10 (90.91%)	6 (85.71%)	17 (94.44%)
Opinion from experts/faculty	8 (72.73%)	5 (71.43%)	15 (83.33%)
To ask librarians already purchasing to a product about their experiences	7 (63.64%)	2 (58.57%)	10 (55.56%)

The data regarding the tools used for selection of print resources in the libraries of NBA accredited ECs presented in table 80 discloses that all Government libraries consider the tools like publisher catalogue through vendors and syllabus, a best part of them consider the tools like user recommendation (90.91%), opinion from experts/faculty (72.73%), reviews in electronic periodicals (72.73%), book reviews (63.64%), observation of other college libraries (63.64%), discussion lists (63.64%) etc. At the same time, the EC libraries under Government departments report that all of them consider tools like publisher catalogue through vendors and syllabus for selecting print resources. A vast majority of them consider tools like user recommendations (85.71%), opinion from experts/faculty (71.43%) and observation of other college libraries/websites (71.43%). It is also found that more than 55 percent of them consider the tools like asking the librarians already purchased a product about their experience (58.57%), book reviews (57.14%) and nearly 50 percent of ECs under Government departments consider the tools like vendor websites (42.86%) and discussion lists (42.86%) for selecting print resources to their libraries.

In the meantime the Self financing EC libraries disclose that all of them consider the tools like publisher catalogue through vendors and syllabus for selecting print resources in their libraries. A lion's share of them adopts the tools like user recommendation/suggestion (94.44%), opinion from experts/faculty (83.33%) and book reviews (72.22%). It is also visible from the table that a good number of them consult the sources like asking the librarians already purchased a product about their experience (55.56%), discussion lists (50%), reviews in electronic periodicals (44.44%) and vendor websites (38.89%).

The overall analysis of the table shows that almost all libraries from three categories of NBA accredited ECs prefer tools like publisher catalogue through vendors, syllabus, user recommendation and opinion from experts/faculty for selecting print documents.

Table 81**Usage of Tools/Sources for Selection of Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)**

Usage of Tools	Category		
	Govt.	Under Govt. Dept.	Self-financing
Low	3 (27.27%)	2 (28.57%)	3 (16.66%)
Medium	1 (9.09%)	2 (28.57%)	7 (38.88%)
High	7 (63.63%)	3 (42.85%)	8 (44.44%)
Chi-square = 3.521**; p-value = 0.495			

** Significant at 0.01 level

The category-wise difference in the usage of tools/sources used for selection of print resources among the libraries of NBA accredited ECs are analysed with Chi-square test and presented in table 81. Since the p-value is greater than the level of significance it can conclude from the table that there exists no significant difference among the Government, under Government departments and Self financing EC libraries in the usage of tools used for print resource selection.

Table 82**Tools/Sources used for Selection of Print Resources in EC Libraries in Kerala (Accreditation-Wise)**

Tools	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Publisher catalogue through vendors	36 (100%)	56 (87.50%)	92 (92.00%)
Syllabus	36 (100%)	0 (0.00%)	36 (36.00%)
Book Reviews	24 (66.67%)	35 (54.69%)	59 (59.00%)
Reviews in Electronic Periodicals	18 (50.00%)	25 (39.06%)	43 (43.00%)
Vendor websites	13 (36.11%)	18 (28.13%)	31 (31.00%)
Discussion Lists	19 (52.78%)	18 (28.13%)	37 (37.00%)
Observation of other college libraries/websites	16 (44.44%)	17 (26.56%)	33 (33.00%)
User recommendations/suggestions	33 (91.67%)	44 (68.75%)	77 (77.00%)
Opinion from experts/faculty	28 (77.78%)	49 (76.56%)	77 (77.00%)
To ask librarians already purchasing to a product about their experiences	19 (52.78%)	28 (43.75%)	47 (47.00%)

Table 82 indicates the tools/sources used for selection of print resources in EC libraries in Kerala reveals that all the libraries of NBA accredited ECs use publisher catalogue through vendors as a main tool for selection of print resources. A larger part of them consider user recommendations/suggestions (91.67%), majority of them prefer opinion from experts/faculty (77.78%) and book review for document selection (66.67%). It is also observed from the table that 50 and more than 50 percent of libraries choose the tools like discussion list (52.78%), asking the librarians already purchasing the product about their experience (52.78%) and reviews in electronic periodicals (50%) as tools for printed resource selection. A good number of them respond that they observe the other college libraries /websites (44.44%) and vendor websites (36.11%) as tools for selection of printed resources in their libraries. When taking into the account of the ECs which do not offer NBA accredited programs, it shows that a large number of libraries consider publisher catalogue through vendors (87.50%) and opinion from experts/faculty (76.56%), majority of them adopts user recommendations/suggestions (68.75%) and book reviews (54.69%), a good number of them prefer ask the librarian purchasing a product about their experience (43.75%) and review in electronic periodicals (39.06%). It is also visible from the table that more than one fourth of libraries consider tools like vendor websites (28.13%), discussion lists (28.13%) and observation of other college websites (26.56%) to select the printed resources in their libraries.

As a whole it can be understood from the data that the EC libraries in Kerala mainly consider tools like publisher catalogue through vendors, user recommendations/suggestions, opinion from experts/faculty for printed resource selection. The libraries of NBA accredited ECs show an increase in the usage of tools for print resource selection at percentage level especially in tools like discussion lists, observation of other college libraries/websites, user recommendations/suggestions.

Table 83**Usage of Tools/Sources for Selection of Print Resources in EC Libraries in Kerala (Accreditation-Wise)**

Usage of Tools	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	8 (22.22%)	29 (45.31%)	37 (37.00%)
Medium	10 (27.77%)	17 (26.56%)	27 (27.00%)
High	18 (50.00%)	18 (28.12%)	36 (36.00%)
Chi-square = 6.395**; p-value = 0.041			

** Significant at 0.05 level

The accreditation-wise difference in the usage of tools used to select print resources between the EC libraries in Kerala are analysed with Chi-square test and presented in table 83. Since the p-value is less than the level of significance it is clear that there is a significant difference between the NBA accredited and non-NBA accredited ECs in the usage of tools used for print resource selection.

4.4.3.2 Tools used for Selection of E-Resources in the Libraries

The EC librarians were asked about the tools used for selection of E- resources in their libraries and category-wise response from the libraries of ECs which have the accredited programs of NBA is displayed in table 84 and table 85 whereas status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 86 and table 87 respectively.

Table 84**Tools/Sources used for Selection of E-resources in the Libraries of NBA Accredited ECs (Category-Wise)**

Tools	Category		
	Govt.	Under Govt. Dept.	Self-financing
Publisher catalogue through vendors	9 (81.82%)	6 (85.71%)	12 (66.67%)
Syllabus	6 (54.55%)	4 (57.14%)	10 (55.56%)
Book Reviews	4 (36.36%)	4 (57.14%)	3 (16.67%)
Reviews in Electronic Periodicals	6 (54.55%)	1 (14.29%)	7 (38.89%)
Vendor websites	2 (18.18%)	3 (42.86%)	4 (22.22%)
Discussion Lists	5 (45.45%)	2 (58.57%)	2 (11.11%)
Observation of other college libraries/websites	4 (36.36%)	2 (28.57%)	6 (33.33%)
Publishers'/vendor demos in seminars/conferences	1 (9.09%)	2 (28.57%)	7 (38.89%)
User recommendations/suggestions	7 (63.64%)	4 (57.14%)	9 (50.00%)
Opinion from experts/faculty	6 (54.55%)	5 (71.43%)	10 (55.56%)
To ask librarians already purchasing to a product about their experiences	3 (27.27%)	4 (57.14%)	7 (38.89%)
Trial offered by the publishers/vendors	2 (18.18%)	3 (42.86%)	7 (38.89%)
Consortiums	4 (36.36%)	3 (42.86%)	7 (38.89%)

It can be understood from table 84 that a major part of Government EC libraries consider publisher catalogue through vendors as the main tool for selecting E-resources. More than 50 percent of them consider tools like user recommendation (63.64%), opinion from experts (54.55%), reviews in electronic periodicals (54.55%) and syllabus (54.44%). It can also be observed from the table that a good number of Government ECs prefer discussion lists (45.45%), consortium (36.36%), and observation of other college libraries (36.36%) for selection of E-resources to their libraries. The table depicts that the best part of EC libraries under Government departments consider tools like publisher catalogue through vendors (85.71%) and opinion from experts (71.43%). It can also be seen from the table that 57.14 percent of them consult the tools like syllabus, book reviews, user recommendation and ask the librarian who already subscribed the product about their experience. A good

number of EC libraries under Government departments seem to consult the tools like consortium (42.86%), trial offered by the publisher (42.86%) and vendor websites (42.86%).

When considering the tools used by the Self financing EC libraries for selecting E-resources, it is evident from the table that majority of them consult the tools like publisher catalogue through vendors (66.67%), syllabus (55.56%), opinion from experts and user recommendation (50%). A good number of them consider the tools like consortium (38.89%), trial offered by the publisher (38.89%), to ask librarians already purchasing a product about their experience (38.89%), publisher demos in seminars (38.89%), reviews in electronic periodicals etc.

The overall analysis of the data reveals that the major tools used by all libraries from three category of NBA accredited ECs for selection of E-resources are publisher catalogue through vendors, user recommendation, Opinion from experts and syllabus. The ECs under Government departments are seem to be used more tools for E-resource selection than other two category of libraries.

Table 85

Usage of Tools/Sources for Selection of E-resources in the Libraries of NBA Accredited ECs (Category-Wise)

Usage of Tools	Category		
	Govt.	Under Govt. Dept.	Self-financing
Low	5 (45.45%)	3 (42.85%)	11 (61.11%)
Medium	2 (18.18%)	1 (14.28%)	1 (5.55%)
High	4 (36.36%)	3 (42.85%)	6 (33.33%)
Chi-square = 2.158**; p-value = 0.773			

** Significant at 0.01 level

The category-wise differences in the usage of tools used to select E-resources among the libraries of NBA accredited ECs are analysed with Chi-square test and illustrated in table 85. Since the p-value is greater than the level of significance it can conclude that there exists no significant difference among the Government, under Government departments and Self financing libraries of NBA accredited ECs.

Table 86**Tools/Sources used for Selection of E-Resources in EC Libraries in Kerala (Accreditation-Wise)**

Tools	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Publisher catalogue through vendors	27 (75.00%)	34 (53.13%)	61 (61.00%)
Syllabus	20 (55.56%)	0 (0.00%)	20 (20.00%)
Book Reviews	11 (30.56%)	15 (23.44%)	26 (26.00%)
Reviews in Electronic Periodicals	14 (38.89%)	16 (25.00%)	30 (30.00%)
Vendor websites	9 (25.00%)	11 (17.19%)	20 (20.00%)
Discussion Lists	9 (25.00%)	7 (10.94%)	16 (16.00%)
Observation of other college libraries/websites	12 (33.33%)	6 (9.38%)	18 (18.00%)
Publishers'/vendor demos in seminars/conferences	10 (27.78%)	9 (14.06%)	19 (19.00%)
User recommendation/suggestion	20 (55.56%)	19 (29.69%)	39 (39.00%)
Opinion from experts/faculty	21 (58.33%)	24 (37.50%)	45 (45.00%)
To ask librarians already purchasing to a product about their experiences	14 (38.89%)	18 (28.13%)	32 (32.00%)
Trial offered by the publishers/vendors	12 (33.33%)	11 (17.19%)	23 (23.00%)
Consortiums	14 (38.89%)	12 (18.75%)	26 (26.00%)

Table 86 indicating the tools used for selection of E-resources in EC libraries in Kerala show that about three fourth of ECs which have the accredited programs of NBA consider the publisher catalogue through vendors (75%) to select E-resources. Nearly 60 percent of libraries prefer the opinion from experts/faculty (58.33%) and user recommendation/suggestion (55.56%). A good number of them adopts the tools like consortium (38.89%), asking librarians already purchasing a product about their experience (38.89%), reviews electronic periodicals (38.89%), observation of other college libraries/websites (33.33%), trial offered by publishers/vendors (33.33%) etc.

Checking the tools used for selecting E-resources in the libraries of ECs which do not have the accredited programs of NBA, it is observed that more than 50 percent

of libraries consider publisher catalogue through vendors (53.13%). A good number of them consider opinions from faculty/experts (37.50%). More than one fourth of them prefer to user recommendation/suggestion (29.69%), ask librarians already purchasing a product about their experience (28.13%) and reviews in electronic periodicals (25%). It is visible from the table that only a few libraries from non-NBA category of ECs consider the other tools like book reviews (23.44%), vendor website (17.19%), trial offered by the publisher/vendor (17.19%) etc.

The overall analysis of tools used by the libraries of ECs in Kerala for selecting E-resources shows that they mainly prefer publisher catalogue through vendors and opinion from faculty/experts. The libraries of ECs which are accredited by NBA show an increase in the usage of tools for E-resource selection at percentage level.

Table 87

Usage of Tools/Sources for Selection of Library E-Resources in EC Libraries in Kerala (Accreditation-Wise)

Usage of Tools	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	19 (52.77%)	48 (75.00%)	67 (67.00%)
Medium	4 (11.11%)	7 (10.93%)	11 (11.00%)
High	13 (36.11%)	9 (14.06%)	22 (22.00%)
Chi-square = 6.790 **; p-value = 0.034			

**** Significant at 0.05 level**

The accreditation-wise difference in the usage of tools used to select E-resources between the EC libraries in Kerala are analysed with Chi-square test and presented in table 87. Since the p-value is less than the level of significance it is clear that there is a significant difference between the NBA accredited and non-NBA accredited EC libraries in their usage of tools used to select E-resources.

4.4.4 Criteria followed to Select the Library Resources

For library professionals to make informed choices, selection policies for all types of libraries should include criteria to guide in the resource selection process. The

criteria should be a blend of general, specific, and technical to enable library staff to select materials in all subject areas and formats. The selection of materials for the EC library should be consistent with the mission of the institution and support its curriculum and research needs in collaboration with the administrators, faculty, and staff. According to the Association of College & Research Libraries' Standards for Libraries in Higher Education, "Libraries provide access to collections sufficient in quality depth, diversity, format and currency to support the research and teaching mission of the institution" ("Selection Criteria, " 2021). To ensure consistency approach with regards to print resources, selection of e-resources for inclusion into collection is an important role for librarians (Patra, 2014). The section covers the criteria followed by the ECs to select both print and E-resources to their libraries.

4.4.4.1 Criteria Followed to Select the Print Resources in the Libraries

The EC librarians were enquired about the criteria followed by them to select print resources in their libraries. The category-wise response from the libraries of ECs which have the accredited programs of NBA is presented in table 88 and table 89 whereas NBA accreditation-wise response from EC libraries in Kerala were presented in table 90 and table 91 respectively.

Table 88

Criteria Followed to Select the Print Resources in NBA Accredited ECs (Category-Wise)

Selection Criteria	Category		
	Govt.	Under Govt. Dept.	Self-financing
Quality	10 (90.91%)	6 (85.71%)	16 (88.89%)
Subject Relevance	11 (100%)	7 (100%)	18 (100%)
Currency, Authority, Completeness	8 (72.73%)	5 (71.43%)	15 (83.33%)
Language	8 (72.73%)	4 (57.14%)	9 (50.00%)
Uniqueness of contents	6 (54.55%)	3 (42.86%)	6 (33.33%)
Relevance of materials for curriculum	10 (90.91%)	7 (100%)	15 (83.33%)
Relevance of materials for faculty/research	10 (90.91%)	5 (71.43%)	13 (72.22%)
Cost effectiveness	7 (63.64%)	5 (71.43%)	11 (61.11%)

Table 88 inferred that all Government colleges prefer to subject relevance of the resources as the main criteria for selection. A broad majority of them consider the criteria like quality (90.91%), relevance of materials for curriculum (90.91%), relevance of material for faculty (90.91%), currency, authority and completeness (72.73%), language (72.73%) and cost effectiveness (63.64%) for selecting print resources.

As the EC libraries under Government departments are concerned, it is visible from the table that all libraries employ the criteria like subject relevance and relevance of material for curriculum. A major part of them opined the consideration of the criteria like quality (90.91%), currency, authority and completeness (71.43%), relevance of the material for curricula (71.43%) and cost effectiveness (71.43%). It is also clear from the table that a good number of libraries prefer the language (57.14%) and uniqueness of contents (42.86%) as criteria for print resource collection.

At the same time, when evaluating the criteria considered by Self financing EC libraries to select print resources, it can be interpreted from the table that all libraries give their first preference to subject relevance. A huge majority of them consider the criteria like quality (88.89%), currency, authority and completeness (83.33%), relevance of material for curriculum (83.33%) and relevance of material for faculty (72.22%). It is also noted from the table that a good percent of Self financing EC libraries consider the criteria like cost effectiveness (61.11%) and language of the print resources (50.00%).

The overall analysis of the data proves that the major criteria followed by all category of NBA accredited EC libraries to select the print resources are subject relevance, relevance of material to the curriculum, relevance of material for faculty, currency, authority and completeness of the resources.

Table 89
Usage of Criteria to Select the Print Resources in NBA Accredited ECs
(Category-Wise)

Usage of Selection Criteria	Category		
	Govt.	Under Govt. Dept.	Self-financing
Low	1 (9.09%)	1 (14.28)	3 (16.66)
Medium	2 (18.18%)	1 (14.28)	4 (22.22)
High	8 (72.72%)	5 (71.42)	11 (61.11)
Chi-square = 0.895 **; p-value = 0.960			

** Significant at 0.01 level

The category-wise difference in the criteria considered to select print resources among the libraries of NBA accredited ECs are analysed with Chi-square test and presented in table 89. Since the p-value is greater than the level of significance, it can be concluded that there exists no significant difference among the libraries of Government, under Government departments and Self financing NBA accredited ECs in their usage of criteria for print resource selection.

Table 90
Criteria Followed to Select the Print Resources in EC Libraries in Kerala
(Accreditation-Wise)

Selection criteria	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Quality	32 (88.89%)	51 (79.69%)	83 (83.00%)
Subject Relevance	36 (100%)	53 (82.81%)	89 (89.00%)
Currency, Authority, Completeness	28 (77.78%)	25 (39.06%)	53 (53.00%)
Language	21 (58.33%)	31 (48.44%)	52 (52.00%)
Uniqueness of contents	15 (41.67%)	22 (34.38%)	37 (37.00%)
Relevance of materials for curriculum	32 (88.89%)	44 (68.75%)	76 (76.00%)
Relevance of materials for faculty/research	28 (77.78%)	39 (60.94%)	67 (67.00%)
Cost effectiveness	23 (63.89%)	35 (54.69%)	58 (58.00%)

Table 90 indicating the criteria for print resource selection in EC libraries in Kerala clears that all libraries of ECs which have the accredited programs of NBA prefer subject relevance whereas majority of them consider quality (88.89%), relevance of material for curriculum (88.89%), relevance of material for faculty/research (77.78%), currency, authority, completeness (77.78%) and cost effectiveness (63.89%) in the selection process of print resources. It is also recorded from the table that nearly 60 percent of NBA accredited ECs consider the criteria like language and a good number of them prefer uniqueness of contents (41.67%) for print resource selection.

The details regarding the selection of print resources in the libraries of ECs which do not have the accredited programs of NBA report that a high percent of libraries consider subject relevance (82.81%) and quality (79.69%), majority of them prefer relevance material for curriculum (68.75%), relevance of material for faculty/research (60.94%) and cost effectiveness (54.69%). It is also noticed that a good number of them adopt the criteria like language (48.44%), currency, authority, completeness (39.06%) and uniqueness of contents for print resource selection.

Altogether, it can be concluded from the data that a large majority of EC libraries in Kerala prefer the criteria like subject relevance, quality and relevance of material for curriculum for print resource selection. Libraries of NBA accredited ECs show an increase at percent level in the selection criteria like currency, authority, completeness, subject relevance and relevance of material for curriculum from the libraries of non-NBA accredited ECs.

Table 91

**Usage of Criteria to Select the Print Resources in EC Libraries in Kerala
(Accreditation-Wise)**

Usage of Selection Criteria	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	5 (13.88%)	20 (31.25%)	25 (25.00%)
Medium	7 (19.44%)	13 (20.31%)	20 (20.00%)
High	24 (66.66%)	31 (48.43%)	55 (55.00%)
Chi-square = 4.179**; p-value = 0.124			

** Significant at 0.01 level

The accreditation-wise difference in the usage of criteria to select print resources between the EC libraries in Kerala are analysed with Chi-square test and illustrated in table 91. Since the p-value is greater than the level of significance, it can be concluded that there exists no significant difference between the libraries of NBA accredited and non-NBA accredited ECs in the usage of criteria for print resource selection.

4.4.4.2 Criteria Followed to Select the E-Resources in the Libraries

The EC librarians were asked about the criteria followed by them to select E-resources in their libraries. The category-wise response from the libraries of ECs which have the accredited programs of NBA is presented in table 92 and table 93 whereas NBA accreditation-wise response from EC libraries in Kerala were presented in table 94 and table 95 respectively.

Table 92

Criteria Followed to Select the E-resources in the libraries of NBA Accredited ECs (Category-Wise)

Selection Criteria	Category		
	Govt.	Under Govt. Dept.	Self-financing
Quality	8 (72.73%)	6 (85.71%)	12 (66.67%)
Subject Relevance	8 (72.73%)	7 (100%)	11 (61.11%)
Currency, Authority, Completeness	4 (36.36%)	5 (71.43%)	10 (55.56%)
Language	6 (54.55%)	4 (57.14%)	6 (33.33%)
Uniqueness of contents	4 (36.36%)	2 (28.57%)	5 (27.78%)
Relevance of materials for curriculum	7 (63.64%)	7 (100%)	11 (61.11%)
Relevance of materials for faculty/research	6 (54.55%)	4 (57.14%)	10 (55.56%)
Cost effectiveness	5 (45.45%)	4 (57.14%)	11 (61.11%)
Trial before use	3 (27.27%)	3 (42.86)	8 (44.44%)
Network compatibility	6 (54.55%)	3 (42.86%)	7 (38.89%)
Strength of search engine/access points	8 (72.73%)	3 (42.86%)	8 (44.44%)
Remote accessibility	5 (45.45%)	4 (57.14%)	8 (44.44%)

Table 92 clearly points out that nearly two third of Government EC libraries consider the criteria like quality (72.73%), subject relevance (72.73%), strength of search engines (72.73%) and relevance of material for curriculum (63.64%). A good number of them also reports the consideration of the criteria like language (54.55%), relevance of material to the curriculum (54.55%), network compatibility (54.55%), cost effectiveness (45.45%), remote accessibility (45.45%) etc. for selecting E-resources.

Data from the table also reveals that all EC libraries under Government departments consider the criteria like subject relevance and relevance of material for curriculum. A best part of them adopts the criteria like quality (85.71%), currency, authority and completeness (71.43%), language (57.14%), relevance of material for faculty (57.14%), cost effectiveness (57.14%) and remote accessibility (54.55%). It is also clear from the table that a good number of libraries follow the criteria like strength of search engine (42.86%), network compatibility (42.86%), trial before use (42.86%) to select E-resources to their library.

At the same time, in the case of Self financing EC libraries it can be visible that majority of them follow the criteria like quality (66.67%), subject relevance (61.11%), relevance of material for curriculum (61.11%), cost effectiveness (61.11%), relevance of material for faculty (55.56%), currency, authority and completeness (55.56%). A good number of them also consider trial before use (44.44%), strength of search engine (44.44%) and remote accessibility as criteria for selecting E-resources.

The overall analysis highlights that EC libraries from all three categories prefer quality, subject relevance, relevance of material to curriculum as their main criteria for E-resource selection.

Table 93

Usage of Criteria to Select the E-resources in the libraries of NBA Accredited ECs (Category-Wise)

Usage of Criteria	Category		
	Govt.	Under Govt. depts	Self-financing
Low	5 (45.45%)	3 (42.85%)	8 (44.44%)
Medium	1 (9.09%)	1 (14.28%)	2 (11.11%)
High	5 (45.45%)	3 (42.85%)	8 (44.44%)
Chi-square = 0.657 **; p-value = 0.998			

** Significant at 0.01 level

Category-wise differences in the usage of criteria used to select E-resources among the libraries of NBA accredited ECs in Kerala are analysed with Chi-square test and illustrated in table 93. Since the p-value is greater than the level of significance it is concluded that there exists no significant difference among the Government, under Government departments and Self financing EC libraries.

Table 94

Criteria Followed to Select the E-Resources in the Libraries of ECs in Kerala (Accreditation-Wise)

Selection Criteria	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Quality	26 (72.22%)	29 (45.31%)	55 (55.00%)
Subject Relevance	26 (72.22%)	30 (46.88%)	56 (56.00%)
Currency, Authority, Completeness	19 (52.78%)	16 (25.00%)	35 (35.00%)
Language	16 (44.44%)	15 (23.44%)	31 (31.00%)
Uniqueness of contents	11 (30.56%)	16 (25.00%)	27 (27.00%)
Relevance of materials for curriculum	25 (69.44%)	25 (39.06%)	50 (50.00%)
Relevance of materials for faculty/research	20 (55.56%)	21 (32.81%)	41 (41.00%)
Cost effectiveness	20 (55.56%)	23 (35.94%)	43 (43.00%)
Trial before use	14 (38.89%)	13 (20.31%)	27 (27.00%)
Network compatibility	16 (44.44%)	17 (26.56%)	33 (33.00%)
Strength of search engine/access points	19 (52.78%)	16 (25.00%)	35 (35.00%)
Remote accessibility	17 (47.22%)	17 (26.56%)	34 (34.00%)

Data regarding the criteria followed in EC libraries in Kerala to select E-resources depicted in table 94 shows that nearly three fourth of libraries of ECs which have the accredited programs of NBA consider quality (72.22%), subject relevance (72.22%) and relevance of material for curriculum (69.44%). More than 50 percent of them consider the relevance of material for faculty/research (55.56%), cost effectiveness (55.56%), currency, authority, completeness (52.78%) and strength of search engine/access points (52.78%). A good number of them adopt the criteria like remote accessibility (47.22%), network compatibility (44.44%), language (44.44%) and trial before use (38.89%).

Considering the criteria for E-resource selection in non-NBA accredited EC libraries, it is visible from the table that nearly 50 percent of libraries consider the criteria like subject relevance (46.88%) and quality (45.31%). A good number of them prefer the criteria like relevance of material for curriculum (39.06%), cost effectiveness (35.94%) and relevance of material for faculty/research (32.81%). Around one fourth of them consider remote accessibility (26.56%), network compatibility (26.56%), strength of search engine (25%), uniqueness of contents (25%), currency, authority and completeness of the contents (25%) for E-resource selection. It is also noted from the table that less number of ECs which do not have accredited programs of NBA consider the criteria like language (23.44%) and trial before use (20.31%) for E-resource selection in their libraries.

Overall analysis of the table concluded that EC libraries mainly consider the aspects like subject relevance, quality, relevance of material for curriculum and faculty/research for selecting E-resources to their libraries. The libraries of NBA accredited ECs show an increase in their preference of aspects followed in E-resource selection than that of non-NBA accredited ECs.

Table 95**Usage of Criteria to Select the E-Resources in the Libraries of ECs in Kerala (Accreditation-Wise)**

Usage of Criteria	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	16 (44.44%)	43 (67.18%)	59 (59.00%)
Medium	4 (11.11%)	5 (7.81%)	9 (9.00%)
High	16 (44.44%)	16 (25.00%)	32 (32.00%)
Chi-square = 5.021**; p-value = 0.081			

** Significant at 0.01 level

The accreditation-wise differences in the usage of criteria to select E-resources between the EC libraries in Kerala are analysed with Chi-square test and demonstrated in table 95. Since the p-value is greater than the level of significance it can be concluded from the table that there is no significant difference between the NBA accredited and non-NBA accredited ECs' libraries in the usage of criteria for E-resource selection.

4.4.5 Steps followed in the process of Acquisition of E-resources

Acquisition is the process for obtaining materials after selection. It consists of selection and procurement of documents. It is a highly professional, time consuming and continuous process. It calls for elaborate purchase and accounting functions in library work. Further it is one of the important functions of collection management as the quality of library collection depends on the process of selection and acquisition of information sources. To sum it up involves selecting documents, vendors, placing orders and finally processing materials and bills when received. This necessitates that one or more professional staff members in the selection committee decide and chalk out the activities in acquisition (Agrapu, 2013). The EC librarians were enquired about the steps followed in the acquisition process of E-resources in their libraries and category-wise response from the libraries of ECs which have the accredited programs of NBA and status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 96 and table 97 respectively.

Table 96**Steps followed in the process of Acquisition of E-resources in the libraries of NBA Accredited ECs (Category-Wise)**

Category	Steps in Acquisition Process			
	Verifying Bibliographic Information of the product	Identifying various pricing options	Reviewing the license and business agreements	Ordering and acquiring the product for your library
Government	11 (100%)	10 (90.91%)	10 (90.91%)	11 (100%)
Under Govt. Dept.	7 (100%)	6 (85.71%)	5 (71.43%)	7 (100%)
Self-financing	16 (88.89%)	17 (94.44%)	15 (83.33%)	18 (100%)

Data mentioned in table 96 which indicates the steps followed by the libraries of NBA accredited ECs shows that all Government EC libraries following the steps of verifying the bibliographic information of the E-resources, a major portion of them identifying various pricing options (90.91%) and reviewing the license and business agreements (90.91%) and all of them seem to be ordering and acquiring the product then. When considering the steps followed in the acquisition of E-resources by EC libraries under Governments it is clear that all of them verify the bibliographic information of E-resources, majority of them identify various pricing option (85.71%), review the license and business agreements (71.43%) and after that all order and acquire the product for their library. In the meanwhile when checking the Self financing EC libraries' procedure of acquiring E-resources to their libraries, it can be observed that great majority of them follow the steps of verifying bibliographic information of E-resources (88.89%), identifying various pricing options (94.44%), reviewing the license and business agreements (83.33%) and at last all of them reports ordering and acquiring the product for their library.

As a whole, it can be concluded from the table that all or a vast majority of libraries from all categories of ECs follow the steps involved in the acquisition process of E-resources in NBA accredited ECs.

Table 97

Steps followed in the process of Acquisition of E-resources in EC libraries in Kerala (Accreditation-Wise)

Accreditation Status	Steps in Acquisition Process			
	Verifying Bibliographic Information of the product	Identifying various pricing options	Reviewing the license and business agreements	Ordering and acquiring the product for your library
NBA Accredited	34 (94.44%)	33 (91.67%)	30 (83.33%)	36 (100%)
Non-NBA Accredited	50 (78.13%)	52 (81.25%)	41 (64.06%)	53 (82.81%)
Total	84 (84.00%)	85 (85.00%)	71 (71.00%)	89 (89.00%)

Data regarding the steps followed in the EC libraries in Kerala illustrated in table 97 indicates that 94.44 percent of ECs which have the accredited programs of NBA verify bibliographic information of the product, 91.67 percent of them identify various pricing options, 83.33 percent of them review the license and business agreements and all the libraries seem to be ordering and acquiring the product for the library.

In the meantime, the steps followed by the ECs which do not have the accredited programs of NBA in the process of acquisition of E-resources in their libraries illustrated in table clears that 78.13 percent of libraries verify bibliographic information of the products, 81.25 percent of libraries identify various pricing options, 64.06 percent of them review the license and business agreements and 82.81 percent seem to report ordering and acquiring the product for their libraries.

Altogether it can be concluded from the table data majority of EC libraries in Kerala follow the steps involved in the acquisition process of E-resources. Compared to the libraries of NBA accredited ECs in Kerala the acquisition process followed in the libraries of non-NBA accredited ECs seem to be less at percent level.

4.4.6 Channels for Acquiring Library Resources

The efficiency of book selection is reflected in selecting books on demand and putting them to right use. Dr S. R. Ranganathan's 2nd Law prescribes "Every reader his or her book". This law has an implication on book selection. Next important thing is the right source to supply documents to the library. These materials can be acquired by purchase, exchange and gift. The basic activities of an acquisition department include selecting and ordering materials, checking in receipts and verification of materials following non-receipts and paying invoices (Balu & Reddy, 2014). The subsequent introduction of networkings, e-mail communications for placing orders, sending reminders, and receiving invoices decreased the time lapse for placing book orders. Now changes are visible in document selection, acquisition or access with the application of ICT and inclusion of e-resources (Agrapu, 2013). The section covers the channels for acquiring library resources - both print and E-resources in the EC libraries in Kerala.

4.4.6.1 Channels for Acquiring Print Resources

The EC librarians were enquired about the channels for acquiring print resources in their libraries and category-wise response from the libraries of ECs which have the accredited programs of NBA and status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 98 and table 99 respectively.

Table 98

Channels for Acquiring Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)

Channels	Category		
	Govt.	Under Govt. Dept.	Self-financing
Publishers	8 (72.73%)	4 (57.14%)	17 (94.44%)
Distributors	6 (54.55%)	6 (85.71%)	16 (88.89%)
By inviting quotations	11 (100%)	7 (100%)	16 (88.89%)
Gift/exchange	8 (72.73%)	3 (42.86%)	9 (50.00%)

Data from table 98 clears that all Government EC libraries under study choose the option of acquiring print resources by inviting quotations. The best part of them report the channels like publishers (72.73%), gift/exchange (72.73%) and above 50 percent of them respond that they acquire print resources from distributors (54.55%). When considering the channels of acquiring print resources of EC libraries under Government departments, it can be seen that all libraries acquire print resources by inviting quotations, a large majority of them acquire print resources through distributors (85.71%) and a good number of them acquire print resources through publishers (57.14%) and by gifts/exchanges. At the same time the Self financing EC libraries report that most of them acquire print resources directly from publishers (94.44%), distributors (88.89%), by inviting quotations (88.89%) and fifty percent of them acquire print resources by gift/exchange.

The overall analysis shows that all libraries of Government and ECs under Government departments acquire print resources by inviting quotations and a major part of Self financing EC libraries acquire print resources directly from publishers.

Table 99

**Channels for Acquiring Print Resources in EC Libraries in Kerala
(Accreditation-Wise)**

Accreditation Status	Channels			
	Publishers	Distributors	By inviting quotations	Gift/exchange
NBA Accredited	29 (80.56%)	28 (77.78%)	34 (94.44%)	20 (55.56%)
Non-NBA Accredited	49 (76.56%)	51 (79.69%)	44 (68.75%)	32 (50.00%)
Total	78 (78.00%)	79 (79.00%)	78 (78.00%)	52 (52.00%)

Channels for acquiring library resources in EC libraries in Kerala depicted in table 99 reveals that in the case of print resources, the libraries of ECs which have the accredited programs of NBA, most of them acquire resources by inviting quotations (94.44%), a vast majority of them acquire resources from publishers (80.56%),

distributors (77.78%) and more than 50 percent of them acquire print resources by gift/exchange (55.56%).

The channels for acquiring print resources by libraries of ECs which do not have the accredited programs of NBA, it is seen from the table that a significant proportion of them consider to acquire resources from distributors (79.69%), publishers (76.56%) and through quotations (68.75%). Fifty percent of them acquire print resources by gift and exchanges.

As a whole it is understood from the table that the ECs main source of acquiring print resources to their libraries are distributors, publishers and invitation of quotations. When high percent of NBA accredited ECs' libraries acquire print resources by inviting quotations, high percent of non-NBA accredited ECs' libraries acquire print resources from distributors.

4.4.6.2 Channels for Acquiring E-resources in the Libraries

The EC librarians were asked about the channels for acquiring E-resources in their libraries and category-wise response from the libraries of ECs which have the accredited programs of NBA and status of accreditation-wise response from EC libraries in Kerala were presented in table 100 and table 101 respectively.

Table 100

Channels for Acquiring E-resources in the Libraries of NBA Accredited ECs (Category-Wise)

Channels	Category		
	Govt.	Under Govt. Dept.	Self-financing
Online database vendors	8 (72.73%)	6 (85.71%)	10 (55.56%)
Publishers	3 (27.27%)	2 (28.57%)	8 (4.44%)
Distributors	3 (27.27%)	3 (42.86%)	10 (55.56%)
By inviting quotations	3 (27.27%)	2 (28.57%)	7 (38.89%)
Approach of consortia	2 (18.18%)	2 (28.57%)	6 (33.33%)
Free downloads from internet	7 (63.64%)	4 (57.14%)	6 (33.33%)

Table 100 exposes that nearly two third of Government EC libraries main channels of acquiring E-resources are online database vendors (72.73%) and free downloads from the internet (63.64%). It is also visible from the table that only a few percent of libraries acquire E-resources through publishers (27.27%), distributors (27.27%) and by inviting quotations (27.27%). When the ECs under Government departments are concern it can be observed from the table that a major part of them acquire E-resources from online database vendors (85.71%), a good number of them acquire E-resources by free downloads from internet (57.14%) and through distributors (42.86%). It can be also observed from the table that a few of them acquire E-resources through publishers (28.57%), by inviting quotations (28.57%) and approach of consortia purchasing. At the same time, more than 50 percent of Self financing EC libraries report their channels of acquiring E-resources are online database vendors (55.56%) and distributors (55.56%). A good number of them report their channels of acquiring E-resources as publishers (44.44%), inviting quotations (38.89%), free downloads from the internet (33.33%) etc.

The overall analysis reveals that the main channels of acquiring E-resources by all categories of NBA accredited ECs' libraries are online database vendors.

Table 101
Channels for Acquiring E-resources in EC Libraries in Kerala
(Accreditation-Wise)

Accreditation Status	Channels					
	Online database vendors	Publishers	Distributors	By inviting quotations	Approach of consortia purchasing	Free downloads from internet
NBA Accredited	24 66.67%)	13 (36.11%)	16 (44.44%)	12 (33.33%)	10 (27.78%)	17 (47.22%)
Non-NBA Accredited	25 39.06%)	22 (34.38%)	17 (26.56%)	21 (32.81%)	14 (21.88%)	22 (34.38%)
Total	49 49.00%)	35 (35.00%)	33 (33.00%)	33 (33.00%)	24 (24.00%)	39 (39.00%)

Table 101 indicates the channels for acquiring E-resources in the EC libraries in Kerala discloses that majority of libraries which have the accredited programs of NBA acquire E-resources through online database vendors (66.67%). Nearly 50 percent of them consider free downloads from the internet (47.22%), a good number of them consider distributors (44.44%), publishers (36.11%) and inviting quotations (33.33%). It is also noted from the table that more than one fourth of them also adopt consortia (27.78%) for acquiring E-resources to their libraries.

The table also shows that a good number of libraries from ECs which do not have accredited programs of NBA acquire E-resources through online database vendors (39.06%), free downloads from internet (34.38%), direct from publishers (34.38%) and by inviting quotations (32.81%). It is also visible from the table that more than one fifth of them acquire E-resources from distributors (26.56%) and through consortia (21.88%).

The overall analysis of channels of acquiring E-resources by EC libraries in Kerala reveals that a good number of libraries acquire E-resources through online database vendors, free downloads from the internet and direct from the publishers.

4.4.7 Criteria Followed to Evaluate the Library Resources

The real value of a library is judged neither by its enormous collection nor by its magnificent building, but by its usefulness to the readers. The effective functioning and maintaining quality in the library mainly depends on the quality in the collection which serves as the main source of information. Therefore the collection of libraries being intended for use must be evaluated from time to time with certain criteria (Sangam & Kumbar, n. d.). The section covers the criteria followed in EC libraries to evaluate their print and E-resources.

4.4.7.1 Criteria Followed to Evaluate the Print Resources in the Libraries

The EC librarians were enquired about the criteria followed in their libraries to evaluate the print resources. The category-wise response from the libraries of ECs which have the accredited programs of NBA is presented in table 102 and table 103

whereas NBA accreditation-wise response from EC libraries in Kerala is presented in table 104 and table 105 respectively.

Table 102

Criteria Followed to Evaluate the Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)

Category	Evaluation Criteria					
	Amount of funds spent	Number of books added	Number of books ordered but not received	Number of books borrowed	Number of books consulted in the library	Number of books received on ILL from library
Government	10 (0.91%)	11 (100%)	6 (54.55%)	10 (90.91%)	10 (90.91%)	3 (27.27%)
Under Govt. Dept.	3 (42.86%)	7 (100%)	3 (42.86%)	5 (71.43%)	2 (28.57%)	0 (0.0%)
Self-finance	13 (2.22%)	16 (88.89%)	8 (44.44%)	8 (44.44%)	8 (44.44%)	4 (22.22%)

It is observed from table 102 that all Government EC libraries evaluated the print resources by the number of books added to the collection. A lion's share of them evaluates the collection by amount of funds spent (90.91%), number of books borrowed (90.91%) and number of books consulted in the library (90.91%). It is also seen from the table that 54.55 percent of libraries evaluate the collection by the number of books ordered but not received. When considering the matter of evaluation criteria followed to evaluate the print resources by the libraries of ECs under Government departments, it is noted that all libraries evaluated the print resources by number of books added, two third of them evaluated the collection by number of books borrowed (71.43%), a good number of them evaluated the collection by amount of funds spent (42.86%) and number of books ordered but not received category (42.86%). At the same time the Self financing EC libraries report that a significant majority of them evaluate the print resources by the number of books added to the collection (88.89%) and amount of funds spent (72.22%). A good number of them seem to evaluate the print resources by number of books ordered but not received (44.44%), number of books borrowed (44.44%) and number of books consulted in the library.

The overall analysis of the data reveals that the libraries of all Government, ECs under Government departments and major part of Self financing libraries of NBA accredited ECs evaluate the print resources by the number of books added to the collection. The Government Libraries seem to be using more methods to evaluate the print resources than that of other two categories of libraries.

Table 103

Usage of Criteria to Evaluate the Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)

Usage of Evaluation Criteria	Category		
	Govt.	Under Govt. Dept.	Self-financing
Low	1 (9.09%)	4 (57.14%)	9 (50.00%)
Medium	4 (36.36%)	1 (14.28%)	1 (5.55%)
High	6 (54.54%)	2 (28.57%)	8 (44.44%)
Chi-square = 8.220**; p-value = 0.068			

** Significant at 0.01 level

The category-wise difference in the usage of criteria to evaluate the print resources among the libraries of NBA accredited ECs are analysed with Chi-square test and presented in table 103. Since the p-value is greater than the level of significance it can conclude that, there is no significant difference among the usage of criteria to evaluate the print resources in the libraries of Government, under Government department and Self-financing ECs.

Table 104

Criteria Followed to Evaluate the Print Resources in the EC Libraries in Kerala (Accreditation-Wise)

Accreditation Status	Evaluation Criteria					
	Amount of funds spent	Number of books added	Number of books ordered but not received	Number of books borrowed	Number of books consulted in the library	Number of books received on ILL from library
NBA Accredited	26 (72.22%)	34 (94.44%)	17 (47.22%)	23 (63.89%)	20 (55.56%)	7 (19.44%)
Non-NBA Accredited	40 (62.50%)	53 (82.81%)	22 (34.38%)	31 (48.44%)	33 (51.56%)	4 (6.25%)
Total	66 (66.00%)	87 (87.00%)	39 (39.00%)	54 (54.00%)	53 (53.00%)	11 (11.00%)

The criteria followed by EC libraries in Kerala to evaluate the print resources displayed in table 104 discloses that a best part of libraries of NBA accredited ECs consider criteria like number of books added to the collection (94.44%), majority of them consider the aspects like amount of funds spend (72.22%), number of books borrowed (63.89%) and number of books consulted in the library (55.56%) to evaluate the print resources. A good number of them prefer the criteria like number of books ordered but not received in the library (47.22%) and only a limited number of ECs consider the number of books received on ILL (19.44%) to evaluate the print resources of their libraries.

When consider the ECs which do not have the accredited programs of NBA, it is observed that a significant proportion of libraries evaluate their print collection by the number of books added to the collection (82.81%), more than 50 percent of them consider the aspects like amount of funds spent (62.50%) and number of books consulted in the library (51.56%), a good number of them prefer number of books borrowed (48.44%) and number of books ordered but not received in the library (34.38%) to evaluate the print resources.

Altogether it can be understood from the data that the ECs in Kerala mainly considers the aspects like number of books added to the library collection and amount of funds spent to the collection to evaluate the print resources in their libraries.

Table 105

Usage of Criteria Followed to Evaluate the Print Resources in the EC Libraries in Kerala (Accreditation-Wise)

Usage of Evaluation Criteria	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	14 (38.88%)	31 (48.43%)	45 (45.00%)
Medium	6 (16.66%)	11 (17.18%)	17 (17.00%)
High	16 (44.44%)	22 (34.37%)	38 (38.00%)
Chi-square = 1.085**; p-value = 0.581			

** Significant at 0.01 level

Accreditation-wise differences in the usage of criteria followed to evaluate the print resources between the EC libraries in Kerala are analysed with Chi-square test and illustrated in table 105. Since the p-value is greater than the level of significance it can conclude that there is no significant difference between the usage of criteria followed to evaluate the print resources in the libraries of NBA accredited and Non-NBA accredited ECs.

4.4.7.2 Criteria Followed to Evaluate the E-Resources in the Libraries

There are many E-resources available in the market which are contending, apparently comparable, and these resources are changing and evolving on a regular basis. It is difficult for the organization to decide which product is much more needed than a competing one or which product is better than another one. Hence, methods used for evaluation of the selection of E-resources is a challenging task for the librarian (Patra, 2014). The EC librarians were enquired about the criteria followed in their libraries to evaluate their E-resource collection and category-wise response from the libraries of ECs which have the accredited programs of NBA is presented in table 106 and table 107 whereas NBA accreditation-wise response from EC libraries in Kerala were presented in table 108 and table 109 respectively.

Table 106

Criteria Followed to evaluate E-resources in the Libraries of NBA Accredited ECs (Category-Wise)

Category	Evaluation Criteria								
	Content	Currency	Reputation	Indexing	Ease of Access	Final cost is fit to budget	Technical Support by vendor	Terms and conditions of licensing agreements	Impact factor
Govt.	10 (90.9%)	6 (54.55%)	9 (81.82%)	6 (54.55%)	8 (72.73%)	7 (63.64%)	8 (72.73%)	9 (81.82%)	5 (45.46%)
Under Govt. dept	7 (100%)	4 (57.14%)	6 (85.71%)	2 (28.57%)	6 (85.71%)	5 (71.43%)	3 (42.86%)	4 (57.14%)	2 (28.57%)
Self-finance	16 (88.89%)	10 (55.56%)	13 (72.22%)	14 (77.78%)	11 (61.11%)	12 (66.67%)	14 (77.78%)	10 (55.56%)	15 (83.33%)

Data illustrated in table 106 highlights that a vast majority of NBA accredited Government EC libraries evaluate the collection by content (90.91%), reputation or

reliability of the publisher (81.82%), terms and conditions of licensing agreements (81.82%), ease of access (72.73%) and technical support by vendor (72.73%). A better part of libraries evaluate E-resource by the criteria like final cost is fit to budget (63.64%), currency of the resources (54.55%), indexing or subject arrangement of E-resources (54.55%) and a good number of them consider impact factor (45.46%) for evaluation of their E-resources. When considering the libraries of ECs under Government departments criteria for E-resource evaluation, the data from the table highlights that all libraries evaluate E-resources by its content, a huge majority of them evaluate the E-resources by reputation (85.71%), ease of access (85.71%), final cost fit to budget (71.43%). It is also visible from the table that a good number of them evaluate E-resources by terms and conditions of license agreements (57.14%), currency (57.14%) and technical support by vendors (42.86%).

The data illustrated in the table also indicates that a great majority of Self financing EC libraries evaluate E-resources by its content (88.89%) and impact factor (83.33%), two third of them evaluate E-resources by indexing/subject arrangement (77.78%), technical support by vendor (77.78%), reputation (72.22%), final cost fit to budget (66.67%) and ease of access (61.11%). It is also noted from the table that a good number of Self financing EC libraries evaluate E-resources by currency (55.56%) and terms and conditions of licensing agreements (55.56%).

As a whole it can be concluded from the data that majority of libraries from three categories of ECs give their first preference to evaluate the E-resource collection to content of E-resources followed by reputation of the publisher and ease of access to E-resources.

Table 107

Usage of Criteria Followed to Evaluate the E- Resources in the Libraries of NBA Accredited ECs (Category-Wise)

Usage of Evaluation Criteria	Category		
	Govt.	Under Govt. Dept.	Self-financing
Low	3 (27.27%)	2 (28.57%)	4 (22.22%)
Medium	2 (18.18%)	2 (28.57%)	3 (16.66%)
High	6 (54.54%)	3 (42.85%)	11 (61.11%)
Chi-square = 1.268**, p-value = 0.924			

** Significant at 0.01 level

Category-wise differences in the usage of criteria considered for E-resource evaluation in the libraries of NBA accredited ECs are analysed with Chi-square test and depicted in table 107. Since the p-value is greater than the level of significance it can conclude that, there is no significant difference in the usage of criteria followed to evaluate the E- resources among the libraries of Government, under Government department and Self-financing ECs.

Table 108

**Criteria Followed to evaluate E-resources in EC Libraries in Kerala
(Accreditation-Wise)**

Accreditation Status	Evaluation Criteria							
	Content	Currency	Reputation	Indexing	Ease of access	Final cost is fit to budget	Technical support by vendor	Terms and conditions of licensing agreements
NBA Accredited	33 (91.67%)	20 (55.56%)	28 (77.78%)	22 (61.11%)	25 (69.44%)	24 (66.67%)	25 (69.44%)	23 (63.89%)
Non-NBA Accredited	40 (62.50%)	30 (46.88%)	25 (39.06%)	19 (29.69%)	32 (50.00%)	33 (51.56%)	29 (45.31%)	29 (45.31%)
Total	73 (73.00%)	50 (50.00%)	53 (53.00%)	41 (41.00%)	57 (57.00%)	57 (57.00%)	54 (54.00%)	52 (52.00%)

Data regarding the criteria used to evaluate E-resource collection in EC libraries in Kerala depicted in table 108 made clear that most of ECs which have the accredited programs of NBA evaluate E-resources of their library by content (91.67%) and more than three fourth of them evaluate the E-resources by the reputation of the publisher (77.78%). Table also shows that majority of libraries evaluate E-resource by considering the ease of access (69.44%), technical support by the vendor (69.44%), final cost fit to budget (66.67%), terms and conditions of licensing agreements (63.89%), indexing (61.11%) and currency (55.56%) of E-resources.

Criteria considered for evaluation of E-resources in the ECs which do not have the accredited programs of NBA reveals that majority of libraries consider the criteria like content of E-resources (62.50%) and final cost fit to budget category (51.56%). Fifty percent of them consider ease of access to E-resources (50%) and a good number of them prefer currency of the resources (46.88%), technical support by vendor

(45.31%), terms and conditions of licensing agreements (45.31%) and reputation of the publisher (39.06%).

As a whole it is concluded from the table that majority of EC libraries in Kerala consider the criteria like content, ease of access to E-resources, final cost fit to budget and technical support by vendors to evaluate their E-resources. The evaluation criteria considered by the ECs which have the accredited programs of NBA seem to be high when compared to the second criteria of ECs at percent level.

Table 109

**Usage of Criteria to evaluate E-resources in EC Libraries in Kerala
(Accreditation-Wise)**

Usage of Evaluation Criteria	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	9 (25.00%)	34 (53.12%)	43 (43.00%)
Medium	7 (19.44%)	5 (7.81%)	12 (12.00%)
High	20 (55.55%)	25 (39.06%)	45 (45.00%)
Chi-square = 8.229**; p-value = 0.016			

*** Significant at 0.05 level*

The accreditation-wise difference in the usage of criteria to evaluate the E-resources between the EC libraries in Kerala are analysed with Chi-square test and presented in table 109. Since the p-value is less than the level of significance it can conclude that, there is significant difference between the usage of criteria to evaluate the E-resources in the libraries of NBA accredited and Non-NBA accredited ECs.

4.4.8 Criteria Followed in De-selection of Resources in the Libraries

De-selection is the removal of materials from the library collection that are no longer needed or viable. It is a standard practice in managing a library's collection. De-selection is important in keeping a collection vibrant, relevant, and usable. It also assists in preventing stacks from becoming overcrowded, and helps make remaining materials more visible and accessible. The Library may, at its sole discretion, remove and withdraw monographs and any other materials (e. g., non-book print items,

manuscript materials, electronic resources, analog media and photographs) based on some criteria (“Materials Deselection Policy, ”, 2021). The section covers the criteria followed in EC libraries to deselect their print and E-resources.

4.4.8.1 Criteria Followed to Deselect Print Resources in the Libraries

The EC librarians were enquired about the criteria followed to deselect print resources in their libraries and category-wise response from the libraries of ECs which have the accredited programs of NBA is presented in table 110 and table 111 and whereas NBA accreditation-wise response from EC libraries in Kerala is presented in table 112 and table 113 respectively.

Table 110

Criteria Followed to Deselect Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)

Category	Deselection Criteria					
	Factually inaccurate	Ugly-Worn beyond mending or rebinding	Superseded-by a new edition or by a much better book on the subject	No discernible literary or scientific merit	Irrelevant to the needs and interests of the library's community	The material is easily obtainable from another library
Government	3 (27.27%)	8 (2.73%)	4 (36.36%)	4 (36.36%)	5 (45.46%)	1 (9.09%)
Under Govt. Dept.	1 (14.29%)	5 (71.43%)	0 (0.00%)	1 (14.29%)	5 (71.43%)	0 (0.00%)
Self-finance	9 (50%)	13 (2.22%)	4 (22.22%)	3 (16.67%)	5 (27.78%)	0 (0.00%)

Data mentioned in table 110 reveals that a significant proportion of Government EC libraries deselect/weedout print resources which is in a condition of ugly/worn beyond mending or rebinding (72.73%), a good number of them deselect print resource by considering the matters like irrelevant to the needs and interests of the library’s community (45.46%), supersede by a new edition or by a much better book on the subject (36.36%), books which is literary or scientifically no merit (36.36%) and books in factually inaccurate status (27.27%).

Libraries of ECs under Government departments report that nearly two third of them deselect the print resources by considering the matter of status of the resources which is ugly worn beyond mending or rebinding (71.43%) and irrelevant to the needs and interests of the library's community (71.43%).

When considering the case of Self financing EC libraries criteria of deselection of print resources it can be noted from the table that a vast majority of them deselect resources by considering its ugly worn beyond mending or rebinding status. Fifty percent of them report that they deselect print resources by considering its factually inaccurate status.

Overall analysis of the data highlights that the main deselection procedure of printed resources considered in three categories of EC libraries are its ugly/ worn beyond mending or rebinding condition.

Table 111

Usage of Criteria to Deselect Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)

Usage of Selection Criteria	Category		
	Govt.	Under Govt. depts	Self-financing
Low	7 (63.63%)	5 (71.42%)	13 (72.22%)
Medium	1 (9.09%)	1 (14.28%)	2 (11.11%)
High	3 (27.27%)	1 (14.28%)	3 (16.66%)
Chi-square = 1.209**; p-value= 0.971			

**** Significant at 0.01 level**

The category-wise difference in the usage of criteria to deselect print resources among the libraries of NBA accredited ECs are analysed with Chi-square test and displayed in table 111. Since the p-value is greater than the level of significance it can conclude that, there is no significant difference among the libraries of Government, under Government department and Self-financing ECs in the usage of criteria followed to deselect the print resources.

Table 112**Criteria Followed to Deselect Print Resources in EC Libraries in Kerala
(Accreditation-Wise)**

Accreditation Status	Factually inaccurate	Ugly-Worn beyond mending or rebinding	Superseded-by a new edition or by a much better book on the subject	No discernible literary or scientific merit	Irrelevant to the needs and interests of the library's community	The material is easily obtainable from another library
NBA Accredited	13 (36.11%)	26 (72.22%)	8 (22.22%)	8 (22.22%)	15 (41.67%)	1 (2.78%)
Non-NBA Accredited	21 (32.81%)	35 (54.69%)	9 (14.06%)	4 (6.25%)	22 (34.38%)	4 (6.25%)
Total	34 (34.00%)	61 (61.00%)	17 (17.00%)	12 (12.00%)	37 (37.00%)	5 (5.00%)

Criteria followed in deselection of print resources in EC libraries of Kerala displayed in table 112 exhibits that a major part of ECs which have the accredited programs of NBA weed out print resources by considering its ugly-worn beyond mending or rebinding condition (72.22%), a good number of them consider irrelevance of the material to the needs and interests of the library's community (41.67%) and it's factually inaccurate condition (36.11%).

In the case of ECs which do not have the accredited programs of NBA, it conveys that more than 50 percent of libraries consider ugly-worn beyond mending or rebinding condition of print resources (54.69%), a good number of them consider its irrelevance to the needs and interests of the library's community (34.38%) and factually inaccurate status (32.81%).

Overall analysis of the table proves that the major criteria considered for deselection of print resources in EC libraries in Kerala are the resources that ugly-worn beyond mending or rebinding condition, irrelevant to the needs and interests of the library's community and factually inaccurate ones.

Table 113

**Usage of Criteria to Deselect Print Resources in EC Libraries in Kerala
(Accreditation-Wise)**

Usage of Deselection Criteria	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	25 (69.44%)	43 (67.18%)	68 (68.00%)
Medium	4 (11.11%)	17 (26.56%)	21 (21.00%)
High	7 (19.44%)	4 (6.25%)	11 (11.00%)
Chi-square = 6.283**; p-value = 0.043			

** Significant at 0.05 level

Accreditation-wise analysis of usage of criteria to deselect print resources between EC libraries in Kerala are analysed with Chi-square test and displayed in table 113. Since the p-value is less than the level of significance it can conclude that, there is significant difference between the usage of criteria to deselect print resources in the libraries of NBA accredited and Non-NBA accredited ECs.

4.4.8.2 Criteria Followed to Deselect E-resources in the Libraries

The EC librarians were enquired about the criteria followed to deselect E-resources in their libraries and category-wise response from the libraries of ECs which have the accredited programs of NBA is presented in table 114 and table 115 whereas NBA accreditation-wise response from EC libraries in Kerala is presented in table 116 and table 117 respectively.

Table 114

**Criteria Followed to Deselect E-resources in the Libraries of NBA Accredited
ECs (Category-Wise)**

Category	Deselection Criteria					
	Ranking of database by acquiring usage statistics	Based on cost benefit analysis	Based on relevance to research work and the curriculum	Uniqueness of the E-resource to avoid duplication	Based on library committee recommendation	Based on budget status of the library
Government	8 (72.73%)	8 (72.73%)	7 (63.64%)	8 (72.73%)	9 (81.82%)	7 (63.64%)
Under Govt. Dept.	1 (14.29%)	5 (71.43%)	3 (42.86%)	2 (28.57%)	6 (85.71%)	6 (85.71%)
Self-finance	13 (72.22%)	10 (55.56%)	9 (50.00%)	3 (16.67%)	11 (61.11%)	13 (72.22%)

Data from table 114 affirms that most of the Government EC libraries Deselect/renew the E-resources based on library committee recommendation (81.82%), nearly two third of them deselect/renew E-resources based on ranking of database by acquiring usage statistics (72.73%), cost benefit analysis (72.73%), uniqueness of the E-resource to avoid duplication (72.73%) and more than 60 percent of them seem to be deselect/renew the E-resources based on budget status of the library (63.64%) and relevance of research work and the curriculum (63.64%).

At the same time most of the libraries of ECs under Government departments reports that they deselect/renew E-resources based on budget status of the library (85.71%), recommendation of library committee (85.71%) and cost benefit analysis (71.43%). It is also visible from the table that a good number of EC libraries under Government departments deselect/renew E-resources based on relevance of resources to the research work and the curriculum (42.86%).

In the meanwhile a major portion of Self financing EC libraries report that they deselect/renew E-resources based on budget status of the library (72.22%), ranking the database by usage statistics (72.22%) and the recommendation of the library committee (61.11%). A good number of them respond that they consider cost benefit analysis (55.56%) and relevance of E-resource to the curriculum and research work (50%) for renewing the E-resources.

It can be concluded from the table that when most of the Government and ECs under Government department libraries deselect/renew E-resources based on library committee recommendation, the Self financing EC libraries seem to consider the budget status of the library and ranking of database by acquiring usage statistics for E-resource renewal.

Table 115**Usage of Criteria to deselect E-resources in the Libraries of NBA Accredited ECs (Category-Wise)**

Usage of Deselection Criteria	Category		
	Govt.	Under Govt. Dept.	Self-financing
Low	3 (27.27%)	2 (28.57%)	7 (38.88%)
Medium	1 (9.09%)	3 (42.85%)	2 (11.11%)
High	7 (63.63%)	2 (28.57%)	9 (50.00%)
Chi-square = 4.214**; p-value = 0.386			

** Significant at 0.01 level

Category-wise difference in the usage of criteria considered to deselect E-resources in the libraries of NBA accredited ECs are analysed with Chi-square test and presented in table 115. Since the p-value is greater than the level of significance it can conclude that, there exists no significant difference in the usage of criteria followed to deselect the E-resources among the libraries of Government, under Government department and self-financing ECs.

Table 116**Criteria Followed to Deselect E-resources in EC Libraries (Accreditation-Wise)**

Accreditation Status	Deselection Criteria					
	Ranking of database by acquiring usage statistics	Based on cost benefit analysis	Based on relevance to research work and the curriculum	Uniqueness of the E-resource to avoid duplication	Based on library committee recommendation	Based on budget status of the library
NBA Accredited	22 (61.11%)	23 (63.89%)	19 (52.78%)	13 (36.11%)	26 (72.22%)	26 (72.22%)
Non-NBA Accredited	21 (32.81%)	30 (46.88%)	29 (45.31%)	19 (29.69%)	32 (50.00%)	36 (56.25%)
Total	43 (43.00%)	53 (53.00%)	48 (48.00%)	32 (32.00%)	58 (58.00%)	62 (62.00%)

Criteria followed for deselection of E-resources in EC libraries in Kerala displayed in table 116 reflects that a better part of ECs which have the accredited

programs of NBA deselect E-resources by considering the recommendation from library committee (72.22%), budget status of the library (72.22%), cost benefit analysis (63.89%) and ranking of database by acquiring usage statistics (61.11%). More than 50 percent of them deselect E-resources based on relevance of the resource to research work and the curriculum (52.78%) and a good number of them deselect by considering the uniqueness of the E-resources to avoid duplication (36.11%).

Libraries of ECs which do not have the accredited programs of NBA illustrated in the table convey that nearly 60 percent of them consider the budget status of the library (56.25%) and 50 percent of them prefer recommendations from the library committee. A good number of the libraries consider cost benefit analysis (46.88%), relevance of the resource to research work and the curriculum (45.31%) and ranking of databases by acquiring usage statistics (32.81%).

Altogether it can be concluded from the data that ECs in Kerala mainly consider the aspects like budget status of the library, recommendation from library committee and cost benefit analysis to deselect E-resources in their libraries.

Table 117

Usage of Criteria to Deselect E-resources in EC Libraries (Accreditation-Wise)

Usage of Deselection Criteria	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	12 (33.33%)	34 (34.12%)	46 (46.00%)
Medium	6 (16.66%)	9 (14.06%)	15 (15.00%)
High	18 (50.00%)	21 (32.81%)	39 (39.00%)
Chi-square = 3.811**; p-value = 0.149			

** Significant at 0.01 level

Accreditation-wise differences in the usage of criteria followed in E-resource deselection between EC libraries in Kerala are analysed with Chi-square test and displayed in table 117. Since the p-value is less than the level of significance it can conclude that, there is significant difference between the usage of criteria to deselect the E-resources in the libraries of NBA accredited and Non-NBA accredited ECs.

4.5 Processing and Organising of Library Resources

Processing and organising of library resources are an important task of the library. It is important as arranging the resources orderly and systematically the users can easily retrieve them fast which will save the time of the user. It not only helps the users but also helps the library staff to locate them and guide the users easily. By organising the resources well the library also will look neat and perfect. The section covers the processing, organising and method of access provided to library resources in EC libraries.

4.5.1 Processing and Organising of Print Resources in the Libraries

Library resources are acquired to support teaching/learning processes and to provide information to users when needed. It thus becomes necessary that the resources be properly organized in a systematic way so that access to these resources is unhindered. Every library has a technical services department/division. This department handles classification, cataloging, physical processing, preservation, and maintenance of the materials in the library. With the introduction of computers, technical processing is also being automated in libraries (“Processing of Library Material,” n. d.). The section covers time taken by EC libraries for processing hundred books, classification scheme adopted by the libraries, catalogue code and form of catalogue used by the libraries, method of organising print resources and method of access provided to print resources by EC libraries.

The EC librarians were enquired about the processing and organising of printed resources in their libraries. The category-wise response from the libraries of ECs which have the accredited programs of NBA and status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 118 and table 119 respectively.

Table 118

Processing and Organising of Print Resources in the Libraries of NBA Accredited ECs (Category-Wise)

Processing and Organising of Print Resources		Category		
		Govt.	Under Govt. Dept.	Self-finance
Time to be taken for processing 100 books	One week	4 (36.36%)	3 (42.85%)	14 (77.77%)
	Two weeks	5 (45.45%)	2 (28.57%)	3 (16.66%)
	Three weeks	2 (18.18%)	1 (14.28%)	1 (5.55%)
	More than three weeks	0 (0.00%)	1 (14.28%)	0 (0.00%)
Classification Schemes adopted in the library	DDC	10 (90.9%)	7 (100%)	18 (100%)
	UDC	0	0	0
	Any other	1 (9.1%)	0	0
Cataloguing code used in the library	AACR II	6 (54.55%)	5 (71.43%)	12 (66.66%)
	Catalogue modules of software packages	5 (45.45%)	2 (28.57%)	6 (33.33%)
Form of catalogue used in the library	Printed Book	1 (9.1%)	1 (14.29%)	0 (0.00%)
	Card form	1 (9.1%)	1 (14.29%)	0 (0.00%)
	OPAC	11 (100%)	7 (100%)	18 (100%)
Method of organizing print journals	Alphabetical	2 (18.18%)	1 (14.28%)	3 (16.67%)
	Classified	3 (27.27%)	0 (0.00%)	3 (16.67%)
	Subject	6 (54.55%)	6 (85.71%)	12 (66.67%)
Method of Access Provided to Users	Open	11 (100%)	7 (100%)	18 (100%)

The category-wise analysis of time taken for processing hundred books in the NBA accredited ECs' libraries given in table 118 indicates that 45.5 percent of Government EC libraries take a time of two weeks for processing hundred books. A good number of them report one week for processing hundred books (36.4%) and only a low percent of Government EC libraries (18.2%) report taking three weeks to process hundred books. At the same time the libraries of ECs under Government departments disclose that 42.9 percent of them take one week for processing hundred books, more than 25 percent of them take a time period of two weeks (28.6%) and a low percent of them report of taking three weeks and more than three weeks for processing of hundred books. It is also observed from the table that a major part of Self financing EC libraries record that they take only one week (77.8%) for processing a hundred books and only a low percent of them report taking two weeks and three weeks for processing hundred books. The overall analysis of the data shows that a high percent of Self financing and a good number of ECs under Government

departments take one week and a good number of Government EC libraries take two weeks for processing print resources.

From table 118 which indicates the category-wise analysis of classification scheme used in the libraries of NBA accredited ECs, it can be understood that almost all libraries from three categories of NBA accredited ECs in Kerala follow the DDC classification system to classify the print resources.

Category-wise analysis of cataloguing code used in the libraries of NBA accredited ECs displayed on table 118 affirms that majority of the libraries of ECs under Government departments (71.43%), Self financing ECs (66.7%) and Government ECs follow AACR II for cataloguing their printed resources. It can also be clear from the table that a good number of Government (45.5%), Self financing (33.3%) and ECs under Government departments (28.6%) follow the code used in the catalogue modules of software packages in their libraries.

Data regarding the category-wise analysis of the form of catalogue used in the libraries of NBA accredited ECs presented in table 118 reveals that all the libraries from three categories of NBA accredited ECs use OPAC for providing cataloguing service to its users. Only a few libraries from Government and ECs under Government department libraries report the usage of catalogue in printed and card form with OPAC.

Data regarding the category-wise analysis of method of organising print journals in the libraries of NBA accredited ECs illustrated in table 118 highlights that more than 50 percent of Government EC libraries organise the print journals in their libraries by subject-wise whereas a good number of them organise them by classified method and a low percent of them organise the print journals by alphabetically. When considering the matter of the libraries of ECs under Government departments it is observed that a vast majority of libraries organise the print journals by subject-wise and only one library seems to organise the E-resource alphabetically. In the meanwhile nearly two third of Self financing EC libraries highlights that they organise the print journals subject-wise and 16.67 percent of them reports that they organise the print journals alphabetical and classified method respectively. Altogether it can be concluded from the table that the majority of libraries from three categories of ECs arranged the print journals subject-wise.

In open access, books are kept on open shelves. As users will have better options of choosing a right book than merely consulting the catalogues, it has been found that provision of open access encourages browsing which leads to greater use of books. This is equally true for all types of libraries whether it is Government operated or private (Manik, 2015). Category-wise analysis of the method of access to print resources provided to users by the libraries of NBA accredited ECs, displayed in table 118 discloses that all libraries from three categories of ECs provide open access to print resources to the users of the library.

Table 119

**Processing and Organising of Print Resources in the EC Libraries in Kerala
(Accreditation-Wise)**

Processing and Organising of Print Resources		NBA Accredited	Non-NBA Accredited	Total
Time to be taken for processing 100 books	One week	21 (58.33%)	30 (46.88%)	51 (51.00%)
	Two weeks	10 (27.78%)	19 (29.69%)	29 (29.00%)
	Three weeks	4 (11.11%)	11 (17.19%)	15 (15.00%)
	More than three weeks	1 (2.78%)	4 (6.25%)	5 (5.00%)
Classification Schemes adopted in the library	DDC	35 (97.22%)	61 (95.31%)	96 (96.00%)
	UDC	0 (0.00%)	3 (4.68%)	3 (3.00%)
	Any other	1 (2.78%)	0 (0.00%)	1 (1.00%)
Cataloguing code used in the library	CCC	0 (0.00%)	1 (1.56%)	1 (1.00%)
	AACR II	23 (63.89%)	33 (51.56%)	56 (56.00%)
	Catalogue modules of software packages	13 (36.11%)	30 (46.88%)	43 (43.00%)
Form of catalogue used in the library	Typed list	0 (0.00%)	8 (12.50%)	8 (8.00%)
	Printed Book	2 (5.56%)	4 (6.25%)	6 (6.00%)
	Card form	2 (5.56%)	6 (9.38%)	8 (8.00%)
	OPAC	36 (100%)	54 (84.38%)	90 (90.00%)
Method of organizing print journals	Alphabetical	6 (16.67%)	14 (21.88%)	20 (20.00%)
	Classified	6 (16.67%)	5 (7.81%)	11 (11.00%)
	Subject	24 (66.67%)	45 (70.31%)	69 (69.00%)
Method of Access Provided to Users	Open	36 (100%)	64 (100%)	100 (100%)

Accreditation-wise analysis of time to be taken for processing 100 books in EC libraries in Kerala depicted in table 119 conveys that nearly 60 percent of ECs which have the accredited programs of NBA take one week (58.33%) to complete processing of hundred books. It is also noted that more than one fourth of them take two weeks (27.28%) and only a less number of them take three weeks (11.11%) and more than three weeks (2.785) respectively. In the case of non-NBA accredited ECs it is observed that nearly 50 percent of libraries take one week (46.88%), nearly 30 percent of libraries take two weeks (29.69%) and limited number of them report three weeks (17.19%) and more than three weeks (6.25%) for processing hundred books in their library. The overall analysis of the table made clear that more than 50 percent of EC libraries in Kerala take one week to process hundred books.

Considering the accreditation-wise analysis of the classification schemes adopted in EC libraries in Kerala illustrated in table 119 explains that almost all libraries from NBA accredited and non-accredited by NBA category ECs adopt DDC scheme to classify their resources.

Accreditation-wise analysis of the cataloguing code used in EC libraries in Kerala presented in table 119 clears that majority of ECs which have the accredited programs of NBA follow AACR II (63.89%) and a good number of them follow the cataloguing code used in the catalogue module of software packages (36.11%). In the meantime more than 50 percent of libraries of ECs which do not have the accredited programs of NBA seem to be adopting AACR II and nearly 50 percent of them adopt the cataloguing code used in the catalogue module of software packages (46.88%). As a whole it can be concluded from the table that nearly 60 percent of EC libraries in Kerala follow AACR II for cataloguing their resources.

Considering the accreditation-wise analysis of the form of catalogue used in the EC libraries in Kerala, it is visible from table 119 that all the libraries from NBA accredited ECs category and a large majority (84.38%) of libraries from non-NBA category ECs use OPAC as their catalogue. It is also noted from the table that a limited number of libraries from these two categories of ECs report using other forms of

catalogue like typed list, printed books and card form. The overall analysis of the table shows that most of the libraries in Kerala use OPAC as their catalogue form.

Taking into consideration the accreditation-wise analysis of the methods adopted in ECs in Kerala to organise print journals in their libraries, it is observed from table 119 that majority of NBA accredited (66.67%) and non-NBA accredited category (70.31%) organise their print journals by subject-wise. It is also clear from the table that only a limited number of libraries from both categories of libraries organise their print journals by other methods like alphabetic and classified. The overall analysis of the table shows that majority of EC libraries in Kerala arrange their print journals subject-wise.

Accreditation-wise analysis of the method of access to print resources provided to users by EC libraries in Kerala displayed in table 119 reports that all the libraries of ECs in Kerala provide open access to their print resources.

4.5.2 Organising and Method of Access to E-resources in the Libraries

The nature of E-resources is different from that of print. The print resources are handled through an established structure of vendors and libraries. However, E-resources do not have such an established system. E-resources present a number of hurdles not encountered by traditional library material collections. They present a number of technical issues that the library has to effectively maintain access to these e-resources in an ongoing and cost effective manner (Agrapu, 2013). The EC librarians are enquired about the organisation of E-resources, mode and method of access provided to E-resources in their libraries. The category-wise response from the libraries of ECs which have the accredited programs of NBA and NBA accreditation-wise response from EC libraries in Kerala were presented in table 120 and table 121 respectively.

Table 120

Organising and Method of Access to E-resources in the Libraries of NBA Accredited ECs (Category-Wise)

Organising and Method of Access to E-resources		Category		
		Govt.	Under Govt. Dept.	Self-finance
Organisation of E-resources	A-Z Listing	3 (27.27%)	3 (42.85%)	6 (33.33%)
	Subject-wise	8 (72.73%)	4 (57.14%)	10 (55.56%)
	Content Type	0 (0.00%)	1 (14.29%)	6 (33.33%)
Mode of Access Provided to E-resources	Access in the library	4 (36.36%)	3 (42.85%)	10 (55.56%)
	Remote access through campus network	10 (90.9%)	6 (85.71%)	15 (83.33%)
	Internet	3 (27.27%)	1 (14.29%)	7 (38.89%)
Method of Access Provided to Users	User ID/password	4 (36.36%)	0 (0.00%)	1 (5.55%)
	IP Address	2 (18.18%)	6 (85.71%)	11 (61.11%)
	Both	5 (45.45%)	1 (14.28%)	6 (33.33%)

Data regarding the organisation of E-resources in the libraries of NBA accredited ECs illustrated in table 120 shows that a significant proportion of Government EC libraries organise its E-resources by subject-wise (72.73%) and more than one fourth of them organise E-resources by A-Z listing (27.27%). At the same time more than 50 percent of EC libraries under Government departments organise their library E-resources by subject-wise (57.14%), a good number of them provide E-resources by A-Z list (42.9%) and a low percent of them organise E-resources by content-wise (14.29%). It can be also observed from the table that more than 50 percent of Self financing EC libraries organise their E-resources by subject-wise, a good number of them also follow A-Z listing (33.3%) and content-wise organisation of E-resources. As a whole it can be concluded from the table that all categories of libraries from NBA accredited ECs give their first preference to subject-wise organisation of E-resources.

Data regarding the category-wise analysis of the mode of access provided to E-resources in the libraries of NBA accredited ECs illustrated in table 120 affirms that a vast majority of Government EC libraries provide E-resource access to users by

remote access through campus network (90.9%), a good number of them provide access to E-resources from the library (36.4%) and more than 25 percent of them provide access to E-resources through internet (27.27%). The libraries of ECs under Government department report that a lion's share of them provide access to E-resources by remote access through campus network (85.71%), a good number of them provide access to E-resources from the library (42.9%) and a low percent of them indicate to provide access to E-resources through internet (14.29%). It can be also clear from the table that a significant proportion of Self financing EC libraries provide access to E-resources by remote access through campus network (83.33%), more than 50 percent of them provide access to E-resources from the library (55.56%) and a good number of them provide access to E-resources through internet (38.89%) too.

From the data of category-wise analysis of method of access to E-resources provided by EC libraries to users presented in table 120, it is evident that nearly 50 percent of Government EC libraries provide both (45.5%) user ID/password and IP address based method of access to E-resources of the library. A good number of them provide user ID/password method of access (36.4%) whereas a few percent of them provide IP address based method of access (18.2%) to its users. At the same time the libraries of ECs under Government departments show that a large majority of them provide IP address (85.71%) based method of access to E-resources to the users of the library and a very low percent of them provide both category of methods to E-resource access. When consider the method of access to E-resources provided by the Self financing EC libraries it is visible that majority of them provide IP address based (61.11%) access to E-resources, a good number of them provide both (33.3%) user ID/password and IP address based method of access to E-resources and only one Self financing EC library provide user ID/password based method of access to E-resources.

Table 121

**Organising and Method of Access to E-resources in EC Libraries in Kerala
(Accreditation-Wise)**

Organising and Method of Access to E-resources		Accreditation Status		
		NBA Accredited	Non-NBA Accredited	Total
Organisation of E-resources	A-Z Listing	12 (33.33%)	7 (10.94%)	19 (19.00%)
	Subject-wise	22 (61.11%)	51 (79.69%)	73 (73.00%)
	Content Type	7 (19.44%)	6 (9.38%)	13 (13.00%)
Mode of Access Provided to E-resources	Access in the library	17 (47.22%)	40 (62.50%)	57 (57.00%)
	Remote access through campus network	31 (86.11%)	29 (45.31%)	60 (60.00%)
	Internet	11 (30.56%)	18 (28.13%)	29 (29.00%)
Method of Access Provided to Users	User ID/password	5 (13.89%)	29 (45.31%)	34 (34.00%)
	IP Address	19 (52.78%)	21 (32.81%)	40 (40.00%)
	Both	12 (33.33%)	14 (21.88%)	26 (26.00%)

Data regarding the accreditation-wise analysis of the method of organisation of E-resources in EC libraries in Kerala depicted in table 121 indicates that more than 60 percent of libraries from ECs which have the accredited programs of NBA organise E-resources by subject-wise (61.11%), a good number of them organise E-resource by A-Z listing (33.33%) and a few among them reports of arranging E-resources by content-wise (19.44%). When checking the organisation of E-resources in ECs which do not have the accredited programs of NBA, it is visible that nearly 80 percent of them organise E-resource by subject-wise (79.69%), a few among them reports organising E-resource by A-Z listing (10.94%) and content-wise (9.38%). Overall analysis of the table indicates that a large majority of EC libraries in Kerala organise their E-resources subject-wise.

When considering the accreditation-wise analysis of mode of access provided to E-resources in EC libraries in Kerala, table 121 shows that a high percent of ECs which have the accredited programs of NBA provide remote access through campus network (86.11%), nearly 50 percent of them provide access in the library (47.22%) and a good number of them provide access through internet too (30.56%). At the same time the ECs which do not have the accredited programs of NBA shows that majority of them provide access to E-resources in the library (62.50%), a good number of them provide remote access through campus network (45.31%) and more than one fourth of them provide access through internet (28.13%).

Altogether it can be concluded from the data that two third of ECs provide the users remote access through campus networks to access E-resources. It is noted that when the highest number of ECs from NBA accredited category provide remote access through campus network, the ECs which do not have the accredited programs of NBA provide access to E-resources in the library itself.

Table 121 indicating the accreditation-wise analysis of method of access to E-resources provided to users in EC libraries in Kerala highlights that more than 50 percent of ECs which have the accredited programs of NBA provide the users access to E-resources through their IP address (52.78%), a good number of them adopt both IP address and username password methods (33.33%) to provide access to E-resources and only a limited number of libraries report username and password method (13.89%) to provide access to E-resources. When consider the case of ECs which do not have the accredited programs of NBA, it is clear that nearly 50 percent of libraries adopt username and password method (45.31%) to provide access to E-resources, a good number of them provide IP address based access (32.81%) and a limited number of them reports of providing both methods (21.88%) to access E-resources.

Overall analysis of the table indicates that a good number of EC libraries in Kerala provide IP address based access to E-resources and when more number of ECs which have the accredited programs of NBA provide IP address based access to E-

resources, it is recorded that more number of ECs which do not have the accredited programs of NBA provide username password based access to E-resources.

4.6 Management of Library Resources

Maintenance of collection is one of the primary activities posing many challenges in collection management. It involves preservation of library resources and stock verification. They insist on leaner and filter libraries as the need of the hour. Frequently librarians in the present digital environment are faced with three technological challenges like medium preservation, technology preservation and migration of information. Another challenge in management of library collection is EC libraries continue to play a prominent role in the distribution of information. In the long run libraries should make their collections that consist of printed materials and fee based E-resource collections available to its user group. This calls for some action adopted by the EC Librarian to punish users for misusing library collections (Agrapu, 2013). With digital materials, collection maintenance includes consideration of continued sufficient coverage of databases or other electronic reference sources, checking for dead or broken links and evaluating these links for accuracy, currency, and relevancy. The section covers the procedures followed in the EC libraries to manage their print and E-resource collection.

4.6.1 Management of Print Resources in Libraries

Print resources should be well managed in the libraries by making them protected with the help of appropriate preservation methods and its stock also should be verified regularly as per the items in the accession register of the library. It is also the duty of the librarian to take action against those who made missing or mutilating the library collection. The EC librarians were enquired about the preservation methods followed in their libraries, frequency and method adopted for physical stock verification of print resources and the action taken by the librarian against those who made missing or mutilation of print resources. The category-wise response from the libraries of ECs which have the accredited programs of NBA and status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 122 and table 123 respectively.

Table 122

**Management of Print Resources in the Libraries of NBA accredited ECs
(Category-Wise)**

Management of Print Resources		Category		
		Govt.	Under Govt. Dept.	Self-finance
Preservation Methods Followed in the Libraries	Binding and Repair	10 (90.9%)	7 (100%)	17 (94.44%)
	Pest control	3 (27.27%)	4 (57.14%)	4 (22.22%)
	Digital preservation	2 (18.18%)	0 (0.00%)	3 (16.66%)
Frequency of physical stock verification process	Annually	9 (81.81%)	6 (85.71%)	11 (61.11%)
	Once in two year	2 (18.18%)	1 (14.28%)	5 (27.77%)
	Once in three year	0 (0.00%)	0 (0.00%)	2 (11.11%)
Method of Stock Verification	Shelf list	3 (27.27%)	1 (14.28%)	1 (5.56%)
	Barcoding Technology	7 (63.64%)	5 (71.43%)	15 (83.33%)
	Accession Register	1 (9.09%)	1 (14.28%)	2 (11.11%)
Action Taken for Missing and Mutilated Collection in the Library	Charge defaulters with the current price of the book with processing charge	5 (45.45%)	3 (42.86%)	13 (72.22%)
	Replace the current edition of the book	9 (81.82%)	6 (85.71%)	12 (66.67%)
	Stop issue	1 (9.09%)	0 (0.00%)	1 (5.56%)

It is obviously clear from table 122 which category-wise analyses the preservation methods followed in the libraries of NBA accredited ECs that all ECs under Government departments and a major part of Self financing (94.44%) and Government (90.9%) EC libraries maintain the books by binding and repairing. Majority of ECs under Government departments (57.14%), and a few Government (27.27%) and Self financing (2.22%) EC libraries doing pest control for maintaining the print collection properly. It is also visible from the table that a very low percent of Government and Self financing EC libraries follow digital preservation of the

documents for better treatment. As a whole it can be concluded from the table that almost all libraries from three categories of NBA accredited ECs technique of preservation of printed resources are binding and repairing

Stock verification is the most important part of the library working. It is an activity which asks the head and his colleagues to have a short break / a pause from their routine duties to assess the stock, and evaluate the utility of assets. It helps to evaluate the working action plan, bring forth the loopholes, lapses, corrections, repairs to be made and help in achieving the up to date information of the library working and taking the action accordingly (Belsare, 2013). Data regarding the frequency of stock verification process followed in the libraries of NBA accredited ECs displayed in table 122 shows that a very large majority of EC libraries under Government departments (85.1%), Government EC libraries (81.8%) and above 60 percent of Self financing EC libraries (61.1%) follow the stock verification process once in every year. More than one fourth of Self financing ECs (27.8%) and a very few percent of Government (18.2%) and ECs under Government departments (14.3%) doing the stock verification process once in every two year. It is also noted from the table that a very low number of Self financing ECs follow the process of stock verification of library materials once in every three years.

Data regarding the methods of stock verification followed in the libraries of NBA accredited ECs illustrated in the table 122 indicates that a largest share of Self financing EC libraries (83.33%), ECs under government departments (71.43%) and Government EC libraries (63.64%) adopt the method of barcoding technology for stock verification. It can be seen from the table that only a few percent of libraries from all three category ECs follow the other methods of stock verification like accession register and shelf lists.

Data regarding the action taken by the libraries of NBA accredited ECs for missing and mutilating collection by the users illustrated in table 122 affirms that a vast majority of Government EC libraries take the action of replacing the current edition of the book (81.82%), nearly 50 percent of them report to charge the defaulters with the current price of the book with processing charge (45.45%). The same

procedure seems to be followed by the EC libraries under Government departments. It is clearly visible from the table that a major part of them replace the current edition of the book (85.71%) and a good number of them report to charge the defaulters with the current price of the book with processing charge. In the case of Self financing EC libraries it seems to be different from other two categories of libraries as two third of them report that they charge the defaulters with the current price of the book with processing charge.

Table 123
Management of Print Resources in EC libraries in Kerala
(Accreditation-Wise)

Management of Print Resources		Accreditation Status		
		NBA Accredited	Non-NBA Accredited	Total
Preservation Methods Followed in the Libraries	Binding and Repair	34 (94.44%)	58 (90.63%)	92 (92.00%)
	Pest control	11 (30.56%)	21 (32.81%)	32 (32.00%)
	Digital preservation	5 (13.89%)	5 (7.81%)	10 (10.00%)
Frequency of physical stock verification process	Annually	26 (72.22%)	53 (82.81%)	79 (79.00%)
	Once in two year	8 (22.22%)	9 (14.06%)	17 (17.00%)
	Once in three year	2 (5.56%)	2 (3.13%)	4 (4.00%)
Method of Stock Verification	Shelf list	5 (13.89%)	17 (26.56%)	22 (22.00%)
	Barcoding Technology	27 (75.00%)	34 (53.13%)	61 (61.00%)
	Accession Register	4 (11.11%)	13 (20.31%)	17 (17.00%)
Action Taken for Missing and Mutilated Collection in the Library	Charge defaulters with the current price of the book with processing charge	21 (58.33%)	26 (40.63%)	47 (47.00%)
	Replace the current edition of the book	27 (75.00%)	46 (71.88%)	73 (73.00%)
	Stop issue	2 (5.56%)	8 (12.50%)	10 (10.00%)
	Cancel membership	0 (0.00%)	3 (4.69%)	3 (3.00%)

Accreditation-wise analysis of the preservation methods followed in EC libraries in Kerala illustrated in table 123 explains that most of the libraries from both NBA accredited (94.44%) and non-accredited by NBA (90.63%) category of ECs consider binding and repair method to preserve their print resources. Data from the table also shows that good number of libraries from both category of ECs follow pest control method and a limited number of ECs report digital preservation of printed resources in their libraries. Altogether it can be concluded from the table that most of the ECs in Kerala adopt binding and repair methods to preserve their print resources in good condition.

Data regarding the accreditation-wise analysis of the frequency of physical stock verification process followed in EC libraries in Kerala presented in table 123 conveys that a lion's share of libraries from NBA accredited (72.22%) and non-accredited by NBA category (82.81%) of ECs do their stock verification annually. Table also shows a few libraries from both categories of ECs doing their stock verification of print resources once in every two year and once in every three year. Altogether it can be concluded from the table that most of the EC libraries in Kerala do the stock verification of print resources annually.

Table 123 reports the accreditation-wise analysis of the method of stock verification followed in EC libraries in Kerala reveals that three fourth of ECs which have the accredited programs of NBA follow barcoding technology (75%) and a limited number of them report the methods of shelf list and accession register for stock verification of printed resources in their libraries. In the case of ECs which do not have the accredited programs of NBA it is observed that more than 50 percent of EC libraries adopt barcoding technology (53.13%), more than one fourth of them reports the method of shelf list (26.56%) and a limited number of them report the method of accession register for stock verification in their libraries. Altogether it can be concluded from the table that barcoding technology is the main stock verification method used by most of the EC libraries in Kerala.

Table 123 indicating the accreditation-wise analysis of the action taken by the library against the users for missing or mutilating the collection in ECs in Kerala

discloses that a significant proportion of ECs which have (75%) and have not (71.88%) accredited programs of NBA follow the procedure of replacing the current edition of the books. Table also indicates that nearly 60 percent of ECs which have the accredited programs of NBA and more than 40 percent of ECs which do not have the accredited programs of NBA charge defaulters with the current price of the books with processing charge. It is noted from the table that only a limited number of libraries report other actions like stopping missed issues and cancelling the membership of the user-like activities. Altogether it can be concluded from the table that EC libraries in Kerala mainly replace the current edition of the books at the instances of users missing or mutilating the collections of the library.

4.6.2 Procedures Followed in the Libraries for Managing E-Resources

Once the selection and acquisition of E-Resources are completed, the next major step is their management in libraries. It is necessary to observe and follow certain management aspects to provide electronic information resources harmoniously to users. The aspects like renewal of annual maintenance contract, content verification, content access, updating E-Resources, achieving etc., are to be taken care of in libraries for managing E-Resources (Rao, 2013). The EC librarians were enquired about the procedures followed in their libraries to manage E-resources properly thus to provide better E-resource service to the users. The category-wise response from the libraries of ECs which have the accredited programs of NBA is displayed in table 124 and 125 whereas status of NBA accreditation-wise response from EC libraries in Kerala were presented in table 126 and table 127 respectively.

Table 124

Procedures Followed in the Libraries of NBA Accredited ECs for Managing E-Resources (Category-Wise)

Procedures	Category		
	Govt.	Under Govt. Dept.	Self-financing
Verification of Access - Content (as per order placed)	8 (72.73%)	5 (71.43%)	10 (55.56%)
Verification of Access - No. of users (as per order placed)	5 (45.45%)	5 (71.43%)	12 (66.67%)
Verification of Access - Access method (as per order placed)	5 (45.45%)	2 (28.57%)	5 (27.78%)
Organizational chart (Duties allotment to technical staff)	3 (27.27%)	2 (28.57%)	4 (22.22%)
Periodical reviewing of Electronic Resources (content, access etc.)	5 (45.45%)	1 (14.29%)	8 (44.44%)
Enquiries and feedback received from users regarding content not covered, downloading problems etc.	5 (45.45%)	4 (57.14%)	10 (55.56%)
Monitoring speed of Information Download Facility	9 (81.82%)	3 (42.86%)	8 (44.44%)
Monitoring Information storage Facility	6 (54.55%)	0 (0.0%)	4 (22.22%)
Print facility to all documents/ part	8 (72.73%)	1 (14.29%)	7 (38.89%)
Data Records of Electronic Resources (accession register)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Shelving of E-resources (non-book materials-accessioning, classification and cataloguing)	2 (18.18%)	1 (14.29%)	0 (0.0%)
Updating of new electronic resources in OPAC	5 (45.45%)	2 (28.57%)	3 (16.67%)
Information literacy programs (Presentation by publishers. announcement by library etc.)	5 (45.45%)	2 (28.57%)	5 (27.78%)
Staff training	7 (63.64%)	3 (42.86%)	7 (38.89%)
Database administration	4 (36.36%)	2 (28.57%)	1 (5.56%)
Communication with vendors	6 (54.55%)	3 (42.86%)	5 (27.78%)
Tracking of Utilization statistics	7 (63.64%)	3 (42.86%)	6 (33.33%)
License Tracking (for renewal of electronic resources)	5 (45.45%)	2 (28.57%)	4 (22.22%)
Overdue alerts to management (renewal, advance payment)	3 (27.27%)	2 (28.57%)	6 (33.33%)
Archiving	2 (18.18%)	0 (0.0%)	3 (16.67%)
AMC Tracking	4 (36.36%)	1 (14.29%)	2 (11.11%)

Data regarding the management procedures followed in the libraries of NBA accredited ECs for managing their E-resources illustrated in table 124 reveals that a large part of Government EC libraries monitors the speed of information download facility of E-resources (81.82%), print facility to all documents/parts (72.73%), verification of access to the content of E-resources as per the placed order (72.73%), training to staff (63.64%) and tracking the statistics of utilization of E-resources. More than 50 percent of them follow the procedures like communication with vendors (54.55%) and monitoring the information storage facility (54.55%). It is also noted from the table that a good number of Government EC libraries track the license of E-resources for its renewal purpose (45.45%), provide information literacy programs (45.45%), update the new E-resources in OPAC (45.45%), receives the enquiries and feedback from users regarding content not covered, downloading problems etc. (45.45%), review the E-resources periodically (45.45%), verify the access method of E-resources as per the order placed (45.45%), verify the number of users access the E-resources as per the placed order (45.5%), tracking of AMC (36.36%) and database administration (36.36%). From the table it can also be interpreted that only a few percent of Government EC libraries do the procedures like archiving of E-resources, overdue alerts to management, duties allotment to technical staff etc.

It is quite clear from the table that a great majority of EC libraries under Government departments do the verification of access to the E-resource content (71.43%) and number of users (71.43%) as per the placed order. Nearly sixty percent of them receive enquiries and feedback from users regarding content not covered, downloading problems etc (57.14%). A good number of them monitor the speed of information download facility, provide staff training, communicate with vendors of E-resources and track the utilisation statistics of E-resources. The data from the table also highlights that more than twenty five percent of EC libraries under Government departments organise duties allotment to technical staff, update new E-resources in the OPAC, organise information literacy programs, administration of database etc.

It is observed from the table that majority of Self financing EC libraries doing the verification of access to E-resources by number of users (66.67%), content

(55.56%) as per the placed order and receives the enquiries and feedback from users regarding content not covered, downloading problems etc (55.56%). A good number of them report the procedure of monitoring the speed information download facility (44.44%), periodical reviewing of E-resources (44.44%), print facility to all documents/parts (38.89%), tracking of utilization statistics (33.33%) and to give overdue alerts to management (33.33%).

As a whole it can be concluded from the table that the Government EC libraries follow four to five procedures like verification of access to the content of E-resources as per the placed order, monitoring speed of information download facility, print facility to all/ parts of the documents, training to library staff etc mainly in the management of E-resources to make it services best to the user community and it is also visible from the table that compared to the Government EC libraries, other two category of ECs seem to be following the management procedures of E-resources less.

Table 125

Number of Procedures Followed in the Libraries of NBA Accredited ECs for Managing E-Resources (Category-Wise)

Number of Procedures	Category		
	Govt.	Under Govt. Dept.	Self-financing
Low	5 (45.45%)	4 (57.14%)	11 (61.11%)
Medium	2 (18.18%)	2 (28.57%)	3 (16.66%)
High	4 (36.36%)	1 (14.28%)	4 (22.22%)
Chi-square = 1.843**; p-value = 0.813			

** Significant at 0.01 level

The category-wise difference in the procedures followed to manage E-resources among the libraries of NBA accredited ECs are analysed with Chi-square test and presented in table 125. Since the p-value is greater than the level of significance it can conclude that, there is no significant difference in the number of procedures followed to manage the E-resources among the libraries of Government, under Government department and self-financing ECs.

Table 126
Procedures Followed in the Libraries of ECs for Managing E-Resources
(Accreditation-Wise)

Procedures	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Verification of Access - Content (as per order placed)	23 (63.89%)	16 (25.00%)	39 (39.00%)
Verification of Access - No. of users (as per order placed)	22 (61.11%)	13 (20.31%)	35 (35.00%)
Verification of Access - Access method (as per order placed)	12 (33.33%)	12 (18.75%)	24 (24.00%)
Organizational chart (Duties allotment to technical staff)	9 (25.00%)	5 (7.81%)	14 (14.00%)
Periodical reviewing of Electronic Resources (content, access etc.)	14 (38.89%)	17 (26.56%)	31 (31.00%)
Enquiries and feedback received from users regarding content not covered, downloading problems etc.	19 (52.78%)	10 (15.63%)	29 (29.00%)
Monitoring speed of Information Download Facility	20 (55.56%)	8 (12.50%)	28 (28.00%)
Monitoring Information storage Facility	10 (27.78%)	7 (10.94%)	17 (17.00%)
Print facility to all documents/ part	16 (44.44%)	11 (17.19%)	27 (27.00%)
Data Records of Electronic Resources (accession register)	0 (0.00%)	0 (0.00%)	0 (0.00%)
Shelving of E-resources (non-book materials-accessioning, classification and cataloguing)	3 (8.33%)	9 (14.06%)	12 (12.00%)
Updating of new electronic resources in OPAC	10 (27.78%)	10 (15.63%)	20 (20.00%)
Information literacy programs (Presentation by publishers. announcement by library etc.)	12 (33.33%)	6 (9.38%)	18 (18.00%)
Staff training	17 (47.22%)	12 (18.75%)	29 (29.00%)
Database administration	7 (19.44%)	7 (10.94%)	14 (14.00%)
Communication with vendors	14 (38.89%)	14 (21.88%)	28 (28.00%)
Tracking of Utilization statistics	16 (44.44%)	5 (7.81%)	21 (21.00%)
License Tracking (for renewal of electronic resources)	11 (30.56%)	8 (12.50%)	19 (19.00%)
Overdue alerts to management (renewal, advance payment)	11 (30.56%)	8 (12.50%)	19 (19.00%)
Archiving	5 (13.89%)	3 (4.69%)	8 (8.00%)
AMC Tracking	6 (16.67%)	5 (7.81%)	11 (11.00%)

Data regarding the accreditation-wise analysis of the procedures followed in EC libraries in Kerala to manage their E-resources to provide better E-resource service to its users mentioned in table 126 reveals that nearly two third of ECs which have the accredited programs of NBA verify the access to the contents of E-resources received as per the placed order (63.89%) and verify the access to E-resources to the number of users as per the placed order (61.11%). More than 50 percent of libraries report that they monitor the speed of information download facility of E-resources (55.56%) and receive enquiries and feedback from users regarding content not covered, downloading problems etc (52.78%). Nearly 50 percent of them respond that they provide E-resource management related training to library staff (47.22%), tracking of utilisation statistics (44.44%) and print facility to the documents (44.44%). A good number of them report that they review the E-resources periodically (38.89%), communicate with the vendors (38.89%), conduct information literacy programs (33.33%), verify the access method of E-resources (33.33%), track the license for renewal of E-resources (30.56%) and alerts the management regarding the overdue of E-resources (30.56%). It is observed from the table that more than one fourth of libraries monitor the information storage facility of E-resources (27.78%), update the new E-resources in OPAC (27.78%) and prepare organise charts to allot duties to library staff (25%). Table shows that only a limited number of libraries follow the procedure of administration of database (19.44%), tracking of AMC (16.67%), archiving of E-resources (13.89%) etc.

When considering the procedure followed by the libraries of ECs which do not have the accredited programs of NBA, the table demonstrates that more than one fourth of libraries review the E-resources periodically (26.56%) and verify the access to E-resources as per the placed order (25%). More than one fifth of libraries report that they communicate with the vendors of E-resources (21.88%) and verify access to the E-resources to the number of users as per the placed order (20.31%). It is noted from the table that very limited number of ECs which do not have the accredited programs of NBA follow the other management procedures of E-resources like training to library staff (18.75%), receiving enquiries and feedback from users

(15.63%), updating of new E-resources in OPAC (15.63%), conducting information literacy programs (9.38%), tracking of AMC (7.81%), archiving (4.69%) etc.

Overall analysis of the table indicates that the majority of ECs in Kerala do not follow most of the management procedures of E-resources in their libraries for providing better E-resource service to its users. There is a difference between the libraries of ECs in the number of procedures followed to manage E-resources in which NBA accredited ECs show high percent when compared to the later one. As Wadekar and Nagarkar (2018) suggested in their study, the library staff need to improve their competencies to manage electronic resources efficiently and the library science curricula need to include a paper on the management of electronic resources that will help the future librarians to manage the electronic resources effectively.

Table 127

Number of Procedures Followed in the Libraries of ECs for Managing E-Resources (Accreditation-Wise)

Number of Procedures	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Low	20 (55.55%)	53 (82.81%)	73 (73.00%)
Medium	7 (19.44%)	4 (6.25%)	11 (11.00%)
High	9 (25.00%)	7 (10.93%)	16 (16.00%)
Chi-square = 8.839**; p-value = 0.012			

**** Significant at 0.05 level**

Accreditation-wise differences in the number of procedures followed to manage E-resources between the EC libraries in Kerala are analysed with Chi-square test and illustrated in table 127. Since the p-value is less than the level of significance it can conclude that, there is significant difference between the numbers of procedures followed to manage the E-resources in the libraries of NBA accredited and non-NBA accredited ECs.

4.7 NBA Accreditation Status in EC Libraries in Kerala

The researcher made an attempt to know whether EC libraries which do not have the accredited programs of NBA trying for the accreditation after knowing its importance, If they are trying for it what impact has made this in their library resources, services and facilities and whether they think that NBA should emphasis any other criteria for accreditation in the case of libraries.

4.7.1 Progress of NBA Accreditation Status in EC Libraries in Kerala

The EC librarians in Kerala were asked about the progress of NBA accreditation status of their institutions with an intention whether those colleges which do not have the accredited programs of NBA are trying for accreditation after knowing its importance. The result was illustrated in table 128.

Table 128

Progress of NBA Accreditation Status in EC Libraries in Kerala

Status	No. of ECs
NBA Accredited	36 (36.00%)
Applied for/in the process of applying for NBA accreditation	47 (47.00%)
Not Applied	17 (17.00%)
Total	100 (100%)

Data from table 128 conveys that out of 100 ECs in Kerala under study, 36 ECs already have NBA accredited programs, 47 ECs are in a stage of applied/in the process of applying for accreditation. It is also noted from the table that 17 ECs are not applied for NBA and when enquired about not applying for accreditation, most of them not respond to the question and some of them replied that they are not eligible for apply now and others respond that they have the accreditation of some other bodies and do not required NBA accreditation.

4.7.2 Librarians Views Regarding the Impact of NBA Accreditation on Library Resources, Services and Facilities

The librarians of ECs in Kerala which have the accredited programs of NBA and in a status of applied/in the process of applying for NBA were enquired about their views on whether they agree that the resources, services and facilities in their library are improved as an impact of NBA or not. The response is recorded on table 129.

Table 129

Librarians Views Regarding the Impact of NBA Accreditation on Library Resources, Services and Facilities

Response	No. of ECs
Yes	78 (93.97%)
No	5 (6.02%)
Total	83 (100%)

According to table 129 out of 83 librarians, almost all of them (93.97%) replied that the resources, services and facilities in their library are improved as an impact of NBA and only a very few number of librarians (6.02%) respond that NBA accreditation didn't make any improvements in the resources, services and facilities in their libraries.

4.7.3 Opinion of EC Librarians Regarding the Impact of NBA Accreditation in the Resources, Services and Facilities of their Libraries

The EC librarians who responded that NBA accreditation has made improvements in resources, services and facilities of their libraries were asked the areas of improvement and the responses are recorded in table 130.

Table 130

Opinion of EC Librarians Regarding the Impact of NBA Accreditation in the Resources, Services and Facilities of their Libraries

Resources/Services	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Increased library area	4 (5.12%)	15 (19.23%)	22 (28.2%)	33 (42.3%)	4 (5.12%)
Increased library opening hours	4 (5.12%)	14 (17.94%)	23 (29.48%)	32 (41.02%)	5 (6.41%)
Increased budget	3 (3.84%)	3 (3.84%)	24 (30.76%)	40 (51.28%)	8 (10.25%)
Improved library infrastructure	3 (3.84%)	3 (3.84%)	22 (28.2%)	44 (56.41%)	6 (7.69%)
Improved ICT infrastructure	5 (6.41%)	4 (5.12%)	25 (32.05%)	37 (47.43%)	7 (8.97%)
Improved library automation status	3 (3.84%)	5 (6.41%)	22 (28.6%)	39 (50.00%)	8 (10.25%)
Improved digital library services	4 (5.12%)	5 (6.41%)	20 (25.64%)	40 (51.28%)	9 (11.53%)
Improved in the activities of library advisory committee	3 (3.84%)	5 (6.41%)	31 (39.74%)	32 (41.02%)	6 (7.69%)
Development in the human resource	3 (3.84%)	7 (8.97%)	34 (43.58%)	28 (35.89%)	5 (6.41%)
Development in collection of print resources	3 (3.84%)	5 (6.41%)	27 (34.61%)	36 (46.15%)	6 (7.69%)
Increased subscription of E-resources	3 (3.84%)	7 (8.97%)	27 (34.61%)	34 (43.59%)	7 (8.97%)
Increased the number of library services provided to users	4 (5.12%)	4 (5.12%)	28 (35.89%)	32 (41.02%)	10 (12.82%)

4.7.3.1 Increased Library Area

The EC librarians were asked whether the area of their library has increased as an impact of NBA accreditation and table 130 shows that more than 40 percent of

librarians agree that the library area has increased as an impact of NBA accreditation. 19.23 percent of them replied that they are not agreeing that NBA accreditation has made an impact on the area of their libraries.

4.7.3.2 Increased Library Opening Hours

The EC librarians were asked whether the opening hours of their library has increased as an impact of NBA. Table 130 displays that 41.02 percent of librarians agree that NBA accreditation has increased opening hours of their libraries and 17.94 percent of them do not agree with the statement that NBA accreditation has increased the opening hours of their libraries.

4.7.3.3 Increased Library Budget

The EC librarians were enquired whether the budget allocated for the library has increased as an impact of NBA. Table 130 indicates that more than 50 percent of librarians agree (51.28%) and 10.25 percent of them strongly agree that NBA accreditation has increased the budget allocated for their libraries.

4.7.3.4 Improved Library Infrastructure

EC librarians were asked whether their library infrastructure has improved as an impact of NBA accreditation. According to table 130 nearly 60 percent of EC librarians agree (56.41%) that NBA accreditation has improved their library infrastructure and a limited number of them disagree with the query.

4.7.3.5 Improved ICT Infrastructure

Data regarding the impact of NBA accreditation on improvement of ICT infrastructure of EC libraries in Kerala illustrated in table 130 explains that nearly 50 percent of libraries agree (47.43%) that NBA accreditation has made improvement in the ICT infrastructure of their libraries and a very limited number of them seem to disagree (5.12%) with the statement.

4.7.3.6 Improved Library Automation Status

The EC librarians were asked whether the automation status of their library has improved as an impact of NBA. Table 130 shows that more than 50 percent of EC

librarians agree that automation status of their libraries are increased as an impact of NBA accreditation and only a few number of EC librarians disagree (6.41%) with the statement that there is improvement in the automation status of their library by accreditation of NBA.

4.7.3.7 Improved Digital Library Services

EC librarians in Kerala were asked whether the digital library services have improved as an impact of NBA accreditation. Their responses are recorded in table 130. According to the table more than 50 percent of libraries agreed with the statement and a limited number of them disagree (6.41%) with the statement.

4.7.3.8 Improved in the Activities of Library Advisory Committee

EC librarians were asked whether the activities of the library advisory committee has improved as an impact of NBA accreditation. The responses are recorded in table 130. As per the table 41.02 percent of libraries agreed with the statement. It is also observed from the table that only a few among them disagree with the statement that NBA accreditation has made an impact on the activities of the library advisory committee.

4.7.3.9 Development in Library Human Resource

EC librarians in Kerala were asked whether the accreditation of NBA has made an impact on the development of human resources in the library. The responses are enclosed in table 130. It is observed from the table that 35.89 percent of libraries agreed with the statement and a limited number of libraries disagree with the statement.

4.7.3.10 Development in Collection of Print Resources

Table 130 sheds light on EC librarians' response regarding the development in collection of print resources in their libraries as an impact of NBA accreditation. It reveals that nearly 50 percent of librarians agreed (46.15%) with the statement and a limited number of them disagreed (6.41%) with the statement.

4.7.3.11 Increased Subscription of E-resources

Table 130 shows the response of EC librarians regarding the increase of E-resource subscription in their libraries as an impact of NBA accreditation. It discloses

that 43.59 percent of librarians agreed with the statement and a few among them disagree (8.97%) with the statement that the NBA accreditation process has made improvement in the subscription of E-resources in their libraries.

4.7.3.12 Increased the Number of Library Services Provided to Users

EC librarians were asked whether NBA accreditation has made an impact on increasing the number of services provided to the users of their libraries. The responses recorded in table 130 shows that 41.02 percent of librarians agreed with the statement and a low number of them disagree with the statement.

As the majority of EC librarians agreed that NBA accreditation has made improvement on the resources, services and facilities of their libraries it can be understood from the data that NBA has made a significant and positive impact on EC libraries in Kerala. Naveen (2020), Odera-Kwach and Ngulube (2013), Raut and Kokate (2013), Ghumre and Veer (2013) in their study to understand the impact of accreditation on libraries also agreed positively that accreditation has made significant changes in their libraries.

4.7.4 Librarian's Views with Regard to NBA Emphasis on Specific Criteria for Accreditation

The librarians of ECs in Kerala which have the accredited programs of NBA and on the way of applying for NBA accreditation were asked whether they have the opinion that NBA should emphasize any more specific criteria in its accreditation process. The responses are recorded in table 131.

Table 131

Librarian's Views with Regard to NBA Emphasis on Specific Criteria for Accreditation

Response	No. of ECs (N=83)
Yes	64 (77.11%)
No	19 (22.89%)
Total	83 (100%)

According to table 131 out of eighty three ECs in Kerala, more than one fourth of librarians (77.11%) opine that NBA should emphasis some more criteria in its accreditation process and only a low percent (22.89%) among them opine that there is no need of any more criteria that NBA should emphasis in its accreditation process.

4.7.4.1. Librarian's Views with Regard to the Criteria in Which NBA Emphasis in its Accreditation Process

The librarians of ECs which have the accredited programs of NBA or on the way of applying for NBA accreditation process, who have the opinion that NBA should emphasize on specific criteria in its accreditation process were asked about the areas in which they want NBA should include in its accreditation process. The responses are noted in table 132.

Table 132

Librarian's Views with Regard to the Criteria in Which NBA Emphasis in its Accreditation Process

Librarian's views	No. of ECs (N=64)
Library orientation and follow up programs for faculty and students	48 (75.00%)
Feedback with regard to library collection and its usage	53 (82.81%)
Emphasis on library services and products	41 (64.06%)
Emphasis on innovative measures in the library	41 (64.06%)
Emphasis on bringing more readers into the library	38 (59.37%)
Liaison with faculty to introduce modules enhancing library use	26 (40.62%)
Working together with training and placement cell to support career opportunities	28 (43.75%)
Doing an analysis of quality rather than quantity with regard to various parameters	32 (50.00%)

It is observed from table 132 that a large majority of librarians opine that NBA should consider the feedback with regard to library collection and its usage (82.81%) and the orientation and follow up programs library conducted for its faculty and students (75%). More than 60 percent of EC librarians opine that the NBA should emphasize innovative measures in the library (64.06%) and the availability of services and products in the libraries (64.06%). Nearly 60 percent of EC librarians opine that NBA should consider activities regarding bringing more readers to the library (59.37%). Fifty percent of EC librarians recommend that the NBA should do an analysis of quality rather than quantity with regard to various parameters. It is also visible from the table that more than 40 percent of EC librarians have an opinion of NBA should lay emphasis on the activities of working together with training and placement cell to support career opportunities (43.75%) and aware about the need of aspects like liaison with faculty to introduce modules enhancing library use (40.62%).

Overall analysis of the table shows that the majority of EC librarians in Kerala have the opinion that NBA should consider the aspects like feedback with regard to the library collection and usage, orientation and follow up programs which libraries conduct for the faculty and students, the services and products of the libraries and innovative measures in the libraries in its accreditation process. In the study of discussing the importance of libraries and librarians in the accreditation process, Kulkarni (2018) also opined that library and librarian can play an important role and contribute a lot in the assessment and accreditation process beyond Library learning resource.

4.8 Problems and Challenges Faced by EC Libraries for Further Library Improvements

According to the changes in technology, the information seeking behaviour of library users also changed. Hence the library professional has to update themselves with the latest information available in the field of engineering education thus to provide better and improved services and facilities to the users. The EC librarians were enquired about whether they face any problems/challenges for further improvement of library resources, services and facilities and their responses are recorded on table 133.

Table 133
Problems and Challenges Faced by EC Libraries for Further Library Improvements

Problems/Challenges	Accreditation Status		Total
	NBA Accredited	Non-NBA Accredited	
Inadequate fund provisions	20 (55.56%)	34 (53.13%)	54 (54.00%)
Lack of support from Authority	3 (8.33%)	12 (18.75%)	15 (15.00%)
Inadequate staff structure	4 (11.11%)	19 (29.69%)	23 (23.00%)
Lack of trained manpower for the implementation of new IT initiatives	11 (30.56%)	8 (12.50%)	19 (19.00%)
Lack of professional encouragement and up-liftments	5 (13.89%)	6 (9.38%)	11 (11.00%)
Non-recognition in the policy decision making of the library activities	3 (8.33%)	10 (15.63%)	13 (13.00%)
Lack of Need based services	4 (11.11%)	8 (12.50%)	12 (12.00%)
Lack of Co-ordination and Planning	4 (11.11%)	8 (12.50%)	12 (12.00%)
Difficulties to implement the library technical processing such as classification and cataloguing	1 (2.78%)	4 (6.25%)	5 (5.00%)
Inadequate space facilities	14 (38.89%)	14 (21.88%)	28 (28.00%)
Inadequate furniture and equipment	9 (25.00%)	11 (17.19%)	20 (20.00%)
Lack of knowledge to use e-resources among library users	9 (25.00%)	18 (28.13%)	27 (27.00%)
Lack of cooperation among the fellow professionals	3 (8.33%)	4 (6.25%)	7 (7.00%)
Difficulties for the subscription of foreign periodicals	7 (19.44%)	15 (23.44%)	22 (22.00%)
Lack of infrastructure to support storage and access	5 (13.89%)	1 (1.56%)	6 (6.00%)
Inadequate ICT Infrastructure	7 (19.44%)	10 (15.63%)	17 (17.00%)
Increasing Cost of Hardware & Software	9 (25.00%)	25 (39.06%)	34 (34.00%)
Lack of proper security system to prevent the loss of books	11 (30.56%)	22 (34.38%)	33 (33.00%)

According to table 133 more than 50 percent of ECs which have the accredited programs of the NBA are facing the problem of inadequate fund provisions (55.56%). Nearly 40percent of them face inadequate space facilities (38.89%). More than 30

percent of them report lack of proper security systems to prevent the loss of books (30.56%) and lack of trained manpower for the implementation of new IT initiatives (30.56%). One fourth of them respond that inadequate furniture and equipment (25%), lack of knowledge to use E-resources among library users (25%) and increasing cost of hardware and software (25%). Nearly one fifth of ECs which have the accredited programs of NBA report inadequate ICT infrastructure (19.44%) and difficulties for the subscription of foreign periodicals (19.44%). Data from the table also reveals that only a low percent of ECs which do not have the accredited programs of NBA report the problems like lack of infrastructure to support storage and access (13.89%), lack of professional encouragement and upliftments (13.89%), inadequate staff structure (11.11%), lack of need based services (11.11%) etc.

Considering the ECs which do not have the accredited programs of NBA, it is observed that more than 50 percent of EC libraries face the problem of inadequate fund provision (53.13%), nearly 40 percent of them face the problem of increasing cost of hardware and software (30.06%), 34.38 percent of libraries report lack of proper security systems to prevent the loss of books, nearly 30 percent of them report inadequate staff structure (29.69%) and lack of knowledge to use E-resources among the library users (28.13%), more than one fifth of them face the problem of difficulties for the subscription of foreign periodicals (23.44%) and inadequate space facilities (21.88%). It is also clear from the table that a low percent of ECs which do not have the accredited programs of NBA report the other problems like lack of support from authority (18.75%), inadequate furniture and equipment (17.19%), inadequate ICT infrastructure (15.63%), non-recognition in the policy decision making of the library activities (15.63%), lack of coordination and planning (12.50%) etc.

Overall analysis of the data reveals that the major problems faced by EC libraries in Kerala are inadequate fund provision, increasing cost of hardware and software, lack of a proper security system to prevent the loss of books, inadequate space facilities and lack of knowledge to use E-resources among the library users.

Table 134

Number of Problems and Challenges Faced by the EC Libraries for Further Library Improvements

Number of Problems and Challenges	NBA Accredited	Non-NBA Accredited	Total
Low	27 (75.00%)	50 (78.12%)	77 (77.00%)
Medium	5 (13.88%)	6 (9.37%)	11 (11.00%)
High	4 (11.11%)	8 (12.5%)	12 (12.00%)
Chi-square = 0.602**; p-value = 0.771			

**** Significant at 0.01 level**

Accreditation wise difference in the number of problems faced by EC libraries for its further development is tested with Chi-square test and presented in table 134. Since the p value is greater than the level of significance, it can conclude that there is no significant difference between the NBA accredited and non-accredited ECs.

4.9 Conclusion

This chapter analysed the data collected from the engineering college librarians in Kerala regarding the development and management of the libraries. It compared the resources, services, ICT infrastructure facilities, collection development policy, organisation and management procedures between the libraries of ECs which have and do not have the accredited programs of NBA. The chapter also analysed the impact of NBA accreditation on resources and services and on other aspects of these libraries. Various statistical techniques like percentage, mean, standard deviation, chi-square etc are used to analyse the data. Results are explained with the help of tables and diagrams which help the researcher to extract the findings through clear interpretations. The results revealed that the libraries of NBA accredited engineering colleges do not show much difference in their resources, services, ICT infrastructure, collection development and management based on their category. But when considering the libraries of engineering colleges which have and do not have the accredited programs of NBA, it is found that they show significant differences in the availability of information resources, ICT infrastructure and services and do not show much difference in the collection development and management of information resources. The finding also proved that NBA accreditation has made a positive impact on engineering college library resources and services in Kerala.

Reference

- Agbetuyi, P. A., Adegbilero-Iwari, I. & Subair, R. (2017) Role of Academic Libraries in Accreditation of Courses and Teaching Programs: A Case of Afe Babalola University Library, Ado-Ekiti. *International Journal of Library and Information Science Studies*, 3 (1), 16-24. <https://www.eajournals.org/wp-content/uploads/Role-of-Academic-Libraries-in-Accreditation-of-Courses-and-Teaching-Programs.pdf>
- Agrapu, D. (2013). *Collection Management of Electronic Information Resources: An Analytical Study of Selected University Libraries in Andhra Pradesh* (Doctoral Thesis, Andhra University). Andhra University, Visakhapattanam. Retrieved from <http://shodhganga.inflibnet.ac.in/handle/10603/8666>
- Balu, C. C., & Reddy, V. P. (2014). A Survey on the present status of engineering college libraries in Sri venkateswara University area, Andhra Pradesh, India. *International Journal of Library and Information Science*, 6 (4), 49–56. <https://doi.org/10.5897/IJLIS2012.028>
- Belsare, S. D. (2013). *Development and management of engineering college libraries in Western Vidarbha Region -: An Analytical Study* (Doctoral Thesis, Shri Jagdish Prasad Jhabarmal TiberwalaI University). Shri Jagdish Prasad Jhabarmal TiberwalaI University, Vidyanagiri. Retrieved from <http://shodhganga.inflibnet.ac.in/handle/10603/16127>
- Choudhury, T. A., Rahman, M. & Barooah, P. K. (2018) A Scenario of Special Libraries and ICT Application in the State of Assam: A Study. *Library Philosophy and Practice (e-journal)*. <http://digitalcommons.unl.edu/libphilprac/2045>.
- Duragannavar, G. F., Manjunath, N and Mamdapur, G. M. (2018). ICT Based Tools and it's Benefits in Library and Information Centre. *International Journal of Research in Humanities, Arts and Science*, 3 (11), 427-432. <https://www.researchgate>.

net/publication/327281881_ICT_Based_Tools_and_it%27s_Benefits_in_Library_and_Information_Centre

- Gavit, B. K. (2019). Web based library services. *Library Philosophy and Practice*. <https://digitalcommons.unl.edu/libphilprac/2931>
- Ghumre, S. & Veer, D. K. (2013) College Library Services in Marathwada Region: A Study on Impact of NAAC Accreditation. *9 th International CALIBER - 2013*, Gujarat, March 2013. <https://www.researchgate.net/publication/314286665>.
- Janice, F. (2016). *Impact of accreditation on engineering college libraries in Mumbai* (Doctoral Thesis, Tilak Maharashtra Vidyapeeth). Tilak Maharashtra Vidyapeeth, <https://sg.inflibnet.ac.in/handle/10603/166487>
- Jestin, K. J. J., & Sornam, S. A. (2019). Infrastructure and Facility Readiness for Providing E-learning and Allied Services in the Engineering College Libraries of Kerala. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/2881>
- Kannappanavar, B. U., & Manjunatha, K. V. (2011). Library resources and services of engineering colleges in Karnataka. *Library Philosophy and Practice (e-Journal)*. Retrieved from <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1501&context=libphilprac>
- Kulkarni, J. N. (2018) Beyond 4.2: Librarian's role in overall NAAC process of the institution in the light of revised framework. *IP Indian Journal of Library Science and Information Technology*, 3 (2), 67-69. DOI: 10.18231/2456-9623.2018.0015.
- Kumar, S. P. (2011). *Challenges for library professionals of engineering colleges in southern district of Tamil Nadu* (Doctoral Thesis, Manonmaniam Sundaranar University). Manonmaniam Sundaranar University, Tirunelveli. Retrieved from <http://shodhganga.inflibnet.ac.in/handle/10603/26786>
- Manik, S. D. (2015). *A Study of NBA Accredited engineering college libraries in Maharashtra with relevance to marketing of library and information product*,

- sources and services*. (Doctoral Thesis, Shri Jagdish Prasad Jhabarmal TiberwalaI University). Shri Jagdish Prasad Jhabarmal TiberwalaI University, Vidyanagiri. Retrieved from <http://shodhganga.inflibnet.ac.in/handle/10603/74805>
- Mansur, S. (2012). E- resource collection development in engineering college libraries: A challenge for knowledge centre managers. *International Journal of Digital Library Services*, 2 (1), 166–177. http://www.ijodls.in/uploads/3/6/0/3/3603729/sunil_mansur_ok_166-177_.pdf
- Materials Deselection Policy. (2021, July 22). <https://library.csueastbay.edu/usingthelibraries/collections/materials-deselection-policy>
- Naveen, C. L. (2020). Impact of NAAC Assessment on the development of college libraries: A Study. https://www.researchgate.net/publication/344085863_Impact_of_NAAC_Assessment_on_the_development_of_college_libraries_A_Study.
- Odera-Kwach, B. A., & Ngulube, P. (2013) The Impact of Accreditation Exercise on University Libraries in Kenya. *African Journal of Library, Archives and Information Science*, 23 (1), 75-87. <https://www.researchgate.net/publication/298441254>.
- Patra, N. K. (2014). *Electronic resource management: A case study of management school libraries in India*. [Doctoral thesis, Sambalpur University]. Sambalpur University, Odisha. <http://hdl.handle.net/10603/57323>
- Processing of Library Material (n. d.) Organisation of Information Resources. <https://nios.ac.in/media/documents/SrSecLibrary/LCh-011.pdf>
- Rajendran, L. (2007). *Planning and development of library and information services of engineering colleges in Tamil Nadu with special reference to Chennai* (Doctoral Thesis, Manonmaniam Sundaranar University). Manonmaniam Sundaranar University, Tirunelveli. Retrieved from <https://sg.inflibnet.ac.in/handle/10603/65648>

- Rao, N. V. (2013). *Management of electronic resources in NBA accredited engineering college libraries in Andhra Pradesh (INDIA): A Survey* (Doctoral Thesis, Andhra University). Andhra University, Visakhapattanam. Retrieved from <http://shodhganga.inflibnet.ac.in/handle/10603/12710?mode=simple>
- Rao, Y. S., & Choudhury, B. K. (2010). Computer Infrastructure Facilities and Services at National Institutes of Technology Libraries in India. *DESIDOC Journal of Library & Information Technology*, 30 (1), 32–37. <https://doi.org/10.14429/djlit.30.282>
- Raut, A. S., & Kokate, R. G. (2013). Study of best practices in the accredited academic libraries of Sant Gadge Baba Amravati University region [PowerPoint slides]. Retrieved from <https://fdocuments.in/document/study-of-best-practices-in-the-accredited-academic-libraries-of-sant-gadge.html>
- Role of professional associations (n. d.). <http://egyankosh.ac.in/bitstream/123456789/33055/1/Unit-15.pdf>
- Sangam, S. L & Kumbar, T. S. (n. d.). Criteria for Evaluating the Quality of Library Collection. https://www.academia.edu/7297149/Criteria_for_evaluation_of_collection_in_Library_Quality_in_Libraries
- Sasikala, C., Nagaratnamani, G., & Dhanraju, V. (2014). Pattern of Collection Development in Academic Libraries in Andhra Pradesh: A Study. *IOSR Journal Of Humanities And Social Science*, 19 (2), 05–18. <http://iosrjournals.org/iosr-jhss/papers/Vol19-issue2/Version-3/B019230518.pdf>
- Satheesha, H., & Vaddankere, M. (2018). Library resources and services in the selected engineering college libraries of Karnataka, India-A survey. *International Journal of Library and Information Studies*, 8 (2), 71–77. http://www.ijlis.org/img/2018_Vol_8_Issue_2/71-77.pdf
- Selection criteria (2021, May 11). <http://www.ala.org/tools/challengesupport/selectionpolicytoolkit/criteria#:~:text=Currency%20and>

%20timeliness%20of%20material,
important%20works%20in%20a%20field%22

Shivakumaraswamy, K. N. (2015). *Collection development in the engineering college libraries of Mysore region: A survey* (Doctoral Thesis, University of Mysore). University of Mysore, Manasagangotri. Retrieved from <https://shodhganga.inflibnet.ac.in/handle/10603/108438>

Shivalingaiah (1994) *Library Facilities in Colleges in Karnataka: a Study* (Doctoral Thesis, Mangalore University). Karnataka. <http://hdl.handle.net/10603/131340>

Tadasad, P. G. (1999). *Collection development, organisation and management among academic libraries in Karnataka state* (Doctoral Thesis, Karnatak University). Karnatak University, Dharwad. Retrieved from <https://sg.inflibnet.ac.in/handle/10603/95507>

Varadaraju, N. C. H., & Ramesh, A. (2018). Collection development in engineering college libraries: A case study of methodist college of engineering, Hyderabad, Telangana. *International Journal of Library and Information Studies*, 8 (1), 278–286. http://www.ijlis.org/img/2018_Vol_8_Issue_1/278-286.pdf

CHAPTER 5

FINDINGS, SUGGESTIONS AND CONCLUSIONS

5.1 Introduction

The study was carried out to understand the development and management of engineering college libraries in Kerala. The overall objective of the study is to analyse the development and management of NBA accredited engineering college libraries in Kerala and to make a comparative study between the engineering colleges accredited and not accredited by NBA in terms of resources, services and facilities. Six research questions have guided this study such as the availability of library resources, services and its development, the availability of Information and Communication Technology infrastructure and facilities, the collection development, organisation and management of information resources, impact of NBA accreditation on engineering college libraries, librarians views on the measures that NBA could emphasise with respect to the process of accreditation in engineering college libraries and problems and challenges faced by the engineering college libraries for further development. After the analysis of the data, the section presents the major findings of the study and gives suggestions and recommendations for further improvement of library resources, services, facilities and their management in engineering colleges. The formulated hypotheses are tested and conclusions are given at the end. The recommendations for further research were also furnished at last of the section.

5.2 Major Findings of the Study

The following are the major findings of the study.

5.2.1 Information Resources and Services

1. From the three categories of NBA accredited EC libraries, Government libraries have the highest percent of separate library building and Self-financing EC libraries have high percent of library area and seating capacity.

2. There is not much difference between the ECs that have and do not have the accredited programs of NBA in the status of their library building. Nearly one third of them have separate library building and above 50 percent of them have seating capacity between 101 to 200. But in the case of the area of library building, while the majority of EC libraries which have the accredited programs of NBA reports an area between 501 to 1500 Sqm, the majority of ECs which do not have the accredited programs of NBA reports it as below 500 Sqm.
3. The working hours of most of the Self-financing EC libraries are from 10 to 12 hours per day, whereas the working hours of the libraries from Government and under Government department categories of ECs are 8 to 10 hours.
4. The majority of EC libraries in Kerala work between 8 and 10 hours. The opening hours of NBA accredited ECs' libraries seem to be longer than those of non-NBA accredited ECs
5. The Government EC libraries have a high percent of average number of library users per day (201-300 users) when compared to the ECs under Government departments and Self-financing ECs.
6. Majority of EC libraries in Kerala have an average number of below 100 users per day. More than forty percent of librarians from NBA accredited ECs report an average number of 101 to 200 users per day, while more than 60 percent of EC librarians from non-NBA accredited categories report an average number of below 100 users per day in their libraries.
7. Most of the libraries in the three categories of NBA accredited ECs have the most common sections like stack, circulation, periodical and reference in their libraries. Compared to the other two categories of NBA accredited ECs, the Self-financing college libraries report the availability of more library sections at the percent level.
8. Chi-square test revealed that there is no significant difference in the availability of library sections among the Government, under Government

Departments and Self-financing ECs which have the accredited programs of NBA.

9. Major part of libraries from both categories of ECs which have and do not have the accredited programs of NBA possess all important common sections of the libraries. The libraries of NBA accredited ECs show a high percent level in the availability of library sections when compared to the libraries of ECs which do not have the accredited programs of NBA.
10. Chi-square test revealed that there is no significant difference in the availability of sections between the libraries of NBA accredited and non-NBA accredited ECs.
11. Most of the libraries in the NBA accredited category possess furniture like bookshelves, an almirah, tables, chairs, circulation desk and periodical display board. When compared to the other two categories of NBA accredited ECs, government EC libraries have a high percentage of furniture availability.
12. Chi-square test revealed that there is no significant difference in the availability of furniture among Government, under Government departments and Self-financing EC libraries.
13. The main furniture like bookshelves, almirah, table, chairs, periodical display board, circulation desk etc. are available in a large majority of EC libraries in Kerala. But NBA accredited ECs show a slight increase in the availability of furniture like CD rack, suggestion box, step stools and book trolleys to the non-NBA accredited ECs.
14. Chi-square test revealed that there exists a significant difference between the NBA accredited and non-NBA accredited ECs in the availability of furniture in their libraries.
15. The highest percent of libraries from three categories of NBA accredited ECs have the equipment like xerox machine, telephone, drinking water dispenser, fire and safety measures and CCTV camera. The Government EC libraries

show an increase in the availability of equipment at percent level when compared to other two categories of NBA accredited ECs.

16. Chi-square test revealed that there is no significant difference in the availability of library equipment among the libraries of Government, under Government departments and Self-financing ECs which have the accredited programs of NBA.
17. A large majority of EC libraries in Kerala have the availability of equipment like Xerox machine, fire and safety measures, telephone, CCTV camera and drinking water dispenser. ECs which have the accredited programs of NBA show an increase in the availability of equipment, except in the case of telephone, in which the ECs which do not have the accredited programs of NBA show a high percent level.
18. Chi-square test revealed that there exists a significant difference between the libraries of NBA accredited and non accredited ECs in the availability of equipment.
19. The average number of books and theses/ dissertations are high in Government EC libraries whereas the average number of journals, bound volumes of journals, patents and newspapers are high in the Self-financing EC libraries.
20. Chi-square test revealed that there exists no significant difference among the Government, under Government department and Self-financing category of ECs in their availability of print resources.
21. There is a difference between the EC libraries in Kerala in the average availability of printed resources based on their accreditation. The ECs which have the accredited programs of NBA show an increase in the average availability of books, journals, bound volumes of journals, theses/dissertations/project reports etc with the ECs which do not have the accredited programs of NBA.

22. Chi-square test revealed that there exists a significant difference in the availability of print resources between the libraries of NBA accredited and Non-NBA accredited ECs.
23. When average annual growth of journals and theses/dissertations are highest in the libraries of Government ECs which have accredited programs of NBA, the growth rate of books, bound volumes of journals and patents/standards seem to be highest in Self-financing EC libraries.
24. The libraries of ECs which have the accredited programs of NBA show an increase in the average annual growth of books, journals and bound volumes of journals. In the meantime they do not show much difference in the average annual growth of theses/dissertations/project reports, patents/standards and newspapers with the non-NBA accredited ECs' libraries.
25. There is not much difference among the three categories of NBA accredited EC libraries in the types of E-resources they offer. But in the case of the availability of E-resources like CD-ROM databases and multimedia products, Self-financing EC libraries show an increase.
26. Chi-square test revealed that there exists no significant difference among Government, under Government department and Self-financing ECs which have the accredited programs of NBA in their availability of E-resources types.
27. Majority of EC libraries in Kerala possess E-resources like E-journals, E-books, online databases and CD ROM databases. The availability of E-resources is high in the libraries of ECs which have the accredited programs of NBA while compared to the ECs which do not have the accredited programs of NBA.
28. Chi-square test revealed that there exists a significant difference between the libraries of NBA accredited and non accredited ECs' libraries in the availability of E-resource types.

29. Government EC libraries from the NBA accredited category show a high percent of availability of E-packages when compared to the other two categories of libraries.
30. Chi-square test revealed that there exists no significant difference among the Government, under Government department and Self-financing ECs in the availability of E-resource packages in their libraries.
31. E-resources like IEEE, SWAYAM/NPTEL videos are available in majority of EC libraries in Kerala and only low percent of libraries report the availability of IET, ISO, MCGraw Hill, ASTM digital library, IEI etc. The ECs which have the accredited programs of NBA show an increase in the availability of E-resource packages like IEEE, ASME, Springer, ASCE, Elsevier, ScienceDirect, National Digital Library and SWAYAM/NPTEL videos.
32. Chi-square test revealed that there exists a significant difference between the NBA accredited and non accredited ECs' libraries in the availability of E-resource packages.
33. The highest percent of librarians from all categories of NBA accredited ECs possess post graduation in library science.
34. A vast majority of EC librarians in Kerala possess the qualification of post graduation in library science.
35. A good number of librarians from three categories of NBA accredited ECs' libraries have the experience of sixteen to twenty years. The librarians from the Government category are more experienced than the librarians of the other two categories of ECs.
36. Nearly one third of EC librarians in Kerala report an experience of below ten years in libraries. More than fifty percent of librarians from NBA accredited ECs report an experience of between sixteen to twenty years while nearly fifty percent of librarians from non-NBA accredited ECs report an experience of below ten years.

37. Government EC librarians from NBA accredited category are more active to organise programs for library professionals than the other two categories of librarians.
38. Only thirty four percent of ECs in Kerala organise seminar/workshop/conference like programs to the library professionals. When fifty percent of NBA accredited ECs organise programs for library professionals, only twenty five percent of non-NBA accredited EC librarians organise any of such programs.
39. Government EC librarians are more active for attending the programs like short term training, quality improvement programs, seminar, conferences etc. than that of the other two categories of NBA accredited ECs' librarians.
40. Chi-square test revealed that there exists no significant difference among the Government and under Government departments and Self-financing category of ECs in the number of programs attended by their librarians.
41. The majority of EC librarians in Kerala mainly attend programs like workshops, seminars and book exhibitions. When the majority of NBA accredited EC librarians attend programs like workshops, seminars, short term training programs and book exhibitions the non-NBA accredited EC librarians' participation in these types of program seems to be at a lower percent level.
42. Chi-square test revealed that there is no significant difference between the NBA accredited and non accredited ECs' librarians' number of attending programs.
43. Government EC librarians have the highest percent of membership in professional bodies when compared to the other two categories of ECs. KLA is the main professional body in which the librarians from the three categories of NBA accredited ECs have membership.
44. Forty four percent of EC librarians in Kerala have membership in any of the professional bodies. When the majority of librarians from NBA accredited

ECs report their membership in any professional bodies, the majority of librarians from non-NBA accredited ECs report that they do not have membership in any professional bodies. KLA is the main professional body in which most of the EC librarians in Kerala have membership.

45. The average number of professional staff is highest in Self-financing EC libraries, while the average number of nonprofessional staff and total number of library staff seem to be highest in Government EC libraries.
46. Chi-square test revealed that there exists no significant difference in the availability of staff among the libraries of Government, under Government department and Self-financing ECs.
47. The ECs which have the accredited programs of NBA show an increase in the average number of professional staff, nonprofessional staff and total library staff with the ECs which do not have the accredited programs of NBA.
48. Chi-square test revealed that there exists a significant difference in the availability of library staff between the NBA accredited and Non-NBA accredited ECs in Kerala.
49. The average number of users are highest in the case of Self-financing EC libraries followed by Government EC libraries and the EC libraries under Government departments.
50. Chi-square test revealed that there exists no significant difference in the number of users among the libraries of Government, under Government department and Self-financing ECs.
51. When the average number of users in NBA accredited ECs are 1905, it seems to be 852 in non-NBA accredited ECs.
52. Chi-square test revealed that there exists a significant difference in the availability of users between the libraries of NBA accredited and Non-NBA accredited ECs in Kerala.

53. The ratio of professional staff to total library staff and the ratio of library users to total library staff seems to be highest in the libraries of ECs under Government departments. The ratio of nonprofessional staff to total library staff, and ratio of library users to professional staff of the library are find to be highest in Self-financing EC libraries.
54. There is not much difference seen between EC libraries in Kerala in the ratio of professional staff to total staff and the ratio of nonprofessional staff to total staff. The ECs which have the accredited programs of NBA show a slight increase in the proportion of library users to professional staff and library users to total staff compared to the ECs which do not have the accredited programs of NBA.
55. The annual growth rate of students, teaching staff, non teaching staff and total number of users is positive in the Government EC libraries that belong to the NBA accredited category, whereas it shows a negative growth in the libraries of Self-financing ECs, followed by ECs under Government departments.
56. The non-NBA accredited ECs are behind in the average annual growth of students, teaching staff and total staff to NBA accredited ECs, but they show a high average annual growth rate in the case of non teaching staff.
57. When Government ECs major source of finance is Government fund and fund from UGC/AICTE, the Self-financing EC libraries source of finance is management and a majority of ECs under Government departments reported management and Government as their source of finance.
58. The major source of finance of EC libraries in Kerala are funds from their management and library overdue charges.
59. The average budget allocated to print resources and furniture, equipment, maintenance is highest in Government ECs whereas the average budget allocated for E-resources and total budget seem to be highest in Self-financing EC libraries.

60. Chi-square test revealed that there exists no significant difference between the budget allocated to the libraries of Government, under Government department and Self-financing ECs which have the accredited programs of NBA.
61. The ECs which have the accredited programs of NBA show a higher increase in the budget allocation of their libraries than that of ECs which do not have the accredited programs of NBA.
62. Chi-square test revealed that there exists a significant difference in the budget allocated to the libraries of NBA accredited and Non-NBA accredited ECs.
63. Among the three categories of ECs that have the accredited programs of NBA, the Self-financing and ECs under Government departments show low level of average annual growth in budget allocation.
64. The EC libraries in Kerala show low level average annual growth in the budget allocated to them and the libraries of NBA accredited ECs show a very low level of average annual growth when compared to the engineering colleges which do not have the accreditation of NBA.
65. Government libraries belonging to the NBA accredited EC category provide more services at percent level than the other two categories of libraries.
66. Chi-square test revealed that there exists no significant difference between the Government, under Government departments and Self-financing EC libraries in the availability of their services.
67. All EC libraries in Kerala provide lending services and most of them provide the services like reference, photocopy and reservation of books. The libraries of ECs which have the accredited programs of NBA shows an increase in providing the services like current awareness service, selective dissemination of information, user awareness/orientation programs, printing, interlibrary loan, reservation of books and book bank facility than the ECs which do not have the accredited programs of NBA.

68. Chi-square test revealed that there is no significant difference between the NBA accredited and non accredited ECs in the availability of services provided by their libraries.
69. Libraries of Government ECs which have the accredited programs of NBA provide high percent of web based library services to the users when compared to the other two categories of EC libraries.
70. Chi-square test revealed that there exists no significant difference between the Government, under Government departments and Self-financing EC libraries in the number of web based services provided by them.
71. OPAC and internet browsing are the main online based services provided by EC libraries in Kerala. The ECs which have the accredited programs of NBA shows an increase in providing most of the online services in their libraries when compared to the ECs which do not have the accredited programs of NBA.
72. Chi-square test revealed that there exists no significant difference between the NBA accredited and non accredited ECs in the availability of web based services.

5.2.2 ICT Infrastructure and Facilities

73. The availability and average availability of the total number of ICT tools are high in the libraries of the Self-financing category of NBA accredited ECs when compared to the Government and ECs under government departments.
74. When checking the availability of ICT tools, the libraries of NBA accredited ECs are high whereas by checking the average availability of the total number of ICT tools the libraries of non-NBA accredited ECs come first.
75. High percent of Government ECs from NBA accredited category fully automated their libraries than that of other two categories of libraries. All the libraries of ECs under Government departments and a best part of Government EC libraries used the open source software Koha for their automation. But a

good number of Self-financing category ECs use other locally developed software.

76. Majority of EC libraries in Kerala fully automated their libraries and a good number of them automated their libraries partially. A high majority of libraries from NBA accredited ECs automated their libraries fully when compared to the libraries which are not accredited by NBA. More than fifty percent of EC libraries use the software Koha to automate their libraries and there is not much difference visible in the case of automation software used in the libraries of NBA accredited and not accredited ECs in Kerala.
77. The digital library is available in all categories of NBA accredited ECs and a great majority of them used the software Dspace in their digital library.
78. The majority of ECs in Kerala have digital libraries. When all NBA accredited ECs report the availability of digital libraries, a good number of libraries from non-NBA accredited ECs report the unavailability of digital libraries. Dspace is reported as the commonly used digital library software by the majority of libraries from both categories of ECs.
79. A good number of Government EC libraries and fifty percent of Self-financing EC libraries from NBA accredited category report the availability of Institutional repositories. The ECs under Government departments do not report the availability of institutional repositories in their libraries.
80. More than three fourth of EC libraries in Kerala do not have institutional repositories. When a good number of ECs which have the accredited programs of NBA report that they have institutional repositories in their libraries, a limited number of ECs which do not have accredited programs of NBA report the availability of institutional repositories in their libraries.
81. Compared to other two categories of EC libraries, Self-financing EC libraries are doing the digitization work of their resources more and all the three categories of libraries have digitised collections of question papers and dissertations/theses/ project reports.

82. Nearly fifty percent of EC libraries in Kerala are digitising their information resources. When high percent of ECs which have the accredited programs of NBA are digitising their resources, high percent of ECs which do not have the accredited programs of NBA have the plan for digitization of resources in their libraries. It is also noted that the EC libraries in Kerala mainly digitise the resources like question papers and theses/dissertations/project reports.
83. Majority of libraries from three categories of ECs which have the accredited programs of NBA report that they have membership in any of the library consortia.
84. Nearly sixty percent of EC libraries in Kerala do not have membership in any consortia. When the majority of ECs which have the accredited programs of NBA report that they have membership in any consortia, majority of ECs which do not have the accredited programs of NBA respond that they do not have membership in any consortia.
85. All categories from NBA accredited ECs' libraries have LAN facilities and all libraries work under part of its institutional network.
86. LAN facility is available in all EC libraries in Kerala and the library network of all ECs which have the accredited programs of NBA and most of the ECs which do not have the accredited programs of NBA working as part of its parent institution.
87. The vast majority of self-financing and ECs under government departments used both wired and wireless media for transmission, while only 36.4 percent of government libraries did.
88. More than fifty percent of EC libraries in Kerala use wired media for transmission. When most of the ECs which have the accredited programs of NBA used both wired and wireless media for transmission the main part of ECs which do not have accredited programs of NBA used only wired media for transmission in their libraries.

89. A significant proportion of libraries from the three categories of NBA accredited ECs used broadband or other cable networks to connect to the internet.
90. Majority of ECs which have and do not have the accredited programs of NBA used broadband/other cable networks for internet connection in their libraries.
91. BSNL is the main internet service provider in all categories of the ECs' libraries which have the accredited programs of NBA
92. BSNL is the main internet service provider used by most EC libraries including NBA accredited and non accredited in Kerala.
93. Majority of EC libraries from three categories of NBA accredited ECs have a bandwidth in between 76-100 Mbps.
94. A good number of ECs in Kerala have an internet bandwidth between 76-100 Mb. When the majority of ECs which have the accredited programs of NBA report an internet bandwidth between 76-100 Mb, a main part of ECs which do not have the accredited programs of NBA report an internet bandwidth in between 26-50 Mb.
95. Computer science expert as the main supervisor of the internet/networking section of the libraries from three categories of NBA accredited ECs.
96. Most of the EC libraries in Kerala belong to NBA accredited and non accredited computer professionals, who are the personnel who supervise the internet/networking section.

5.2.3 Collection Development, Organisation and Management

97. Most of the libraries from three categories of NBA accredited ECs have written collection development policy and a better part of them have separate collection development policy for E-resources.
98. There is not much difference between the libraries of NBA accredited and non accredited ECs in the existence of collection development policy and separate

collection development policy for E-resources, but a slight difference is visible in the case of written collection development policy, as it seems to be higher in the libraries of NBA accredited ECs.

99. Librarians, department heads/ faculty and principals from all three categories of NBA accredited ECs have a major role in the document selection process of their libraries.
100. Almost all EC libraries in Kerala have librarian in charge, and in the vast majority of ECs, the department head/faculty is in charge of selecting documents for the library. The participation of student representatives in the libraries of NBA accredited ECs seems to be higher than that of non-NBA accredited ECs
101. Almost all libraries from three categories of NBA accredited ECs prefer tools like publisher catalogue through vendors, syllabus, user recommendation and opinion from experts/faculty for selecting print documents.
102. Chi-square test revealed that there exists no significant difference among the Government, under Government departments and Self-financing EC libraries in the usage of tools used for print resource selection.
103. EC libraries in Kerala mainly consider tools like publisher catalogue through vendors, user recommendation/suggestion, opinion from experts/faculty for printed resource selection. The libraries of NBA accredited ECs show an increase in the usage of tools for print resource selection at percentage level especially in tools like discussion lists, observation of other college libraries/websites, user recommendation/suggestions.
104. Chi-square test revealed that there exists a significant difference between the NBA accredited and non-NBA accredited ECs in the usage of tools used for print resource selection.
105. The major tools used by all libraries from three category of NBA accredited ECs for selection of E-resources are publisher catalogue through vendors, user

recommendation, opinion from experts and syllabus. The ECs under Government departments are seem to be used more tools for E-resource selection than other two category of libraries.

106. Chi-square test revealed that there exists no significant difference among the Government, under Government departments and Self-financing libraries of NBA accredited ECs in the tools used for E-resource selection.
107. Tools used by the libraries of ECs in Kerala for selecting E-resources show that they mainly prefer publisher catalogue through vendors and opinion from faculty/experts. The libraries of ECs which are accredited by NBA show an increase in the usage of tools for E-resource selection at percentage level.
108. Chi-square test revealed that there exists a significant difference between the NBA accredited and non-NBA accredited EC libraries in their usage of tools used to select E-resources.
109. Major criteria followed by all categories of NBA accredited EC libraries to select the print resources are subject relevance, relevance of material to the curriculum, relevance of material for faculty, currency, authority and completeness of the resources.
110. Chi-square test revealed that there exist significant similarity among the libraries of Government, under Government departments and Self-financing NBA accredited ECs in their usage of criteria for print resource selection.
111. A large majority of EC libraries in Kerala prefer the criteria like subject relevance, quality and relevance of material for curriculum for print resource selection. Libraries of NBA accredited ECs show an increase at percent level in the selection criteria like currency, authority, completeness, subject relevance and relevance of material for curriculum from the libraries of non-NBA accredited ECs.

112. Chi-square test revealed that there exists no significant difference between the libraries of NBA accredited and non-NBA accredited ECs in the usage of criteria for print resource selection.
113. NBA accredited ECs' libraries from all three categories prefer quality, subject relevance, relevance of material to curriculum as their main criteria for E-resource selection.
114. Chi-square test revealed that there exists no significant difference in the E-resource selection criteria between the Government, under Government departments and Self-financing EC libraries.
115. EC libraries mainly consider the aspects like subject relevance, quality, relevance of material for curriculum and faculty/research for selecting E-resources to their libraries. The libraries of NBA accredited ECs show an increase in their preference of aspects followed in E-resource selection than that of non-NBA accredited ECs.
116. Chi-square test revealed that there is no significant difference between the NBA accredited and non-NBA accredited ECs' libraries in their usage of criteria for E-resource selection.
117. A vast majority of libraries from all categories of ECs follow the steps involved in the acquisition process of E-resources in NBA accredited ECs.
118. Majority of EC libraries in Kerala follow the steps involved in the acquisition process of E-resources. Compared to the libraries of NBA accredited ECs in Kerala the acquisition process followed in the libraries of non-NBA accredited ECs seem to be less at percent level.
119. All libraries of Government and ECs under Government departments acquire print resources by inviting quotations and a major part of Self-financing EC libraries acquire print resources directly from publishers.
120. ECs main source of acquiring print resources to their libraries are distributors, publishers and invitation of quotations. When high percent of NBA accredited

ECs' libraries acquire print resources by inviting quotations, high percent of non-NBA accredited ECs' libraries acquire print resources from distributors.

121. Main channels of acquiring E-resources by all categories of NBA accredited ECs' libraries are online database vendors.
122. Channels of E-resources by EC libraries in Kerala reveals that a good number of libraries acquire E-resources through online database vendors, free downloads from the internet and direct from the publishers. There is not much difference between the libraries of NBA accredited ECs and non-NBA accredited ECs in their channels for acquiring E-resources.
123. Libraries of all Government, ECs under Government departments and major part of Self-financing libraries of NBA accredited ECs evaluate the print resources by the number of books added to the collection. The Government Libraries seem to be using more methods to evaluate the print resources than that of other two categories of libraries.
124. Chi-square test revealed that there is no significant difference among the libraries of Government, under Government department and self-financing ECs in their usage of criteria to evaluate the print resources.
125. ECs in Kerala mainly consider the aspects like number of books added to the library collection and amount of funds spent to the collection, to evaluate the print resources in their libraries. NBA accredited ECs' libraries seem to use more methods to evaluate their print resources than that of non-NBA accredited ECs.
126. Chi-square test revealed that there exists no significant difference between the libraries of NBA accredited and Non-NBA accredited ECs in their usage of criteria that followed to evaluate the print resources.
127. Majority of libraries from the three categories of NBA accredited ECs give their first preference when evaluating the E-resource collection to the content

of E-resources followed by the reputation of the publisher, and then the ease of access to E-resources.

128. Chi-square test revealed that there is no significant difference among the libraries of Government, under Government department and Self-financing ECs, in their usage of criteria to the E- resource evaluation.
129. Majority of EC libraries in Kerala consider the criteria like content, ease of access to E-resources, final cost fit to budget and technical support by vendors to evaluate their E-resources. The evaluation criteria considered by the ECs which have the accredited programs of NBA seem to be high when compared to the second criteria of ECs at percent level.
130. Chi-square test revealed that there exists a significant difference between the libraries of NBA accredited and Non-NBA accredited ECs in their usage of criteria to evaluate the E-resources.
131. The main criteria for deselection of printed resources considered by NBA-accredited EC libraries in three categories are their ugly, worn beyond mending, or rebinding condition.
132. Chi-square test revealed that there is no significant difference among the libraries of Government, under Government department and Self-financing ECs in their usage of criteria to deselect the print resources.
133. Major criteria considered for deselection of print resources in EC libraries in Kerala are resources that are beyond mending or rebinding condition, irrelevant to the needs and interests of the library's community, and factually inaccurate ones.
134. Chi-square test revealed that there exists a significant difference between the libraries of NBA accredited and Non-NBA accredited ECs in their usage of criteria to deselect print resources.
135. When most of the Government and EC libraries under Government departments deselect or renew E-resources based on library committee

recommendations, the Self-financing EC libraries seem to consider the budget status of the library and the ranking of databases by acquiring usage statistics for E-resource renewal.

136. Chi-square test revealed that there exists no significant difference between the libraries of Government, under Government department and self-financing ECs in their usage of criteria to deselect the E-resources.
137. ECs in Kerala mainly consider the aspects like budget status of the library, recommendation from library committee and cost benefit analysis to deselect E-resources in their libraries.
138. Chi-square test revealed that there exists a significant difference between the libraries of NBA accredited and Non-NBA accredited ECs in their usage of criteria to deselect the E-resources.
139. High percent of Self-financing and a good number of ECs under Government departments take one week and a good number of Government EC libraries take two weeks for processing print resources.
140. More than fifty percent of EC libraries in Kerala take one week to process a hundred books.
141. All libraries from three categories of NBA accredited ECs in Kerala follow the DDC classification system to classify the print resources.
142. Almost all libraries from NBA accredited and non accredited category ECs adopt DDC scheme to classify their resources.
143. AACR II is the main catalogue code used by the majority of libraries from three categories of NBA accredited ECs.
144. Nearly sixty percent of EC libraries in Kerala follow AACR II for cataloguing their resources.
145. Almost all libraries from three categories of NBA accredited ECs use the OPAC system for giving cataloguing services to the users.

146. Most of the EC libraries in Kerala use OPAC as their catalogue form.
147. The majority of libraries from three categories of NBA accredited ECs arranged the print journals subject wise.
148. Majority of EC libraries in Kerala arrange their print journals subject wise.
149. All libraries from three categories of NBA accredited ECs provide open access to print resources.
150. All the libraries of ECs in Kerala provide open access to their print resources.
151. All categories of libraries from NBA accredited ECs give their first preference to subject wise organisation of E-resources.
152. A large majority of EC libraries in Kerala organise their E-resources subject wise.
153. A major part of libraries from three categories of NBA accredited ECs prefer remote access through campus networks as mode of access to E-resources.
154. Two-thirds of ECs provide users with remote access to E-resources via campus networks. It is noted that when the highest number of ECs from the NBA accredited category provide remote access through the campus network, the ECs that do not have the accredited programs of NBA provide access to E-resources in the library itself.
155. Majority of ECs under Government departments and Self-financing ECs provide IP based access to E-resources whereas a good number of Government EC libraries provide both user ID/password and IP address based method of access to E-resources.
156. A good number of EC libraries in Kerala provide IP address based access to E-resources and when more number of ECs which have the accredited programs of NBA provide IP address based access to E-resources, it is recorded that more number of ECs which do not have the accredited programs of NBA provide username password based access to E-resources.

157. Almost all libraries from three categories of NBA accredited ECs technique of preservation of printed resources are binding and repairing.
158. Most of the ECs in Kerala adopt binding and repair methods to preserve their print resources in good condition.
159. A significant majority of libraries from three categories of NBA accredited ECs do the stock verification of resources annually.
160. Most of the EC libraries in Kerala do the stock verification of print resources annually.
161. The libraries that belong to the three categories of NBA accredited ECs, most preferred method of stock verification is barcoding technology.
162. Barcoding technology is the main stock verification method used by most of the EC libraries in Kerala.
163. Action taken for missing and mutilated collection in Government and ECs under Government departments are replacing the current edition of the book whereas the Self-financing EC libraries first preference is charging the defaulters with the current price of the book with processing charge.
164. EC libraries in Kerala mainly replace the current edition of the books at the instances of users missing or mutilating the collections of the library.
165. Government EC libraries follow four to five procedures like verification of access to the content of E-resources as per the placed order, monitoring the speed of information download facilities, providing print facilities for all or parts of the documents, training library staff, etc mainly in the management of E-resources to make it services best to the user community. In comparison to Government EC libraries, the other two types of ECs appear to follow e-resource management procedures less strictly.

166. Chi-square test revealed that there is no significant difference between the libraries of Government, under Government department and self-financing ECs in their number of procedures followed to manage the E-resources.
167. The majority of ECs in Kerala do not follow most of the procedures for E-resource management in their libraries. NBA accredited ECs show a high percent in the procedures followed to manage the E-resources when compared to the libraries of non-NBA accredited ECs.
168. Chi-square test revealed that there exists a significant difference between the libraries of NBA accredited and non-NBA accredited ECs in the number of procedures followed to manage the E-resources.

5.2.4 Impact of NBA Accreditation on Information Resources and Services

169. Out of eighty three EC librarians in Kerala which are accredited by NBA or applying/in the process of accreditation, almost all of them replied that the resources, services and facilities in their library are improved as an impact of NBA and only a very few number of librarians (6.02%) respond that NBA accreditation didn't make any improvements in the resources, services and facilities in their libraries.
170. More than forty percent of librarians agree that the library area has increased as an impact of NBA accreditation.
171. More than forty percent of librarians agree that NBA accreditation has increased opening hours of their libraries.
172. More than fifty percent of librarians agree and 10.3 percent of them strongly agree that NBA accreditation has increased the budget allocated for their libraries.
173. Nearly sixty percent of EC librarians agree that NBA accreditation has improved their library infrastructure.

174. Nearly fifty percent of libraries agree that NBA accreditation has made improvement in the ICT infrastructure of their libraries.
175. More than fifty percent of EC librarians agree that automation status of their libraries are increased as an impact of NBA accreditation.
176. More than fifty percent of EC librarians agreed that digital library services have improved as an impact of NBA accreditation.
177. More than forty percent of EC librarians agreed that activities of the library advisory committee has improved as an impact of NBA accreditation and 40.3 percent of them neither agree or disagree with the statement
178. Nearly forty percent of libraries agreed that accreditation of NBA has made an impact on the development of human resources in the library whereas 44.2 percent of them neither agree or disagree with the statement.
179. Nearly fifty percent of librarians agreed that collection of print resources in their libraries has increased as an impact of NBA accreditation whereas 35.1 percent of librarians neither agree or disagree with the statement.
180. More than forty percent of librarians agreed that E-resource subscription in their libraries has increased as an impact of NBA accreditation whereas 34.6 percent of them neither agree or disagree with the statement.
181. More than forty percent of librarians agreed that NBA accreditation has made an impact on increasing the number of services provided to the users of their libraries whereas 35.9 percent of librarians neither agree nor disagree with the statement.

5.2.5 Librarians Views on the Measures that NBA Could Emphasize with Respect to the Process of Accreditation in Engineering College Libraries

182. Out of eighty three ECs in Kerala, nearly eighty percent of librarians opine that NBA should emphasis some more criteria in its accreditation process

183. A large majority of librarians opine that the NBA should consider the feedback with regard to library collection and usage, as well as the orientation and follow up programs that are conducted by the library for its faculty and students.
184. More than sixty percent of EC librarians opine that the NBA should emphasize innovative measures in the library and also the availability of services and products in the libraries.
185. Nearly sixty percent of EC librarians opine that NBA should consider activities regarding bringing more readers to the library.
186. Fifty percent of EC librarians recommend that the NBA should do an analysis of quality rather than quantity with regard to various parameters.
187. More than forty percent of EC librarians have an opinion that NBA should lay emphasis on the activities of libraries working together with training and placement cell to support career opportunities and also should be aware about the need for aspects like liaison with faculty to introduce modules enhancing library use.

5.2.6 Problems and challenges for Further Development of EC Libraries

188. More than fifty percent of EC libraries report inadequate fund provisions as the main problem faced by them.
189. A good number of them respond to the problems like lack of a proper security system to prevent loss of the books and increased cost of hardware and software.
190. More than one fourth of EC libraries report lack of knowledge to use E-resource among library users and inadequate space facilities.
191. More than twenty percent of EC libraries respond to inadequate staff structure, inadequate furniture and equipment, difficulties for the subscription of foreign periodicals.

192. Nearly one fifth of them respond to lack of trained manpower for the implementation of new IT initiatives, inadequate ICT infrastructure as their problem.
193. A limited number of EC libraries report the problems like lack of support from authority, non recognition in the policy decision making of the library activities, lack of need based services, lack of coordination and planning etc.
194. Chi-square test revealed that there is no significant difference seen between the libraries of NBA accredited and non accredited ECs in the number of problems faced by them for further development of the libraries.

5.3 Tenability of Hypotheses

Based on the previous studies, twelve hypotheses were formulated at the beginning of the study. On the basis of the findings drawn out of the study, the formulated hypotheses are being tested whether they are accepted or rejected.

Hypothesis-1

The first hypothesis states that **there exists no significant difference in the availability of resources and services among the libraries of NBA accredited engineering colleges in Kerala based on their category.**

According to finding number 8, 12, 16, 20, 26, 30, 46, 66, 70 the three categories of libraries from NBA accredited engineering colleges show no significant difference in their library resources and services. It is revealed through the results illustrated in tables 13, 17, 21, 24, 29, 33, 48, 63, 66.

As per the findings given above, this hypothesis is accepted.

Hypothesis - 2

The second hypothesis states that **the engineering college libraries in Kerala show a significant difference in the availability of resources and services based on their accreditation.**

The finding number 14, 18, 22, 28, 32, 48 shows that there exists a significant difference in the availability of library resources between the NBA accredited and Non-accredited engineering colleges in Kerala. But according to the finding number 68 and 72, there is no significant difference in the library services provided by these libraries. It is clearly understood from the results displayed in tables 19, 23, 25, 31, 35, 49, 65, 69.

As per the findings given above, this hypothesis is rejected.

Hypothesis-3

The third hypothesis states that **the libraries of NBA accredited engineering colleges in Kerala show a difference in the availability of ICT infrastructure and facilities based on their category.**

According to finding number 73, 75, 79, 81, 87 the three categories of NBA accredited ECs show difference in the availability of ICT tools, status of automation, institution repositories, digitization work and transmission media, but finding number 77, 83, 85, 89, 91, 93 show no difference in some aspects of their ICT infrastructure. It is revealed through the results illustrated in tables 70, 72 and 74.

As per the findings given above, this hypothesis is rejected.

Hypothesis - 4

Fourth hypothesis states that **the engineering college libraries in Kerala show a difference in the availability of ICT infrastructure and facilities based on their accreditation.**

As per finding number 74, 76, 78, 80, 82, 84, 88, 94 the engineering colleges in Kerala show difference in ICT infrastructure between them, but finding number 86, 90, 92 reveals no difference in availability of LAN facilities, type of internet connection and internet service provider. It is clearly understood from the results displayed in tables 71, 73 and 75.

As per the findings given above, this hypothesis is rejected.

Hypothesis - 5

Fifth hypothesis states that **engineering college libraries which do not have the accredited programs of NBA show a low level of growth in information resources, budget and number of users when compared to the NBA accredited engineering colleges in Kerala.**

According to finding number 24, the libraries of ECs which have the accredited programs of NBA show an increase in the average annual growth of books, journals and bound volumes of journals when compared to ECs which do not have the accredited programs of NBA. In the case of theses/dissertations/project reports, patents/standards and newspapers, both of them do not show much difference. Finding number 56 reveals that both NBA accredited and non accredited ECs in Kerala show low level average annual growth in the number of users in their libraries. Even though non-accredited ECs' libraries show a very low level of average annual growth in number of library users. As per the finding number 64 the EC libraries in Kerala show low level average annual growth in the budget allocated to them and the libraries of NBA accredited ECs show a very low level of average annual growth when compared to the engineering colleges which do not have the accreditation of NBA. It is revealed through the results illustrated in table 27, 55 and 61.

As per the findings given above, this hypothesis is rejected.

Hypothesis - 6

Sixth hypothesis states that **NBA accredited engineering colleges show no significant difference in the collection development of resources based on their category.**

The finding number 102, 106, 110, 114, 124, 128, 132 and 136 show no significant difference among the libraries of NBA accredited ECs in the process of collection development they followed. It is revealed through the results illustrated in tables 81, 85, 89, 93, 103, 107, 111, 115.

As per the findings given above, this hypothesis is accepted.

Hypothesis -7

Seventh hypothesis states that **engineering college libraries in Kerala show a significant difference in the collection development of resources based on their accreditation.**

Finding number 104, 108, 130, 134 and 138 highlights that libraries of NBA accredited and non accredited ECs show significant differences in the collection development process of their resources. But finding number 112, 116 and 126 shows that there exist no significant difference in collection development process of these libraries. It is cleared through the results which are demonstrated in tables 83, 87, 91, 95, 105, 109, 113, 117.

As per the findings given above, this hypothesis is rejected.

Hypothesis -8

Eighth hypothesis states that **libraries of NBA accredited engineering colleges show a difference in the organisation and management of information resources based on their category**

According to finding number 141, 143, 145, 147, 149, 151 and 153, all libraries from three categories of NBA accredited ECs show no difference in the organisation of their information resources. But finding number 155 shows the majority of ECs under Government departments and Self financing ECs provide IP based access to E-resources whereas a good number of Government EC libraries provide both user ID/password and IP address based method of access to E-resources. As per finding number 157, 159, 161 there is no difference among these three categories of engineering college libraries' procedures followed to manage their printed information resources whereas finding number 165 shows difference in the procedures followed to manage E-resources among these three categories of NBA accredited ECs. It is revealed through the results illustrated in tables 118, 120, 122 and 124.

As per the findings given above, this hypothesis is rejected.

Hypothesis - 9

The ninth hypothesis states that **engineering college libraries in Kerala show a difference in the organisation and management of information resources based on their accreditation.**

Finding number 154 and 156 reveals that the libraries of NBA accredited and non accredited ECs show difference in their mode and method provided to access E-resources. But finding number 140, 142, 144, 146, 148, 150 and 152 shows no difference between these engineering college libraries in the organisation of their resources. According to finding number 167 the libraries of NBA accredited and non-accredited ECs keep differences in their E-resource management process, but finding number 158, 160 and 162 shows no difference in the management of print resources in these libraries. It is cleared through the results which are demonstrated in tables 119, 121, 123 and 126.

As per the findings given above, the hypothesis is rejected.

Hypothesis - 10

Tenth hypothesis states that **the NBA accreditation has a positive impact on engineering college libraries in Kerala.**

According to finding number 169, out of eighty three EC librarians in Kerala which are accredited by NBA or applying/in the process of accreditation, most of them replied that the resources, services and facilities in their library are improved as an impact of NBA. It is clearly exhibited in table 129 and 130.

As per the finding mentioned above, the hypothesis is accepted.

Hypothesis - 11

The Eleventh hypothesis states that **the NBA should lay more emphasis on specific services and practices of engineering college libraries with respect to its accreditation process.**

According to finding number 182, out of eighty three ECs in Kerala, nearly 80 percent of librarians opine that NBA should emphasise some more criteria in its accreditation process. It is cleared from the table 131 and 132.

As per the finding mentioned above, the hypothesis is accepted.

Hypothesis - 12

The twelfth states that **inadequate fund provision is the main problem faced by most of the engineering college libraries in Kerala for their further development.**

According to finding number 188, more than 50 percent of EC libraries report inadequate fund provision as their main problem. It can be clearly understood from table 133.

As per the findings mentioned above, the hypothesis is accepted.

5.4 Suggestions of the Study

Based on the findings and responses from the librarians of EC libraries in Kerala regarding the various aspects in development and management of engineering college libraries in Kerala, the following suggestions are made with a view for further improvement of resources and facilities in these libraries.

1. It will be very helpful to the users if the library services are round the clock. It is found from the study that the majority of engineering college libraries provide 8 to 10 hour service to the users and only some engineering colleges from NBA accredited category provide 10 to 12 hour library services to the users. It is suggested that all the libraries should extend their working hours to provide better services and also to increase the average number of users per day in the libraries.
2. The strength of the library staff should be increased with the increasing working hours and rise of users per day in libraries. According to the study 79 percent of EC libraries report below 3 professional staff, 85 percent of EC

libraries report below 2 non professional staff and 71 percent of them report below 4 total number of staff availability in their libraries. If the libraries want to be worked in shifts the number of library staff seems to be insufficient.

3. The study disclosed that there exists a significant difference in the availability of furniture and equipment between the engineering colleges that have and do not have the accredited programs of NBA. It is suggested that every library should acquire adequate furniture and equipment for safe custody of documents and there should be comfort and congenial atmosphere to reading users and enable the staff to discharge their duties efficiently and effectively.
4. The study found that there is a significant difference in the average availability of printed resources as well as E-resources between the libraries of ECs which have and do not have the accredited programs of NBA. The EC libraries which have the accredited programs of NBA also show an increase in the average annual growth of books and journals with the ECs which do not have the accredited programs of NBA. It is suggested that the ECs which do not have the accredited programs of NBA should give more concentration for developing the information resources in their libraries.
5. The study found that nearly 60 percent of EC libraries in Kerala do not have membership in any consortia. When the majority of ECs which have the accredited programs of NBA report that they have membership in any consortia, majority of ECs which do not have the accredited programs of NBA respond that they do not have membership in any consortia. It is suggested that libraries should join more consortia in order to provide vast and current information to its users.
6. The study reports that the programs like training, seminars, workshops which help the library professionals to update with the latest trends in the profession are attended at a very low number by 57 percent of librarians and 66 percent of library professionals are not even attending any such programs. It is suggested that if the librarian and library professional both want to be updated with the latest technologies to provide better and qualitative service to the

users they should attend these types of programs and library associations should take necessary initiatives for organising such programs.

7. According to the study 74 EC libraries in Kerala provide a low number of web based services. It is suggested that EC libraries should give more importance to the web based services as it is the requirement of the present era.
8. The user awareness programs are provided by 66 percent of EC libraries and new arrival sections are available 72 percent of EC libraries. There is a suggestion to display the contents of new books and journals in the notice board to make more users aware about them which may increase the usage of the same.
9. The study revealed that there exists a significant difference between the budget allocated to the libraries of NBA accredited and Non-NBA accredited ECs. When the libraries of NBA accredited ECs allocate an average budget of 2011057.79, the libraries of ECs which do not have accredited programs of NBA allocate an average budget of 820033.28. The authorities should give special consideration in the budget matter of their libraries for developing a qualitative collection thus to provide better service to the users.
10. The automation software Koha is used by 51 percent of EC libraries in Kerala. It is suggested that other EC libraries in Kerala may also use Koha as it is open source software instead of using any commercial one.
11. The availability of institutional repository is reported by only 23 percent of libraries and 44 percent of libraries report digitization of their documents. Both of them are essential services of the present era and it is suggested to the libraries to take initiatives to start these services.
12. According to the study 44 percent of EC libraries report the availability of WiFi facilities. ECs should provide WiFi facility to the users so that they can access the E-resources subscribed by the library from anywhere in the campus which will increase its usage.

13. As the importance of E-resources are increasing day by day, it is suggested for a separate collection development policy for developing a good and qualitative collection.
14. The study reported that 73 percent of EC libraries in Kerala follow only a low number of procedures to manage their E-resources properly. It is suggested that EC libraries should appoint skilled technical staff/provide training to existing staff for managing the E-resources properly thus to provide better E-resource services which will increase the usage of the same.
15. In the book selection committee, student representatives are members in only 44 percent of EC libraries. It is suggested that as the students are the ultimate users of these information resources, EC libraries should engage them too in the committee of book selection.
16. Conducting user surveys in regular intervals will help the EC libraries to know the users' information requirements well.
17. From the study a good number of EC librarians respond that lack of a proper security system to prevent loss of the books is one of the main problems faced by them. As already reported that 71 percent of EC libraries have the availability of library staff of below 4, these libraries face a shortage of staff and it will be very difficult to manage the large collections. It is suggested that the authorities should take necessary action to set up a proper security system to manage the library collection thus to prevent the loss of books.

5.5 Conclusion

Engineering practice and its related technologies have become global in scope and scale. To be effective, today's engineering graduates must not only be grounded in scientific and mathematical fundamentals, engineering principles and design, but must also have a global outlook and the broader skills to work in society in both their home country and internationally. Engineering education is thus challenged to prepare a technically competent graduate, as it has done traditionally, and to add several dimensions of broadening – all within a program of reasonable length. The NBA

accreditation is playing an important role to improve the quality of programs provided in the engineering colleges. The overall objective of the study is to understand the development and management of engineering college libraries in Kerala. It is mainly aimed to analyse the resources, services, ICT infrastructure, collection development and management of information resources in the engineering college libraries which have the accredited programs of NBA and also make a comparative study of these resources with the engineering colleges which do not have the accredited programs of NBA.

The engineering college libraries of Government, under Government departments and Self-financing which have the accredited programs of NBA show no significant difference in their availability of library sections, furniture, library equipment, print resources, E-resources, library staff and services. They also show uniformity in the availability of digital library, membership in any consortia and network infrastructure facilities. But in some aspects like the availability of ICT tools, status of automation, institutional repository and digitization of library resources they show some differences. Status of collection development policy in the libraries of NBA accredited ECs show that most of the libraries from three categories of ECs have written collection development policy and a better part of them have separate collection development policy for E-resources. Librarians, department heads/ faculty and principals from all three categories of NBA accredited ECs have a major role in the document selection process of their libraries. The Government, under Government department and Self-financing engineering college libraries which have the accredited programs of NBA show significant similarities in their usage of tools and criteria used for selection, evaluation and deselection of library resources. These three categories of libraries also show similarities in organisation and management of their resources.

The engineering colleges which have and do not have the accredited programs of NBA show significant differences in the availability of furniture, equipment, print resources, E-resources, library staff, users and budget allocation of their libraries. It is also found that these engineering college libraries show significant similarities in the case of services provided to its users. While considering the ICT infrastructure and

facilities, it is revealed that libraries of engineering colleges which have the accredited programs of NBA show differences in the availability of ICT tools, digital library, institutional repositories, digitization process, membership in any consortia and internet bandwidth with the engineering colleges which do not have the accredited programs of NBA. But these libraries show uniformity in the aspects like automation status, LAN facility, Internet connection and internet service provider. There is not much difference between the libraries of NBA accredited and non accredited ECs in the existence of collection development policy and separate collection development policy for E-resources. Almost all EC libraries in Kerala the librarian and in a large majority of ECs the department head/faculty have the main role of selecting documents to their library. The engineering colleges show significant differences in usage of tools for library resource selection and criteria for deselection of resources. They show significant similarity in the criteria used to select the library resources. Two thirds of ECs provide the users remote access through campus networks to access E-resources and a good number of EC libraries in Kerala provide IP address based access to E-resources. The engineering which have and do not have the accredited programs of NBA show similarities in the organisation of their library resources. Even though they show uniformity in the management of print resources, their procedures followed to manage E-resources show significant differences.

The libraries of ECs which have the accredited programs of NBA shows an increase in the average annual growth of books, journals and bound volumes of journals with the ECs which do not have the accredited programs of NBA and they do not show much difference in the average annual growth of thesis/dissertation/project reports, patents/standards and newspapers with the non-NBA accredited ECs' libraries. As both NBA accredited and non accredited ECs in Kerala show low level average annual growth in the number of users in their libraries, compared to the libraries of NBA accredited ECs, non accredited one shows very low level of average annual growth in number of library users. Engineering college libraries in Kerala show low level average annual growth in the budget allocated to them and the libraries of NBA accredited engineering colleges show a very low level

of average annual growth when compared to the engineering colleges which do not have the accreditation of NBA.

A large majority of EC libraries which do not have the accredited programs of NBA are applied or in the process of applying for NBA accreditation for their engineering programs and the librarians of almost all of these libraries respond that the resources, services and facilities in their library are improved as an impact of NBA accreditation. A large majority of them also have the opinion that the NBA should emphasize some more criteria in its accreditation process. A large majority of librarians opine that the NBA should consider the feedback with regard to library collection and its usage and the orientation and follow up programs which are conducted by the library for its faculty and students. More than 60 percent of EC librarians opine that the NBA should emphasize innovative measures in the library and the availability of services and products in the libraries.

The engineering college librarians mainly report inadequate fund provision as their main problem for further improvement of their services. A good number of them respond to the problems like lack of a proper security system to prevent loss of the books and increased cost of hardware and software. More than one fourth of EC libraries report lack of knowledge to use E-resource among library users and inadequate space facilities. More than 20 percent of EC libraries respond to inadequate staff structure, inadequate furniture and equipment, difficulties for the subscription of foreign periodicals.

The findings of the study demonstrates the status of engineering college libraries which have the accredited programs of NBA and how it differs from those engineering college libraries which do not have the accredited programs of NBA. Most of the Government, under Government departments and Self-financing libraries of ECs which have the accredited programs of NBA show similarities in their resources, services and other aspects of the study. But when comparing these aspects with the engineering colleges which have and do not have the accredited programs of NBA, it is found that NBA accredited ECs show high availability of print resources, E-resources, library staff, users and budget allocation of their libraries than that of

ECs which do not have the accredited programs of NBA. While considering the ICT infrastructure and facilities, libraries of engineering colleges which have the accredited programs of NBA also show differences in the availability of ICT tools, digital library, institutional repositories, digitization process and their membership in any consortia. Engineering benefits only when it is done for the right engineering college, which is highly reputed and imparts quality education. Technical Education can meet the escalating demands of a growing society and to meet its multiplying demands. With the conventional methods and stereo-typed general education, people acquire nothing to contribute to the progress and prosperity of human society. As the library plays a major role to satisfy the multidimensional information needs of the engineering professionals, a full fledged library is a necessity of any engineering college to attain its objectives well. In the study the engineering college libraries mainly raise the problem of inadequate fund provision. It is suggested that the authorities should give more importance in their budget allocation to their libraries and provide their support in other aspects also which will help the libraries to overcome their major problems and to improve their resources and services to make the engineering students education more qualitative and make them employable and more suitable for the job.

5.6 Recommendations for Further Research

This study has enabled us to understand the development and management of engineering college libraries in Kerala. The investigator wishes to suggest the following areas for further research to add the quantum of knowledge in this area.

- A comparison study can be conducted in the availability of library resources and facilities between the engineering colleges of Kerala and engineering colleges of any other state that have the accredited programs of NBA.
- The same study can be conducted by including the libraries of all professional and technical institutions in Kerala like Management, Architecture, Pharmacy and Hotel Management and Catering Technology and have the accredited programs of NBA.

Findings, Suggestions and Conclusions

- A comparison study of the satisfaction level of library users between the engineering colleges that have the accredited programs of NBA and those that do not have the accredited programs of the NBA can be conducted.
- A comparison study of usage of library resources, services and facilities can be conducted between the engineering colleges which have accredited programs of NBA and those that do not have the accredited programs of NBA.

Appendix A
University of Calicut
Department of Library and Information Science
(To the librarian/the person in charge of the library)

Dear sir/madam,

This questionnaire is intended to collect data / suggestions in connection with my research on the topic “*Development and management of Engineering College Libraries in Kerala*” under the guidance of Dr. Vasudevan TM, Professor, Department of Library and Information Science, University of Calicut. I seek your valuable cooperation and help in obtaining the necessary information. I give my fullest assurance that all the information you provide will be kept confidential and used only for academic purpose.

Thanking you

Manchu O
Research
Scholar
University of
Calicut

(Please put a tick (✓) mark in the appropriate box(es) and kindly answer the questions as they apply. Where Spaces have been provided you are required to write your answer)

SECTION I - GENERAL INFORMATION OF THE COLLEGE

- 1.1. Name of the Institution
- 1.2 Year of establishment.....
- 1.3 Category : Government Under Govt. Dept. Self-financing
- 1.4 Accredited by NBA : Yes No

SECTION 2 - LIBRARY RESOURCES AND SERVICES

2.1. Physical Resources

2.1.1. Does the college have a separate library building?

Yes No

2.1.2. Please mention the total area of the library.....sqm

2.1.3. Please mention the total seating capacity of the library.....

2.1.4. Please mention the working hours of the library.....Hrs

2.1.5. Give the average number of users of the library per day.....

2.1.6. Please mention the rooms or sections in the library? (Multiple answer can be ticked)

Name of the section	✓	Name of the section	✓
Stack Room		New arrivals section	
Circulation		Librarian Cabin	
Acquisition		Binding	
Technical		Newspaper section	
Reference		Reading Room	
Periodical		Reprography section	
Back volume section		Property counter	
Any others (please specify).....			

2.1.7. Please mention the availability of the following furniture in the library?(Multiple answer can be ticked)

Furniture	✓	Furniture	✓
Book shelves/Racks		Circulation desk	
Almirah		CD Rack	
Tables		Suggestion box	
Chairs		Notice Board	
Newspaper Stand		Step Stools	
Periodical display board		Book Trolley	
Any others(Pls Specify).....			

2.1.8. Please mention the availability of following equipment in the library? (Multiple answer can be ticked)

Equipment	✓	Equipment	✓
Binding machine		Telephone	
Lamination machine		Drinking water dispenser	
Xerox machine		Fire and safety measures	
Air Conditioning		CCTV camera	
Any others(Pls specify)			

2.2.Information Resources

2.2.1. Please mention total number of print resources in the following years in your library

Print Resources	2017-18	2018-19	2019-20
Books			
Journals			
Journals (Bound Vol.)			
Theses/ Dissertations/ Projects			
Patents/Standards			
Newspapers			
Any others			

2.2.2. Specify type of E-resources available in your library

E-Resources	<input checked="" type="checkbox"/>
E-books	
E-journals	
Online Databases	
CD-ROM Databases	
Multimedia Products	
Others	

2.2.3. Please mention details of E-Resources available in your library? (Multiple answer can be ticked)

E- Packages	<input checked="" type="checkbox"/>
IEEE	
ASME	
SPRINGER	
ASCE	
McGraw Hill	

ELSEVIER	
IETE	
ASTM DIGITAL LIBRARY	
J-GATE	
DELNET	
SCIENCE DIRECT	
ISO	
IEI	
IET	
NATIONAL DIGITAL LIBRARY	
SWAYAM-NPTEL Videos	
Any others(pls specify)	

2.3. Human Resources

2.3.1. Qualification of the librarian (in library science).....

2.3.2. Experience of the librarian..... Yrs

2.3.3. Please specify the details of staffs available in the library

Library Staff	No.of Posts (✓)
Professional Staff	
Non-Professional Staff	

2.3.4. Do You Organise any workshops/seminars/conferences for library professionals?

Yes No

2.3.5. Have you attended any : Short Term Training Programs

Quality Improvement Program Workshops Seminars

Conference Book Exhibitions Book talks

2.3.6. Are you a member of any professional body? Yes No

2.3.6.1.. If Yes please mention name of the organization

ALA KLA ILA IFLA

Any others (please specify).....

2.3.7. Please mention total number of registered members in your library for the following years

Library Members	2017-18	2018-19	2019-20
Students			
Teaching Staff			
Non-teaching Staff			
Others			

2.4. Financial Resources

2.4.1. What are the sources of finance of the library? (Multiple answer can be ticked)

Source	✓	Source	✓
Management		Overdue charges	
Government		Reprography	
UGC/AICTE		Student fee	
Donations		Document delivery	
Any other (please specify)			

2.4.2. Please mention budget allocation (Average) of the library for the following resources.

Item	2017-18	2018-19	2019-20
Print resources			
E-Resources			
Furniture, equipments and maintenance			
Any other (please specify)			
Total			

2.5.Information Services

2.5.1. Please mention the various services provided by the Library? (Multiple answer can be ticked)

Services	✓
Lending Services	
Reference Services	
Current Awareness Service (CAS)	
Selective Dissemination of Information (SDI)	
News papers Clippings	
User awareness/Orientation Programs	
Photocopy services	
Printing Facility	
Scanning facility	
Translation Service	
Indexing Service	
Abstracting Service	
Referral Service	
Inter library loan	
Bibliography services	
Reservation books	
Book bank	
Any others(pls specify)	

2.5.2. Please mention the online library services (web based services) available in your library. (Multiple answer can be ticked)

web based services	✓
OPAC (Online Public Access Catalogue)/ Web OPAC	
Online Reference service	
Electronic document delivery service	
Virtual reference desk/ Ask-a-librarian	
Electronic current awareness service	
Electronic SDI service	
Circulation service	
Online interlibrary loan service	
Online library news	
Email based services	
Online contact address	
Web based library tutorials	
Online library chat	
Online library holidays list	
Web based user education	
Online map of the library	
Information about special exhibits	
Online in house library bulletins	
Online general library policies	
Online staff list	
Change password online	
Online mailboxes for user comment or suggestions	
Internet Browsing	
Access to emerging types of Web-sites (Blogs, RSS, wikis, online bookmarking service etc)	

SECTION 3 - ICT INFRASTRUCTURE AND FACILITIES

3.1. Please mention the network infrastructure facilities available in your library

Network Infrastructure Facilities		<input checked="" type="checkbox"/>	
3.1.1.	Availability of LAN facility	Yes	<input type="checkbox"/>
		No	<input type="checkbox"/>
3.1.2.	Network in your library is	Independent	<input type="checkbox"/>
		Part of Institution	<input type="checkbox"/>
3.1.3.	Transmission media used as part of your library	Wired	<input type="checkbox"/>
		Wireless	<input type="checkbox"/>
		Both	<input type="checkbox"/>
3.1.4.	Type of internet connection in the library	Leased line	<input type="checkbox"/>
		Broadband/other cable networks	<input type="checkbox"/>
3.1.5.	Internet Service Provider (ISP)	BSNL	<input type="checkbox"/>
		Reliance	<input type="checkbox"/>
		Asianet	<input type="checkbox"/>
		Airtel	<input type="checkbox"/>
		Railtel	<input type="checkbox"/>
3.1.6.	Access speed (Bandwidth) of internet	1-25mb	<input type="checkbox"/>
		26-50 mb	<input type="checkbox"/>
		51-75 Mb	<input type="checkbox"/>
		76-100 Mb	<input type="checkbox"/>
		above 100 Mb	<input type="checkbox"/>
3.1.7.	Personnel supervising internet/networking section in your library	LIS professional	<input type="checkbox"/>
		Computer Science Expert	<input type="checkbox"/>
		Outsourcing	<input type="checkbox"/>

3.2. Please specify the ICT tools available in the library (Multiple answer can be ticked)

Tools	✓	Total No.
Computers		
Laptop		
Scanners		
Barcode Scanners		
Printers		
Web Camera		
DVD/ VCD		
Microphone		
LCD Projectors		
I Pods		
Speakers		
RFID Reader		
Backup devices(Pendrive, External hard disc)		
Any others(please specify).....		

3.3. Please mention the status of automation, digital Library, institutional repository and consortia membership of your library

3.3.1.	Status of Automation	✓
	Fully Automated	
	Partially Automated	
	Not Automated	
3.3.2.	Automation Software Used	✓
	Koha	
	Bookmagic	
	Autolib	
	Soul	
	Libsoft	
	Others	
3.3.3.	Availability of Digital Library	✓
	Yes	
	No	
3.3.4.	Digital Library Software Used	✓
	Dspace	

	Greenstone	
	Other (Please Specify)	
3.3.5.	Availability of Institutional Repository	✓
	Yes	
	No	
3.3.6.	Have you digitized any of the library collection	✓
	Yes	
	No	
	No, but plan for future	
3.3.7.	Availability of digitized resources	✓
	Books	
	Journals	
	Thesis/Dissertation/Project Reports	
	Exam Question Papers	
3.3.8.	Membership in any Consortia	✓
	Yes	
	No	

SECTION 4 - COLLECTION DEVELOPMENT OF INFORMATION RESOURCES

4.1. Whether your library has a collection development policy?

Yes No

4.1.1. If “yes”, indicate whether the policy is written unwritten

4.2. Does the library have separate collection development policies for books and non-book materials? Yes No

4.3. Please mention the authority/Authorities responsible for selecting documents. (Multiple answer can be ticked)

Authority	✓
Principal	
Department head/faculty	
Librarian	
Student representatives	
Others (please specify)	

4.4. Please indicate (✓) the tools /sources for selection of library materials
(Multiple answer can be ticked)

Tools/sources	Print (✓)	E-resources (✓)
Publisher Catalogues through vendors		
Syllabus		
Book reviews		
Reviews in Electronic periodicals or Journals		
Vendor websites		
Discussion lists		
Observation of other college library resources/ websites		
Publishers'/vendor demos in seminars/ Conferences		
User recommendation/suggestion		
Opinion from experts/ Faculty		
To ask librarians already subscribing to a product about their experiences		
Trial offered by the Publishers/vendors		
Consortiums		
Others (please specify)		

4.5. Please indicate (✓) the criteria which you follow to select the documents
(Multiple answer can be ticked)

Selection Criteria	Print (✓)	E resources (✓)
Quality (based on review, user needs, etc.)		
Subject relevance		
Currency, Authority, Completeness		
Language		
Uniqueness of contents		
Relevance of materials for curriculum		
Relevance of materials for faculty/research		
Cost effectiveness		
Trial before use		
Network compatibility		
Hardware/Software compatibility		
Strength of search engine/access points		
Remote accessibility		
Others (please specify)		

4.6. Does your library follow the following steps for the process of acquisition of E-resources (Multiple answer can be ticked)

Steps	Yes (✓)	No (✓)
Verifying the bibliographic information of the product		
Identifying various pricing options		
Reviewing the licence and business agreements		
Ordering and acquiring the product for your library		

4.7. Please indicate the channel(s) for acquiring documents. (Multiple answer can be ticked)

Channels	Print (✓)	E-Resources (✓)
Online database vendors		
Publishers		
Distributors		
By inviting quotations		
Approach of consortia purchasing		
Gift/Exchange		
Free downloads from Internet/WWW		
Others (please specify)		

4.8. Please indicate the criteria used to evaluate your library collection (Multiple answer can be ticked)

Print Collection	✓
Amount of funds spent	
No. of books added	
No. of books ordered but not received	
No. of books borrowed	
No. of books consulted in the library	
No. of books received on ILL from library	
Any other, please specify.....	

E-Resources	✓
Content (Completeness of content, Format, Coverage data, Duplication of Content with other packages)	
Currency (Frequency of updates, archiving of availability)	
Reputation (Reliability)	
Indexing (arrangement of subjects)	
Impact Factors (Rating of the journals usage)	
Ease of access	
Final Cost is fit to budget	
Technical Support by vendor	
Terms and conditions of Licensing agreements	

4.9 .Please indicate the criteria considered for Weeding out/ De-selection of resources(Multiple answer can be ticked)

Print Resources	(✓)
Factually inaccurate	
Ugly-worn beyond mending or rebinding	
Superseded - by a new edition or by a much better book on the subject	
No discernible literary or scientific merit	
Irrelevant to the needs and interests of the library's community	
The material is easily obtainable from another library.	
E-resources	(✓)
Ranking of database by acquiring usage statistics	
Based on Cost-Benefit analysis	
Based on relevance to research work and the curriculum	
Uniqueness of the e-resources to avoid duplication	
Based on Library committee recommendation	
Based on budget status of the library	

SECTION 5 - ORGANISATION AND MANAGEMENT OF INFORMATION RESOURCES

5.1. Please mention the methods followed for organising print resources in your library

5.1.1.	Time to be taken for processing 100 books	✓
	One week	
	Two weeks	
	Three weeks	
	More than three weeks	
5.1.2.	Classification Schemes adopted in the library	
	DDC	
	CC	
	UDC	
	Any other	
5.1.3.	Cataloguing code used in the library	
	AACR II	
	CCC	
	Catalogue modules of software packages	
	Any other	
5.1.4.	Form of catalogue used in the library	
	Printed Book	
	Card form	
	OPAC	
5.1.5.	Method of organizing print journals	
	Alphabetical	
	Classified	
	Subject	
	Any other	
5.1.6.	Method of Access Provided to Users	
	Open	
	Closed	

5.2. Please mention the method of organising and method of access to E-resources in your library

5.2.1.	Organisation of E-resources	✓
	A-Z Listing	
	Subject wise	
	Content Type	
5.2.2.	Mode of Access Provided to E-resources	
	Access in the library	
	Remote access through campus network	
	Internet	
5.2.3.	Method of Access Provided to Users	
	User ID/password	
	IP Address	
	Both	

5.3 . Please mention the procedures followed in your library to manage the print resources

5.3.1.	Preservation Methods Followed in the Libraries	✓
	Binding and Repair	
	Pest control	
	Digital preservation	
5.3.2.	Frequency of physical stock verification process	
	Annually	
	Once in two year	
	Once in three year	
5.3.3.	Method of Stock Verification	
	Shelf list	
	Barcoding Technology	
	Accession Register	
5.3.4.	Action Taken for Missing and Mutilated Collection in the Library	
	Charge defaulters with the current price of the book with processing charge	
	Replace the current edition of the book	
	Stop issue	

- 5.4. Please indicate (✓) the procedures followed in your library for managing the E-resource collection (Multiple answer can be ticked)

Management Procedures		(✓)
1. Verification of Access	a) Content (as per order placed)	
	b) No. of users (as per order placed)	
	c) Access method (as per order placed)	
2. Organizational chart (Duties allotment to technical staff)		
3. Periodical reviewing of Electronic Resources (content, access etc.)		
4. Enquiries and feedback received from users	a) Content not covered	
	b) Down loading	
5. Monitoring speed of Information Download Facility		
6. Monitoring Information storage Facility		
7. Print facility to all documents/ part		
8. Data Records of Electronic Resources (accession register)		
9. Shelving (non book materials-CDROM) of electronic resources	a) Accessioning	
	b) Classification	
	c) Cataloging	
10. Updating of new electronic resources in OPAC		
11. Information literacy program	a) Presentations by publishers	
	b) Announcements by library	
12. Staff training		
13. Database administration		
14. Communication with vendors		
15. Tracking of Utilization statistics		
16. License Tracking (for renewal of electronic resources)		
17. Conservation & Preservation		
18. Overdue alerts to management (renewal, advance payment)		
19. Archiving		
20.AMC Tracking		

SECTION 6 - IMPACT OF ACCREDITATION ON LIBRARY RESOURCES AND FACILITIES

6.1. Whether your institution applied for /in the process of applying for NBA accreditation?

Yes No

6.1.1. If your answer is No, Please mention the reason.....

6.1.2. If your answer is yes, do you agree that the following resources/services in your library have improved significantly as an impact of the NBA accreditation process?

Resources/Services	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree
Increased library area					
Increased library opening hours					
Increased budget					
Improved library infrastructure					
Improved ICT infrastructure					
Improved library automation status					
Improved digital library services					
improvement in the activities of Library advisory committee					
Development in library human resource					
Development in collection of print resources					

Increased subscription of E-resources					
Increase the number of Library services provided to users					

6.2. Do you think that the NBA should emphasize specific criteria and procedures of the library with respect to accreditation (answer only those respondents who applied for /in the process of applying for NBA accreditation) ?

Yes No

6.2.1. If your answer is yes, please mention the areas

Areas	✓
Library orientation and follow up programs for faculty and students	
Feedback with regard to library collection and its usage	
Emphasis on library services and products	
Emphasis on innovative measures in the library	
Emphasis on bringing more readers into the library	
Liaison with faculty to introduce modules enhancing library use	
Working together with training and placement cell to support career opportunities	
Doing an analysis of quality rather than quantity with regard to various parameters	

SECTION 7 - CONSTRAINTS FOR FURTHER IMPROVEMENT

7.1. Please mention if there are any constraints for further development/management of resources and facilities in your library.

Problems	✓
Inadequate fund provisions	
Lack of support from Authority	
Inadequate staff structure	
Lack of trained manpower for the implementation of new IT initiatives	
Lack of professional encouragement and up-liftments	
Non recognition in the policy decision making of the library activities	
Lack of Need based services	
Lack of Co-ordination and Planning	
Difficulties to implement the library technical processing such as classification and cataloguing	
Inadequate space facilities	
Inadequate furniture and equipments	
Lack of knowledge to use e-resources among library users	
Lack of cooperation among the fellow professionals	
Difficulties for the subscription of foreign periodicals	
Lack of infrastructure to support storage and access	
Inadequate ICT Infrastructure	
Increasing Cost of Hardware & Software	
Lack of proper security system to prevent the loss of books	
Others (please specify)	

Signature of librarian/incharge

Thanking you

Appendix B

List of Engineering Colleges Selected for the Study

Sl No.	Engineering College	Category	Year of Establishment
1	Ace College of Engineering, Thiruvananthapuram	Self-financing	2013
2	Adi Shankara Institute of Engineering Technology, Ernakulam	Self-financing	2001
3	Ahalia School of Engineering and Technology, Palakkad	Self-financing	2012
4	Al Azhar College of Engineering and Technology, Ernakulam	Self-financing	2010
5	Al-Ameen Engineering College, Palakkad	Self-financing	2003
6	Albertian institute of science and technology, Ernakulam	Self-financing	2011
7	Amal Jyothi College of Engineering, Kottayam	Self-financing	2001
8	Ammini College of Engineering, Palakkad	Self-financing	2010
9	AWH Engineering College, Kozhikode	Self-financing	2001
10	Baselious Mathews II College of Engineering, Kollam	Self-financing	2002
11	Bishop jerom institute, Kollam	Self-financing	2010
12	Carmel college of Engineering & Technology, Alappuzha	Self-financing	2014
13	Christ College of Engineering, Irinjalakuda	Self-financing	2015
14.	College of Engineering, Thiruvananthapuram	Government	1939
15	College of Engineering and Management Punnappra, Alappuzha	under Government Departments	2008
16	College of Engineering and Technology Payyanur, Kannur	Self-financing	2011
17	College of Engineering, Kallooppara, Pathanamthitta	under Government Departments	2004

18	College of Engineering Karunagappally, Kollam	under Government Departments	2000
19	College of Engineering, Kidangoor, Kottayam	under Government Departments	2000
20	College of Engineering Muttathara, Thiruvananthapuram	under Government Departments	2016
21	College of Engineering Pathanapuram, Pathanamthitta	under Government Departments	2011
22	College of Engineering, Perumon, Kollam	under Government Departments	2000
23	College of Engineering, Thrikaripur, Kasargode	under Government Departments	2000
24	College of Engineering Vatakara, Kozhikode	under Government Departments	1999
25	College of Engineering, Chengannur, Alappuzha	under Government Departments	1993
26	College of Engineering, Cherthala, Alappuzha	under Government Departments	2004
27	College of Engineering Munnar, Idukki	under Government Departments	2000
28	College of Engineering Thalassery, Kannur	under Government Departments	2000
29	Eranad Knowledge City Technical Campus, Malappuram	Self-financing	2012
30	Federal Institute of Science and Technology, Ernakulam	Self-financing	2002
31	Government College of Engineering, Kannur	Government	1986
32	Government Engineering College, Wayanad	Government	1999
33	Government Engineering College, Kozhikode	Government	1999
34	Government Engineering College,	Government	1958

	Thrissur		
35	Government Engineering College, Trivandrum	Government	1999
36	Government Engineering College, Sreekrishnapuram Palakkad	Government	1999
37	Government Engineering College, Idukki	Government	2000
38	Gurudeva Institute of Science And Technology, Kottayam	Self-financing	2010
39	IES College of Engineering, Thrissur	Self-financing	2003
40	Ilahia college of engineering and technology, Ernakulam	Self-financing	2002
41	Institute of Engineering and Technology, University of Calicut, Malappuram	Under universities	2001
42	Jai Bharath College of Management and Engineering Technology, Ernakulam	Self-financing	2009
43	Jawaharlal College of Engineering and Technology, Palakkad	Self-financing	2008
44	Jyothi Engineering College, Thrissur	Self-financing	2002
45	K M E A Engineering College, Ernakulam	Self-financing	2002
46	Kottayam Institute Of Technology And Science, Kottayam	Self-financing	2011
47	LBS College of Engineering, Kasaragod	Under Government Departments	1993
48	L B S Institute of Technology for Women Poojappura, Trivandrum	Under Government Departments	2001
49	Malabar College of Engineering and Technology, Thrissur	Self-financing	2009
50	Mangalam College of Engineering, Kottayam	Self-financing	2002
51	Mar Athanasius College of Engineering, Ernakulam	Government	1961
52	Mar Baselios College of Engineering and Technology, Trivandrum	Self-financing	2002
53	Mar Baselious Christian College of Engineering and Technology, Idukki	Self-financing	2001
54	M. Dasan Institute of Technology,	Self-financing	2012

	Kozhikode		
55	MEA Engineering College, Malappuram	Self-financing	2002
56	MES College of Engineering Malapuram	Self-financing	1994
57	MES Institute of Technology and Management, Kollam	Self-financing	2009
58	METS School of Engineering, Thrissur	Self-financing	2002
59	MGM College of Engineering & Technology, Ernakulam	Self-financing	2011
60	Government Model Engineering College, Ernakulam	Under Government Departments	1989
61	Mohandas College of Engineering and Technology, Thiruvananthapuram	Self-financing	2002
62	Mount Zion institute of science and technology, Alapuzha	Self-financing	2009
63	Musaliar College of Engineering, Thiruvananthapuram	Self-financing	2011
64	Musaliar College of Engineering & Technology, Pathanamthitta	Self-financing	2002
65	Muslim Associations college of engineering, Thiruvananthapuram	Self-financing	2002
66	Muthoot Institute of Technology and Science , Ernakulam	Self-financing	2013
67	NSS College of Engineering, Palakkad	Government	1960
68	Nirmala College of Engineering, Thrissur	Self-financing	2011
69	North Malabar Institute of Technology, Kasaragod	Self-financing	2012
70	Providence College of Engineering, Alappuzha	Self-financing	2015
71	Rajadhani Institute of Engineering and Technology, Trivandram	Self-financing	2009
72	Rajagiri School of Engineering and Technology, Ernakulam	Self-financing	2001
73	Rajiv Gandhi Institute of Technology, Kottayam	Government	1991
74	Royal College of Engineering and	Self-financing	2003

	Technology, Thrissur		
75	Sadguru Swami Nithyananda Institute of Technology, Kasaragod	Self-financing	2010
76	Sahrdaya College of Engineering and Technology, Thrissur	Self-financing	2002
77	Saintgits College of Engineering, Kottayam	Self-financing	2002
78	SCMS School of Engineering and Technology, Ernakulam	Self-financing	2001
79	Sree Narayana Gurukulam College of Engineering, Ernakulam	Self-financing	2002
80	Sree Buddha College of Engineering , Alappuzha	Self-financing	2002
81	Sree Narayana Guru College of Engineering and Technology, Kannur	Self-financing	2003
82	Sree Narayana Guru Institute of Science and Technology, Ernakulam	Self-financing	2003
83	Sree Narayanamangalam Institute of Management and Technology, Ernakulam	Self-financing	2002
84	Sreepathy Institute of Management and Technology, Palakkad	Self-financing	2009
85	St Thomas College of Engineering & Technology, Alappuzha	Self-financing	2010
86	St Thomas College of Engineering and Technology, Kannur	Self-financing	2014
87	St. Joseph's College of Engineering and Technology, Kottayam	Self-financing	2002
88	Thangal Kunju Musaliar College of Engineering, Kollam	Government	1958
89	Thejus Engineering College, Thrissur	Self-financing	2009
90	Toc H Institute of Science and Technology, Ernakulam	Self-financing	2002
91	UKF College of Engineering and Technology, Kollam	Self-financing	2009
92	University college of engineering Thodupuzha, Kottayam	Under University	1996
93	University College of Engineering, Kariavattom, Trivandrum	Under University	2000
94	Valia Koonambaikulathamma	Self-financing	2009

	College of Engineering & Technology, Kollam		
95	Vedavyasa Institute of technology, Malappuram	Self-financing	2004
96	Vidya Academy of Science and Technology, Thrissur	Self-financing	2003
97	Vijnan Institute of Science and Technology, Ernakulam	Self-financing	2011
98	Vimal Jyothi Engineering College, Kannur	Self-financing	2002
99	Viswajyothi College of Engineering and Technology, Ernakulam	Self-financing	2001
100	Younus College of Engineering & Technology, Kollam	Self-financing	2002

BIBLIOGRAPHY

- Agbetuyi, P. A., Adegbilero-Iwari, I. & Subair, R. (2017) Role of academic libraries in accreditation of courses and teaching programs: A case of Afe Babalola University Library, Ado-Ekiti. *International Journal of Library and Information Science Studies*, 3 (1), 16-24. <https://www.eajournals.org/wp-content/uploads/Role-of-Academic-Libraries-in-Accreditation-of-Courses-and-Teaching-Programs.pdf>
- Agrapu, D. (2013). *Collection management of electronic information resources: An analytical study of selected University Libraries in Andhra Pradesh* [Doctoral thesis, Andhra University]. <http://shodhganga.inflibnet.ac.in/handle/10603/8666>
- AICTE (2021). *All India Council for Technical Education: Approval process handbook 2021-22*. AICTE. [https://aicte-india.org/sites/default/files/approval/Approval%20Process%20Handbook_2021-22%20\(Revised\).pdf](https://aicte-india.org/sites/default/files/approval/Approval%20Process%20Handbook_2021-22%20(Revised).pdf)
- Alliance University (2020, December 18). *Engineering education in India: A brief overview*. <https://www.alliance.edu.in/blog/2020/12/18/engineering-education-in-india-a-brief-overview/>
- American Library Association (2019). Library. In *Online Dictionary of Library and Information Science*. <https://libguides.ala.org/library-definition>
- Anu, V. (2021). The state of engineering education in India: Know here. <https://www.embibe.com/exams/state-of-engineering-education-in-india/>
- Archana, S. N. & Humayoon, K. (2012). E-resources in the engineering college libraries of Kerala: Problems towards sustainable collection development. <https://dyuthi.cusat.ac.in/purl/3927>
- Arithmetic Mean. (2021, June 5). In *Wikipedia*. https://en.wikipedia.org/wiki/Arithmetic_mean.
- Arokyamary, R & Ramasesh, C. P. (2014) IT infrastructure facilities in engineering college libraries of Karnataka. *Pearl A Journal of Library and Information Science*, 8 (4). DOI: 10.5958/0975-6922.2014.00750.5
- Balu, C. C., & Reddy, V. P. (2014). A survey on the present status of engineering college libraries in Sri Venkateswara University area, Andhra Pradesh, India. *International Journal of Library and Information Science*, 6 (4), 49–56. <https://doi.org/10.5897/IJLIS2012.028>
- Belsare, S. D. (2013). *Development and management of engineering college libraries in western Vidarbha region: An analytical study* [Doctoral thesis, Shri Jagdish Prasad Jhabarmal Tiberwala University]. <http://shodhganga.inflibnet.ac.in/handle/10603/16127>
- Bhargava (2001). Present engineering education in India - An emerging economy- and a glimpse of the scenario in the 21st century. In Weichert, D. Rauhut, B., Schmidt, R. (Eds), *Educating the Engineer for the 21st Century* (pp 77-80). Kluwer Academic Publishers. https://link.springer.com/chapter/10.1007%2F0-306-48394-7_9

- Bhattacharya, N. & Das, S. K. (2015). Present status of e-resources available in the engineering college libraries of West Bengal: Problems towards sustainable collection development. *Knowledge Librarian*, 2 (3), 232-251. <http://www.klibjlis.com/2.3.12.pdf>
- Bhavsar, V & Patel, U. (2016). *Issues and challenges of engineering college library services in Anand district of Gujarat: A study*. 61st International Conference of Indian Library Association (ILA) on Sustaining the Excellence: Transforming Libraries Through Technology, Innovation and Value Added Services in Google Era, Saurasthara University Library. https://www.researchgate.net/publication/309856190_Issues_and_Challenges_of_Engineering_College_Library_Services_in_ANAND_District_of_Gujarat_A_Study_1_Dr_Vaishali_Bhavsar_2_Dr_Umesh_Patel
- Bhoi, N. K. (2017). *Use of Information Communication Technology (ICT) and library operation: An overview*. 445–456. <http://eprints.rclis.org/32231/1/Use%20of%20Information%20Communication%20Technology%20%28ICT%29%20and%20Library%20OperationAn%20Overview.pdf>
- Bloomfield, B. C. (1987). Collection development the key issues. In S. Konall (Ed.) *Collection development options for efficient management*. Tayler Graham
- Breeding, M. (2004). The many facets of managing electronic resources. *Computer in Libraries Westport*, 24 (1), 25-33
- Bryson, J. O. (1990) *Effective library and information centre management*. P.71.
- Cal State East Bay (2021) *Materials deselection policy*. <https://library.csueastbay.edu/usingthelibraries/collections/materials-deselection-policy>
- Cambridge University Press. (2021, June 7). College. In *Cambridge Dictionary*. <https://dictionary.cambridge.org/dictionary/english/college>
- Cambridge University Press. (2021 June 7). Development. In *Cambridge Dictionary*. <https://dictionary.cambridge.org/dictionary/english/development>
- Chavan, S., & Naik, R. R. (2018). Information and Communication Technology infrastructure in the engineering college libraries of north Karnataka. *Pearl : A Journal of Library and Information Science*, 12 (1), 67–71. https://www.researchgate.net/profile/Santosh-Chavan-7/publication/304714388_Impact_of_Social_Media_among_the_PG_Students_of_Karnatak_University_Dharwad_A_Study/links/5c021f93a6fdcc1b8d4d121f/Impact-of-Social-Media-among-the-PG-Students-of-Karnatak-University-Dharwad-A-Study.pdf
- Choudhury, T. A., Rahman, M. & Barooah, P. K. (2018) A scenario of special libraries and ICT application in the state of Assam: A study. *Library Philosophy and Practice (e-journal)*. <http://digitalcommons.unl.edu/libphilprac/2045>.
- Collins (2021, July 12) Engineering. In *Collins Dictionary*. <https://www.collinsdictionary.com/dictionary/english/engineering>
- Dayal, R. (2012). Recent trends of using ICT in modern college libraries. *International Journal of Engineering and Mathematical Sciences*, 1 (1), 55–59. <http://www.ijems.org/uploads/5029054700IJEMS9.pdf>

- Deshapande, K. S. (1985) *University library system in India*. Sterling. p. 87.
- Duragannavar, G. F., Manjunath, N and Mamdapur, G. M. (2018). ICT based tools and its benefits in library and information centre. *International Journal of Research in Humanities, Arts and Science*, 3 (11), 427-432. https://www.researchgate.net/publication/327281881_ICT_Based_Tools_and_it%27s_Benefits_in_Library_and_Information_Centre
- Emery, J., Stone, G., & McCracken, P. (2019). *Techniques for electronic resource management: TERMS and the transition to open*. American Library Association. <https://doi.org/10.15760/lib-01>
- Evans. G. E. (1987). Developing library and information centre collections. Littleton
- Evans, G. E. (2004). Developing library and information centre collection, (4th ed.). Greenwood Publication.
- Gavit, B. K. (2019). Web based library services. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/2931>
- Government of kerala (2021 March 21). *About Kerala*. <https://kerala.gov.in/about-kerala>
- Ghumre, S. & Veer, D. K. (2013) College library services in Marathwada Region: A study on impact of NAAC accreditation. *9 th International CALIBER - 2013*, <https://www.researchgate.net/publication/314286665>.
- Gill, M., Sharma, N., & Karki, K. (2016). Evaluation of collection development provided by NIT libraries in North India. *Journal of Advancements in Library Sciences*, 3 (3), 1–6. <http://sciencejournals.stmjournals.in/index.php/JoALS/article/view/328/160>
- Goud, T. L. (2017). Collection development in University Libraries: A case study of Kakatiya University, Warangal, Telangana State. *International Journal of Library and Information Studies*, 7 (2), 10. http://ijlis.org/img/2017_Vol_7_Issue_2/235-244.pdf
- Gulnaz, & Nishat, F. (2019). Collection development practice in Indian Institute of Technology libraries of Eastern India: A study. *Collection and Curation*, 38 (2), 25–31. <https://doi.org/10.1108/CC-08-2018-0015>
- Gupta, R. K. (2014). *Status and impact of Information Technology in engineering colleges institutions libraries of Rajasthan: A study*. [Doctoral thesis, Banasthali Univesity]. <http://hdl.handle.net/10603/141889>
- Hanchate, P. D., & Sawant, S. (2018). A study on ICT based library services with reference to academic libraries in rural area. “*Knowledge Librarian*” *An International Peer Reviewed Bilingual E-Journal of Library and Information Science Special Issue*, 85–89. <http://eprints.rclis.org/32346/3/SNDT%20CONFERENCE%20PROCEEDING-100-104.pdf>
- Horsfall, M. N. (2019). Management of media and electronic resources in Nigerian Libraries. *Library Philosophy and Practice (e-Journal)*, 12. https://www.researchgate.net/publication/335856719_Management_of_Media_and_Electronic_Resources_in_Nigerian_Libraries

- Hosburgh, N. (2014) Managing the electronic resources lifecycle: Creating a comprehensive checklist using Techniques for Electronic Resource Management (TERMS). *The Serials Librarian*, 66 (1-4). <https://www.tandfonline.com/doi/full/10.1080/0361526X.2014.880028>
- Janice, F. (2016). *Impact of accreditation on engineering college libraries in Mumbai* [Doctoral thesis, Tilak Maharashtra Vidyapeeth]. <https://sg.inflibnet.ac.in/handle/10603/166487>
- Jestin, K. J. J., & Sornam, S. A. (2019). Infrastructure and facility readiness for providing e-learning and allied services in the engineering college libraries of Kerala. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/2881>
- Jestin, J. K. J., & Sornam, S. A. (2016). E-resources in engineering college libraries in Kerala: Awareness and availability – A study. *International Journal of Digital Library Services*, 6 (2), 85–90. <http://www.ijodls.in/uploads/3/6/0/3/3603729/ijodls929.pdf> dt 25/03/19
- Kannappanavar, B. U., & Jayaprakash. (2014). Library facilities, sources and services in the engineering colleges in Goa State: A study. *International Journal of Librarianship and Administration*, 5 (2), 131–146. http://www.irphouse.com/ijla/ijlav5n2_06.pdf
- Kannappanavar, B. U., & Manjunatha, K. V. (2011). Library resources and services of engineering colleges in Karnataka. *Library Philosophy and Practice (e-Journal)*. <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1501&context=libphilprac>
- Karuppasamy, P (2018). *Quality of library services in engineering colleges And Arts Science Colleges of South TamilNadu*. [Doctoral thesis, Madurai Kamraj University]. <http://hdl.handle.net/10603/305412>
- Katz, W. A. (1980). Collection development; the selection of materials for libraries: Holt
- Kaula, P. N. (1983). Guidelines for College Libraries. *Herald of Library Science*, 22 (1-2) 48.
- Kaur, M., & Walia, P. K. (2016). Collection development of electronic resources in management libraries of India. *Collection Building*, 35 (3), 73–83. <https://doi.org/10.1108/CB-04-2016-0007>
- Khan, A. M. (2010). Managing collection development and organization in globalizing Indian university libraries. *Collection Building*, 29 (1), 15–21. <https://doi.org/10.1108/01604951011015259>
- 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>
- Khayal, O. (2019). Role of Technical Education. DOI: 10.13140/RG.2.2.15406.05447
- Khayal, R. (2013). *Collection development and services in Law libraries in Delhi: A comparative study* [Doctoral thesis, Aligarh Muslim University]. <https://sg.inflibnet.ac.in/handle/10603/138842>

- Kim, H. Y. (2017). Statistical notes for clinical researchers: Chi-squared test and fisher's exact test. *Restor Dent Endod*, 42 (2), 152–155. DOI: 10.5395/rde.2017.42.2.152.
- Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. New Age International (P) Ltd, Publishers.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurements*, 30, 607-610. https://home.kku.ac.th/sompong/guest_speaker/KrejcieandMorgan_article.pdf
- Krishnamurthy, M. & Roopa, E. (2019). Assessment of library resources and services in engineering colleges in India: A study. *Library Philosophy and Practice*.1-11. <https://www.proquest.com/openview/9582b9c8ad5ce493c1292e9f95f9ed40/1?pq-origsite=gscholar&cbl=54903>
- Krishnamurthy, M., Roopa. & Reddy, S. (2018). Provision of e-resources in engineering college libraries in India: A pilot study. *International Journals of Library and Information Science*, 10 (8), 85-93. DOI: 10.5897/IJLIS2018.0849.
- Krishnendu, C. (2020, February 14). More than 50 percent engineers jobless, AICTE decides to stop setting up new engineering colleges till 2022. *News Nation*. <https://english.newsnationtv.com/education/more/aicte-to-stop-setting-up-more-engineering-colleges-till-2022-253899.html>
- Kulkarni, J. N. (2018) Beyond 4.2: Librarian’s role in overall NAAC process of the institution in the light of revised framework. *IP Indian Journal of Library Science and Information Technology*, 3 (2), 67-69. DOI: 10.18231/2456-9623.2018.0015.
- Kumar, K. (2014) Digital collection and development initiatives in engineering college libraries: An analytical survey. *International Journal of Knowledge Content Development & Technology*, 4 (1), 5-21. <http://dx.doi.org/10.5865/IJKCT.2014.4.1.005>.
- Kumar, R. (2012). Growth and development of architectural engineering college libraries in Haryana, India. *Library Philosophy and Practice (e-Journal)*, 743. <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1817&context=libphilprac>
- Kumar, S. K. R. (2017). Recent trends of ICT services and the present scenario of some selected engineering college libraries in Coimbatore district, Tamilnadu: A study. *Asian Journal of Applied Science and Technology*, 1 (1), 199–202. <http://ajast.net/data/uploads/ajast-42.pdf>.
- Kumar, S. P. (2011). *Challenges for library professionals of engineering colleges in southern district of Tamil Nadu* (Doctoral Thesis, Manonmaniam Sundaranar University). Manonmaniam Sundaranar University, Tirunelveli. <http://shodhganga.inflibnet.ac.in/handle/10603/26786>
- Library Management (2021, May 18). In *Wikipedia*. https://en.wikipedia.org/wiki/Library_management
- Library Material (n. d.). <https://nios.ac.in/media/documents/SrSecLibrary/LCh-009.pdf>

- Linh, A. C. & Le, T. A. (2020). Improving the quality of university library services to meet the requirements of basic educational quality accreditation. DOI: 10.46223/HCMCOUJS. soci. en.10.1.572.2020
- List of Engineering Colleges in Kerala (2021, May 17). In *Wikipedia* https://en.wikipedia.org/wiki/List_of_engineering_colleges_in_Kerala.
- List of Engineering Colleges in Kerala (2021, May 17). Office of the Commissioner for Entrance Examinations (n. d.). <https://cee.kerala.gov.in/collegelist/main/index.php>
- Malipatil, B. & Nagaraj, J. (2017) Automation of engineering college libraries in Kalaburagi and Bidar Districts of Karnataka state. *PESQUISA*, 2 (2), 77-86. <http://pesquisaonline.net/wp-content/uploads/2017/05/Pesquisaonline.net-Bazavaraj-Librarian.pdf>
- Manik, S. D. (2015). *A study of NBA accredited engineering college libraries in Maharashtra with relevance to marketing of library and information product, sources and services*. [Doctoral thesis, Shri Jagdish Prasad Jhabarmal Tiberwala University]. <http://shodhganga.inflibnet.ac.in/handle/10603/74805>
- Mansur, S. (2012). E- resource collection development in engineering college libraries: A challenge for knowledge centre managers. *International Journal of Digital Library Services*, 2 (1), 166–177. http://www.ijodls.in/uploads/3/6/0/3/3603729/sunil_mansur_ok_166-177_.pdf
- Materials Deselection Policy. (2021, July 22). <https://library.csueastbay.edu/usingthelibraries/collections/materials-deselection-policy>
- Men, J. M. & Isreal, A. A. (2017) The role of academic libraries in the accreditation of undergraduate programmes: A case study of Federal University of Technology Minna, Niger State. *Library Philosophy and Practice (e-journal)*. <http://digitalcommons.unl.edu/libphilprac/1529>
- Merugu, R. K. & Bandi, Y (2014) E-Resource management at the engineering college libraries of Karimnagar District, Telangana: A study. *International Journal of Technology and Business Management*, 3 (1), 37-44. https://www.academia.edu/11968640/_E_Resource_Management_at_the_Engineering_College_Libraries_of_Karimnagar_District_Telangana_A_Study_
- Mozumder, S. K., Barooah, P. K. & Hussain, M. (2020) Status of college library services in Barak Valley, Assam: A study. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/4011>.
- Mondal, A. K., & Bandyopadhyay, A. K. (2010). Application of ICT and related manpower problems in the college libraries of Burdwan. *DESIDOC Journal of Library & Information Technology*, 30 (4), 44–52.
- Mondal, N. C., & Jana, P. K. (2015). Trends in private engineering education institutions and their libraries services in West Bengal: An overview. *Journal of Advancements in Library Sciences*, 2 (2), 32–40. sciencejournals.stmjournals.in/index.php/JoALS/article/download/381/207

- Mulla, K. R. & Chandrashekra, M. (2006) E-resources and services in engineering college libraries – A case study. *E-JASL 1999-2009*, 7 (1). <https://digitalcommons.unl.edu/ejasljournal/76>
- Mushtaq, M., & Tausif, A. (2020). Collection management of electronic resources in engineering college libraries of Aligarh, India: A study. *Collection and Curation*, 39 (3), 89–96. <https://doi.org/10.1108/CC-09-2019-0028>
- Naick, B. R. D., & Mohan, R. (2017). A survey of library collection development among the engineering colleges of Karminagar and Warangal districts of Telegana State. *International Journal of Digital Library Services*, 7 (2), 1–14. <http://www.ijodls.in/uploads/3/6/0/3/3603729/1ijodls217.pdf>
- Nandita, B. & Rajani, K. B. (2018). Issues and challenges of college library services in Upper Assam: An evaluative study. *ACLA 15th Biennial Conference & National Seminar on The Role of College Libraries in Meeting Users' Information Needs*, Assam, October 2018. <https://www.researchgate.net/publication/352249130>.
- Naveen, C. L. (2020). Impact of NAAC Assessment on the development of college libraries: A Study. https://www.researchgate.net/publication/344085863_Impact_of_NAAC_Assessment_on_the_development_of_college_libraries_A_Study.
- NBA (2019). General manual for accreditation. https://www.nbaind.org/Uploads/General_Manual_V1.0.pdf
- NBA (2020). Evaluation guidelines with indicative exhibits/context to be observed/assessed - SAR Tier – II (UG Engineering): First Time Accreditation. <https://www.nbaind.org/files/evaluation-guidelines-tier-ii-v0.pdf>
- NBA (2020). National Board of Accreditation. <https://www.nbaind.org/about>
- NBA Accreditation (2015 March 7). <http://www.uiet.puchd.ac.in/index.php/2015-12-23-06-54-18>
- Nimbhorkar, S. P. (2019). Electronic resources collection development policy. *Journal of Library and Information Technology*, 15 (1), 47–51.
- Nworie, J. & Magnus, U. (2017) *Library use companion and study Skills*. Springfield Publishers. p24-32. https://www.researchgate.net/publication/327187509_LIBRARY_COLLECTION_NATURE_TYPES_AND_USES_IN_ACADEMIC_LIBRARIES
- Nwosu, R. O., Ejedafiru, E. F., Ifeka, & Okeke, E. (2013). Challenges of electronic information management in Nigerian University Libraries. *IOSR Journal Of Humanities And Social Science*, 13 (2), 75–79. <https://doi.org/10.9790/0837-1327579>
- Obiano, D. C. (2021). The impact of collection development policy on the provision of library resources in academic libraries in Imo State, Nigeria. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/5538>.
- Odera-Kwach, B. A., & Ngulube, P. (2013) The impact of accreditation exercise on University Libraries in Kenya. *African Journal of Library, Archives and Information Science*, 23 (1), 75-87. <https://www.researchgate.net/publication/298441254>.

- Okogwu, F. I. & Ozioko, R. E. (2018). Challenges of collection development of electronic resources in University Libraries in South East Nigeria. *Library Philosophy and Practice (e-Journal)*, 22. <https://digitalcommons.unl.edu/libphilprac/1880/>
- Okoye, M. O., & Ugwuanyi, C. F. (2012). Management of electronic resources by cataloguers in Nigerian Federal University Libraries. *Library Philosophy and Practice (e-Journal)*. <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1781&context=libphilprac>
- Oxford University Press. (n. d.). Development. In *Oxford Learner's Dictionaries*. <https://www.oxfordlearnersdictionaries.com/definition/english/development>
- Pal, N. & Barman, R. K. (2020) Current scenario of library resources and services in the private University Libraries of Assam, India. https://www.researchgate.net/publication/344883343_Current_Scenario_of_Library_Resources_and_Services_in_the_Private_University_Libraries_of_Assam_India
- Panneerselvam, P. (2016). A study on autonomous engineering college libraries in Tamil Nadu. *International Journal of Information Sources and Services*.3 (5), 72-80. https://www.researchgate.net/publication/311774379_A_STUDY_ON_AUTONOMOUS_ENGINEERING_COLLEGE_LIBRARIES_IN_TAMIL_NADU
- Partap, B. (2016). Status of engineering college libraries in Ambala District of Haryana: A survey. *SRELS Journal of Information Management*, 53 (2), 153-162. DOI: 10.17821/srels/2016/v53i2/91277
- Partap, B. & Saha, P. (2019). Status of engineering college libraries in Bhubaneswar region of Odisha, India: A comparative study. *Library Philosophy and Practice (e-journal)*. <https://digitalcommons.unl.edu/libphilprac/2722>.
- Partap, B. & Tiwari, M. (2018). Status of ICT infrastructure and services of libraries of SRMSWCET Bareilly and DBITE Dehradun: A comparative study. *International Journal of Information, Library & Society*,
- Patel, R. P. (2018). ICT based best practices in library. *IP Indian Journal of Library Science and Information Technology*, 3 (2), 101–105. <https://www.ipinnovative.com/media/journals/IJLSIT-3-2-101-105.pdf>
- Patel, S. (2016). Collection development in academic libraries. *International Journal of Library and Information Science*, 8 (7), 62–67. <https://doi.org/10.5897/IJLIS2015.0601>
- Patra, N. K. (2014). *Electronic resource management: A case study of management school libraries in India*. [Doctoral thesis, Sambalpur University]. <http://hdl.handle.net/10603/57323>
- Processing of Library Material (n. d.) Organisation of information resources. <https://nios.ac.in/media/documents/SrSecLibrary/LCh-011.pdf>
- Rahman, M., Choudhury, T. A., & Barooah, P. K. (2019). Management of collection in university libraries of Assam in ict environment: A study. *Library Philosophy and Practice (e-Journal)*, 36. <https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=5409&context=libphilprac>

- Rajasekharam, D., & Anjaiah, M. (2018). A survey on collection development of NAAC accredited Government degree college libraries affiliated to Kakatiya University, Warangal, Telangana state. *International Journal of Advance Research, Ideas and Innovations in Technology*, 4 (5), 154–168. <https://www.ijariit.com/manuscripts/v4i5/V4I5-1224.pdf>
- Rajendran, L. (2007). *Planning and development of library and information services of engineering colleges in Tamil Nadu with special reference to Chennai* (Doctoral Thesis, Manonmaniam Sundaranar University). Manonmaniam Sundaranar University, Tirunelveli. <https://sg.inflibnet.ac.in/handle/10603/65648>
- Rajendran, V., & Kumar, R. S. (2018). Status of automation and networking among the college libraries affiliated to Bharathiar University. *Journal of Current Trends in Library and Information Science : International Refereed Journal*, 5 (1), 1–4. <http://jctl.org/index.php/jctl/article/view/46>
- Ram, S. (2020). Role of academic libraries in the accreditation process: A case of library science and engineering education in India. In *Internationalization of Library and Information Science Education in the Asia-Pacific Region* (pp.269-281). DOI: 10.4018/978-1-7998-2273-8.ch012
- Ramana, V. P., & Rao, C. V. (2003) Use of Information Technology in Central University Libraries of India, *DESIDOC Bulletin of Information Technology* 23. 2 p.35.
- Rao, N. V. (2013). *Management of electronic resources in NBA accredited engineering college libraries in Andhra Pradesh (INDIA): A Survey* (Doctoral Thesis, Andhra University). Andhra University, Visakhapattanam. <http://shodhganga.inflibnet.ac.in/handle/10603/12710?mode=simple>
- Rao, Y. S., & Choudhury, B. K. (2010). Computer infrastructure facilities and services at National Institutes of Technology libraries in India. *DESIDOC Journal of Library & Information Technology*, 30 (1), 32–37. <https://doi.org/10.14429/djlit.30.282>
- Rao, Y. S., & Choudhury, B. K. (2010). Network infrastructure facilities: A case study of NIT libraries in India. *International Journal of Library Science*, 1 (J10), 11. <http://eprints.relis.org/25004/2/network%20infrastructure%20facilities.pdf>
- Raut, A. S., & Kokate, R. G. (2013). Study of best practices in the accredited academic libraries of Sant Gadge Baba Amravati University region [PowerPoint slides]. Retrieved from <https://fdocuments.in/document/study-of-best-practices-in-the-accredited-academic-libraries-of-sant-gadge.html>
- Reddy, K. H., & Chandraiah, I. (2017). Collection development in university libraries: A case study. *International Journal of Digital Library Services*, 7 (3), 114–126. <http://www.ijodls.in/uploads/3/6/0/3/3603729/11ijodls3717.pdf>
- Reddy, T. R. (2015). *A survey on Information and Communication Technology infrastructure in engineering college libraries in Sri Venkateswara University Area* (Thesis, Sri Venkateswara University). Sri Venkateswara University, Tirupathi. <http://hdl.handle.net/10603/185405>
- Raut, A. S., & Kokate, R. G. (2013). Study of best practices in the accredited academic libraries of Sant Gadge Baba Amravati University region [PowerPoint slides]. <https://fdocuments.in/document/study-of-best-practices-in-the-accredited-academic-libraries-of-sant-gadge.html>

//documents. in/document/study-of-best-practices-in-the-accredited-academic-libraries-of-sant-gadge. html

- Ravikumar, A., & Naick, B. R. D. (2015). Collection development in autonomous engineering college libraries affiliated to JNTUK Kakinada: A Study. *International Journal of Library & Information Science*, 4 (3), 85–97. https://iaeme.com/MasterAdmin/Journal_uploads/IJLIS/VOLUME_4_ISSUE_3/IJLIS_04_03_011.pdf
- Role of professional associations (n.d.).<http://egyankosh.ac.in/bitstream/123456789/33055/1/Unit-15.pdf>
- Sahu, M. K. (2015). An academical study of collection development activity in academic libraries affiliated to BijuPatnaik University of Technology (BPUT), Odisha. *SRELS Journal of Information Management*, 52 (2), 131–140.
- Sajini, P. N. (2018). Collection development policy for e-resources in University Libraries: A study. *Indian Journal of Information Sources and Services*, 8 (1), 64–68. <https://www.trp.org.in/wp-content/uploads/2018/05/IJISS-Vol.8-No.1-January-June-2018-pp.64-68-1.pdf>
- Saleem, A., Batcha, M. S., & Tabusum, S. S. Z. (2013). Application and uses of Information Communication Technology (ICT) in academic libraries: An overview. *International Journal of Library Science*, 2 (3), 49–52. <https://doi.org/10.5923/j.library.20130203.01>
- Sangam, S. L & Kumbar, T. S. (n. d.). Criteria for evaluating the quality of library collection. https://www.academia.edu/7297149/Criteria_for_evaluation_of_collection_in_Library_Quality_in_Libraries
- Sasikala, C., Nagaratnamani, G., & Dhanraju, V. (2014). Pattern of collection development in academic libraries in Andhra Pradesh: A study. *IOSR Journal Of Humanities And Social Science*, 19 (2), 05–18. <http://iosrjournals.org/iosr-jhss/papers/Vol19-issue2/Version-3/B019230518.pdf>
- Satheesha, H., & Vaddankere, M. (2018). Library resources and services in the selected engineering college libraries of Karnataka, India-A survey. *International Journal of Library and Information Studies*, 8 (2), 71–77. http://www.ijlis.org/img/2018_Vol_8_Issue_2/71-77.pdf
- Selection criteria (2021, May 11). <http://www.ala.org/tools/challengesupport/selectionpolicytoolkit/criteria#:~:text=Currency%20and%20timeliness%20of%20material,important%20works%20in%20a%20field%22>
- Shanmugam, T. (2012). Collection development practices in selected engineering college libraries in Tamil Nadu : A survey. *International Journal of Opinion in Physical Sciences*, 1 (1), 11–16
- Sharma, P., & Sharma, A. K. (2018). E-resources and their use in private engineering college libraries. *International Journal of Library Information Network and Knowledge*, 3 (1), 146–154. <http://slp.org.in/IJLINK/volumes/IJLINK-V3I1-13.pdf>

- Shivakumaraswamy, K. N., & Nikam, K. (2015). Developing print collection at Mysore region engineering college libraries (MRECL) in Karnataka: A study. *Journal of Advancements in Library Sciences*, 2 (2), 1–11. <http://sciencejournals.stmjournals.in/index.php/JoALS/articles/view/373/199>
- Shivakumaraswamy, K. N. (2015). *Collection development in the engineering college libraries of Mysore region: A survey* [Doctoral thesis, University of Mysore]. <https://shodhganga.inflibnet.ac.in/handle/10603/108438>
- Shivalingaiah (1994) *Library facilities in colleges in Karnataka: A study* [Doctoral thesis, Mangalore University]. <http://hdl.handle.net/10603/131340>
- Standard Deviation (2021, April 15). In *Investopedia*. <https://www.investopedia.com/terms/s/standarddeviation.asp>.
- Subba, S., & Das, S. K. (2019). ICT infrastructure in college libraries of Darjeeling district of West Bengal, India: A survey. *International Journal of Research in Social Sciences*, 9 (1), 476–490. http://www.ijmra.us/project%20doc/2019/IJRSS_JANUARY2019/IJMRA-14972.pdf
- Tadasad, P. G. (1999). *Collection development, organisation and management among academic libraries in Karnataka state* [Doctoral thesis, Karnatak University]. <https://sg.inflibnet.ac.in/handle/10603/95507>
- Technical Education - Kerala (2014). <https://ktu.edu.in/eu/core/technicalEducationGrowthIntake.htm?jpxEU9Czq%2BMoNbhlpPiNevBBY22LVH%2BIF0uxmjnFYbr8R5izegPCarhViLMj0VH6>
- Tiwari, B. K., & Sahoo, K. C. (2011). Infrastructure and use of ICT in University Libraries of Madhya Pradesh: Librarians views. *International Journal of Information Dissemination and Technology*, (4), 9.
- Umeozor, S. N. & Emasealu, H. (2016). Impact of external quality assurance on academic libraries. https://www.researchgate.net/publication/306193743_Impact_of_external_quality_assurance_on_academic_libraries
- Vahida, B. T. (2016). *Six Sigma analysis of University Libraries in Kerala*. [Doctoral thesis, University of Calicut]. <http://hdl.handle.net/10603/186242>.
- Varadaraju, N. C. H., & Ramesh, A. (2018). Collection development in engineering college libraries: A case study of methodist college of engineering, Hyderabad, Telangana. *International Journal of Library and Information Studies*, 8 (1), 278–286. http://www.ijlis.org/img/2018_Vol_8_Issue_1/278-286.pdf
- Wadekar, P. P., & Nagarkar, S. P. (2018). Current practices of management of online databases at university libraries in Maharashtra state of India. *Library Management*, 39 (8/9), 569–582. <https://doi.org/10.1108/LM-08-2017-0073>
- Warning, P., Henri, J., Sinclair, C., Chan, C. Y. C., & Chu, B. (2021). A framework for accreditation of International Baccalaureate School Libraries. *IASL Annual Conference Proceedings*, March 2021. DOI: 10.29173/iasl7988
- Wilson, L. R. & Tauber, M. F. (1956). *The university library*. New York: Columbia University Press.

LIST OF PUBLICATIONS

Journal Papers

1. Manchu, O & Vasudevan, T.M. (2020). Management of electronic resources in NBA accredited engineering college libraries in Kerala : A survey. *Kelpro Bulletin*, 24(2), 76-94.
2. Manchu, O & Vasudevan, T.M. (2018). Awareness of institutional repositories and open access publishing among researchers in university of calicut. *International Research: Journal of Library & Information Science*, 8(1), 43-51. <http://irjlis.com/category/volume-no-8/issue-no-1-mar-2018/>

Conference Papers/Chapters in Books

3. Manchu, O & Vasudevan, T.M.(2021). Collection and management of electronic resources in engineering college libraries in Kerala. *International Online Conference 2021 on Transformation of the Library Ecosystem: Terrains and Trajectories*.Kerala: C.H.Mohammed Koya Library, University of Calicut.
4. Manchu, O & Vasudevan, T.M.(2019). ICT facilities and services in NBA accredited engineering college libraries in Kerala. In Mohamed Haneefa K. & Vasudevan T.M.(EDs), *Proceedings of the National Conference on Innovations and Transformations in Libraries* (pp. 291-303). Kerala : Department of Library and Information Science, University of Calicut. ISBN: 978-93-86712-59-2.
5. Manchu, O & Vasudevan, T.M.(2018). Library resources and facilities at St.Joseph college, Devagiri: A user satisfaction study. In P. Ravichandran & R. Ponnudurai (EDs), *International Conference on Rejuvenating Libraries for Information Access in the Digital Era* (pp. 829-839). Annamalainagar : Annamalai University. ISBN: 978-81-935783-2-2.