METHODOLOGICAL APPROACH TO ASSESS THE LIBRARY CATALOGUES

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Abstract

The study focused on assessing the quality of catalogue records of university libraries in Karnataka available through their Web OPACs. The study assessed the various parameters of cataloguing records which determines the quality of the records. This study explains the methodology adopted for this research work in detail. The methodology gives describes the design of the study and procedures, the universities and sample records, instruments, methods of data collection, and treatment of data. The researcher identified nine of the existing 44 universities of Karnataka for the collection of data for the study. Only nine universities provided access to their catalogue records via the internet-based OPACs and hence, they have been selected.

Keywords: ***Web OPAC, Catalogue, Metadata, Cataloguing Quality, Cataloguing Procedures, MARC 21, Metadata Quality, Library Automation, KOHA, University Libraries.***

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1. Introduction

This research study examined the library catalogue records of the nine universities in Karnataka to assess the quality of description in them. This study explains the methods and procedures selected and adopted in the analysis of cataloguing quality. Assessment of quality is often subjective. However, in the literature on the catalogue, the quality of treated as a quantifiable parameter. Hence, it is imperative to explain succinctly the concept of quality here in this study.

Quality (or lack of it) has three goals to achieve. They are:

- "Promoting predictability of retrieval
- Promoting serendipity in retrieval, and
- Promoting depth of access to books" (Mann, 1994).

The following three definitions that define cataloguing quality give the perspective in which the cataloguing quality is perceived in this study:

a) "Accurate bibliographic information that meets the users' needs and provides appropriate access in a timely fashion" (Tillett, 1995, p. 28).

b) "Quality cataloguing centres on how accurately, specifically, and straightforwardly the information about work is being presented in the catalogue record for achieving the objective of bringing the user and the work face to face" (Shahid, 1995, p. 16).

c) "Quality cataloguing is the consistent creation of a comprehensive bibliographic record, aimed at the highest level of the researcher, yet retrieval by all users both now and (with minimal adaptation if necessary) in the future" (Avdoyan, 1995, p. 3).

d) Thomas (1996) defines cataloguing quality as "encompassing consistency, depth, appropriateness and timeliness as well as accuracy. Even if perfection is not desirable and users are satisfied with only partial success in retrieval, high standards and accuracy of library catalogues are essential. Libraries themselves need accurate inventories of their collection".

2. Pilot Studies

The researcher had to understand the concept and perception of cataloguing quality. Hence, he reviewed 48 previous works and reported it in a journal in the form of a review article (Chandrappa & Harinarayana, 2018c). The review discussed the various perceptions on issues related to cataloguing quality, which in reality vary among cataloguers. Quality maintenance is a culture and needs to be instilled through rigorous training.

In a study, the researcher examined the quality in catalogue records with reference to the accuracy, comprehensiveness and adherence to standards. 52 common catalogue records of Mysore University Library (MUL), Bangalore University Library (BUL), and Gulbarga University Library (GUL) were tested for the cataloguing quality. The records were tested for their deficiency in their contents, inconsistency errors, and types of edit & input errors. The findings showed that the percentage of error rate in BUL is higher than GUL and MUL. The study showed the ratio of error rates to be 3.5:6:7 (MUL: GUL: BUL) (Chandrappa & Harinarayana, 2018b).

A study by the researcher attempted to investigate the error rate found in the metadata records of the Mysore University Library (MUL). The study selected and analysed the accuracy of 624 metadata records of the Mysore University Library along with 491 records of Library of Congress (LoC). The assessment of the selected records discerned two main types of errors

notably: Major and minor errors. These findings illustrate and prove that the percentage of error rate in MUL is higher than that of LoC. Consequently, the study highlighted that the current error ratio between both institutions reaches almost up to 5:1 (MUL: LoC) (Chandrappa & Harinarayana, 2016).

A study was conducted to examine the quality of catalogue records in the top five management institutes in India. The study attempted to investigate the error rate found in the catalogue records of five management institutes by comparing with bibliographic records of the Library of Congress (LoC). The study analysed the accuracy of 293 catalogue records for which data was collected during May 2015. The errors in the data were listed and categorised as major and minor errors. The finding showed that while LoC records are almost error free, the quality of catalogue records of management institutes, on the other hand, was far from an acceptable level. 1093 errors from 251 records were found amounting to 4.35 errors per record (Chandrappa & Harinarayana, 2018a).

3. Approaches to the measurement of Cataloguing Quality

Quality perception differs with the activity to which it is applied. For example, in acquisition availability of minimal information on the resource being purchased may be good enough but for a cataloguer availability of comprehensive and accurate information is necessary. An opinion paper on cataloguing quality (Library of Congress Cataloging Forum, 1995) elicits the opinions on the concept 'Cataloguing quality' from the 32 cataloguers. A few articles have in the past have discussed the concept. Based on this literature, a full-length discussion on the quality of cataloguing was reviewed in one of the articles by the researcher (Chandrappa & Harinarayana, 2018c).

There have been a few attempts in the past to enlist the parameters to be considered for assessing the quality of catalogue records. Graham's (1990) parameters for accuracy include mechanical accuracy (typographic, transcription); intellectual accuracy, appropriateness of heading (the form of rendering), holdings; and standards adherence. Snow (2011) has identified four parameters: technical details of the bibliographic record, adherence to standards, the cataloguing process/workflow/staff, and impact upon users/accessibility.

These aspects have been kept in mind while examining the quality of the catalogue in the present study.

3.1 University Libraries Considered for the Study

There were 44 universities in the state of Karnataka as per the UGC website (University Grants Commission, 2017b, 2017c, 2017d). The websites of all these universities were checked to verify the accessibility of OPACs on the web (Table 3.1). The researcher identified nine of the existing 44 universities of Karnataka for the collection of data for the study. Only these nine universities provided access to their catalogue records via the internet-based OPACs. Incidentally, all of them have adopted the MARC21 format for data entry and use Koha. These environments of the nine universities provided perfect homogeneity for comparison of cataloguing quality among them. It is interestingly observed that a few unselected universities possess Web OPACs, whose access was permitted solely through the intranet. The researcher was not allowed to access their OPACs and download the records in the format required by him. Hence, the researcher opted out those libraries from the scope of this research work.

Table: 3.1

*Accessibility of OPACs**

Sl. No	Access Status	State Universities	Central Universities	Private Universities	Total
1.	OPAC not available on the Web	13	0	12	25
2.	Unable to open the OPAC link on the Web	5	1	1	7
3.	OPAC accessible, but the records could not be down-loaded in MARC format	3	0	0	3
4.	Web OPAC Accessible	**7**	**0**	**2**	**9**
	Total	**28**	**01**	**15**	**44**

**Note.* Web OPAC Status of the University Libraries in Karnataka in Appendix – A.

The researcher collected the data until January, 2018. It is surprising to note that 25 universities were operating without Web OPACs out of which 13 were state universities and 12 were private universities. In the absence of Web OPAC, the data from them cannot be verified and thus they were not included in the present study.

From Table 3.1 above, it may be noted that 7 universities did not have access to the public through Web OPAC despite having a linked URL on their respective websites. As shown in the table, there were 5 state universities, 1 central university and 1 private university which did not provide access to OPAC. Hence, they were also not included in the study.

Table: 3.2

List of Selected Universities in Karnataka

Sl. No.	Parent Institution of the Libraries	Code	Place	Type of University	URL/Official name of the university library
1.	Azim Premji University	APL	Bengaluru	Private	http://library.azimpremjiuniversity.edu.in/cgi-bin/koha/opac-search.pl **Azim Premji University Library**
2.	Alliance University	AUL	Bengaluru	Private	http://jvbi-koha.informindia.co.in/cgi-bin/koha/opac-search.pl **Alliance University Central Library**
3.	Bangalore University	BUL	Bengaluru	State	http://bublib-koha.informindia.co.in/cgi-bin/koha/opac-main.pl **Bangalore University Library**
4.	Gulbarga University	GUL	Kalaburagi	State	http://libcat-guglib.informindia.co.in/ **Gulbarga University Central Library**
5.	Mangalore University	MUL	Mangalore	State	http://mu-koha.informindia.co.in/cgi-bin/koha/opac-search.pl **Mangalore University Library**
6.	University of Agricultural Sciences	UAL	Bengaluru	State	http://uas.bestbookbuddies.com/cgi-bin/koha/opac-search.pl http://uasbagrilibindia.org/cgi-bin/koha/opac-search.pl **University of Agricultural Sciences Library**
7.	University of Horticultural Sciences	UHL	Bagalkot	State	http://14.139.87.152/cgi-bin/koha/opac-main.pl **University of Horticultural Sciences Library**
8.	University of Mysore	UML	Mysuru	State	http://libcatmysore-koha.informindia.co.in/ **Mysore University Library**
9.	Visvesvaraya Technological University	VTL	Belagavi	State	http://library.vtu.ac.in/cgi-bin/koha/opac-search.pl **Sri S. G. Balekundri Central Library and Information Center**

To conclude, only 9 universities which provided access to the public through Web OPACs were considered for the present study. Out of the 9 universities, seven were state universities and 2 were private universities. Incidentally, all of them were using Koha. The URL and other details of the selected university libraries are given in Table 3.2. For convenience, the libraries have been coded by the researcher for this work. For example, APL stands for the library of the Azim Premji University. It may be noted that the official names of the university libraries, if any, were not used for codification purpose to suit the requirement of the data analysis and to achieve the uniformity of coding in this present study. For example, Mysore University Library is coded as UML and not as MUL, which represents Mangalore University Library.

Out of the nine universities shown in Table 3.2 above, three universities are technical universities devoted to specific subjects. They are the University of Agricultural Sciences (Bengaluru), University of Horticultural Science (Bagalkot), and Visvesvaraya Technological University (Belgaum).

1.1 Criteria for the Catalogue Record Inclusion in the Sample

For this study, the following criteria were adopted:

1. It was imperative for the record to be present in the format in machine-readable cataloguing records as per the MARC standard.
2. Only the records of documents in the English language were considered.
3. Catalogue data from only 0.001% of the total records from each university library was collected through Web OPAC. However, if in a university library 0.001% yielded less than one hundred catalogue records, then a minimum of 100 catalogue records were considered for analysis from that library. In other words, the study covered a minimum of 100 samples from each university or 0.001% of the population of each university (whichever is greater). In Table 3.3, APL, AUL, UAL, UHL and VTL fell in that category.

Table: 3.3

*Library Collections of the Universities in Karnataka**

Sl. No.	Name of the University	Total collection* / Data collection date	English Books**	Percentage (n=737903)	Number of Unique Records onsidered for the Study
1.	APL	42012 May, 2017	24076	3.26	100
2.	AUL	27355 July, 2017	12657	1.72	100
3.	BUL	350229 September, 2016	164615	22.31	165
4.	GUL	141126 December, 2016	120000	16.26	120
5.	MUL	146578 January, 2018	125113	16.96	125
6.	UAL	143891 March, 2017	90050	12.20	100
7.	UHL	8040 November, 2017	7800	1.06	100
8.	UML	480852 June, 2016	177944	24.11	178
9.	VTL	103282 September, 2017	15648	2.12	100
	Total	1443365	737903	100.00	1088

* *Note*. **Total collection:** The last accession number as found in the Web OPAC on the date of data collection.

***Note.* **English books:** The number indicates documents in English, which was obtained by applying the language filter in Koha advanced search. In case of a networked library situation, only the main library collection was searched.

4. The sample size was tested for its adequacy using the standard formula of Krejcie and Morgan's (1970).

$$\text{Size} = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)}$$

Where,

S = required sample size

X^2 = value of chi-square for 1 degree of freedom at the desired confidence level. The value of chi considered for the study is 3.84

N	=	the population size. The total population of English books is 7, 37,903.
P	=	the population proportion (assumed to be .50 since they would provide the maximum sample size)
d	=	the degree of accuracy expressed as a proportion (.05).

The Morgan's table for sample size has given the sample size to be 663 at 99% confidence level for an error margin of 5%. The researcher, however, has taken 1088 catalogue records (more than minimum sample size expected), which form the basis for analysis and generalisation.

Table 3.3 illustrates the holding details of documents as entered in the accession registers of respective universities. The collective size of the holdings of documents in English from all the universities was 7, 37,903, which is about half the size of the overall the collection 14, 43,365, (51.12%) in all languages.

1.2 The Nature of Sampled Records

From the selected university libraries databases, a random sample of English-language records was compiled. As already mentioned, a final sample of 1088 catalogue records for unique titles was gathered and used for the study. However, in reality, due to the presence of multiple copies of the records, 4849 (0.66 %) of the overall collection was covered by the study. VTL and UHL had a number of multiple copies than the other libraries. Table 3.4 indicates the general data about the 9 samples of the research study. It may be noted that the researcher examined a total of 7485 fields manually to check for the quality of catalogue records. Even if one assumes that there were 5 characters in each field, the researcher had to examine more than 37000 characters. This indicates that this research work was laborious and warranted meticulous data collection.

Table: 3.4

General Data of the Study Sample

Sl.	Name of the University	English Books	No. of Unique	No. of Records Covered	No. of Fields examined
1.	APL	24076	100	141	681
2.	AUL	12657	100	1263	707
3.	BUL	164615	165	596	1109
4.	GUL	120000	120	196	782
5.	MUL	125113	125	126	852
6.	UAL	90050	100	116	686
7.	UHL	7800	100	721	672
8.	UML	177944	178	246	1257
9.	VTL	15648	100	1444	739
	Total	737903	1088	4849	7485

The catalogue records were to be selected randomly for the sample. The Microsoft Excel function (=randbetween(bottom, top)) was used to generate the accession number for searching in the university's database. The details of the search result are given precisely in Table 3.5.

Table: 3.5

Record Availability in Various Universities

Sl.	Availability Status	APL	AUL	BUL	GUL	MUL	UAL	UHL	UML	VTL	Total	%
1.	Records could not be traced in OPAC	2	52	182	40	77	78	25	263	437	1156	44.44
2.	Record was a vernacular language	19	1	26	26	37	12	6	72	2	201	7.73
3.	Record could not be identified properly because of insufficient bibliographic details	0	2	0	12	3	7	1	3	1	29	1.11
4.	Record was a bound volume of journal	0	1	0	0	0	109	0	0	1	111	4.27
5.	Record was a copy of the record already included in the sample	0	4	1	1	0	0	10	0	0	16	0.62
6.	Record found and included in the sample	100	100	165	120	125	100	100	178	100	1088	41.83
	Total Records	121	160	374	199	242	306	142	516	541	2601	100.00
	Percentage	4.65	6.15	14.38	7.65	9.30	11.76	5.46	19.84	20.80	100.00	

Out of 2601 accession number searched, records for 1156 accession numbers were unavailable and/or inaccessible in the Web OPAC. The records in Kannada, Urdu, Hindi, and other languages were not considered for the study as they require a different set of parameters for the quality assessment.

1.1 Instruments

To assist and facilitate the grouping of errors occurring in the sample records, a set of 'error category lists' was developed. For the data analysis, this study adopted the categories suggested by Zeng (1992). They were:

- *Format errors*, which consist of inadequate use of the tag(s), indicator(s), subfield code(s) etc.,
- *Content errors*, which consist of missing field(s), and subfield(s), inconsistency between fields and/or attributes, and incorrect content; and
- *Edit and input errors,* which consist of inadequate spacing, misspelling, incorrect upper and lower case, punctuation etc.,

The above categorisation established the basis for additional advancement of the Error Category Lists. Since the identification of errors was done according to their respective position in the fields (e.g., 100, 245, 250, etc.), the codes in the Error Category Lists for each field may be functional in a different manner. The list charted in Figure 3.1 exemplifies the instrument that was used for the analysis.

It may also be noted that each type of error was given a weight, which helped the researcher in quantifying the results appropriately. The weighting scheme was also adopted from Zeng study. The weighting scheme was necessitated as one can't consider all the errors to be of same important as they (the errors) will have varied impact on the retrieval.

Error Type Codes

Sl. No.	Type of Error	Code	Description
1.	FORMAT ERRORS (Weight: 3)	F1	Incorrect field tag
		F2	Incorrect Indicator
		F3	Omitted subfield code; Incorrect subfield code; Incorrect sequence of subfields.
		F4	Other format differences
2.	CONTENT ERRORS (Weight: 2)	C1	Omitting a whole field; or containing an extra field
		C2	Omitting a part of the entry such as a subfield; or containing an extra part for the entry
		C3	Inconsistency between corresponding fields or value
		C4	Incorrect content - whole field
		C5	Incorrect content - subfield
		C6	Other content errors
3.	EDIT & INPUT ERRORS (Weight: 1)	E1	Spacing
		E2	Misspelling
		E3	Capitalisation
		E4	Comma
		E5	Colon
		E6	Full stop missing
		E7	Omitted slash
		E8	Semicolon

Figure 3.1. Example of error category list

2. Conclusion

The methodology proved by earlier studies and pilot studies was adopted for this research. Care has been taken to examine each of the 1088 records manually and individually. The data was analysed to report the quality of records.

The results of the pilot studies helped the researcher in more than one way. The methodology was decided on the experience gained during the pilot studies. The parameters used in this study was also an outcome of the previous experience of the pilot studies. Another outcome of the pilot study was a necessary revision to the scheme for categorization of errors because a great number of errors were the English language based. The tags to be examined in the present study was decided based on the pilot studies. The tags used are 020, 082, 100, 110, 111, 130, 245, 250, 260, 300, 490, 600, 610, 700, 710, 711, and 730.

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Appendix - A

Web OPAC Status of the University Libraries in Karnataka

State Universities of Karnataka

Sl.	Name of the University	Place	Web OPAC Status
1.	Akkamahadevi women's University	Vijayapura	OPAC not available on the Web
2.	Bangalore University	Bengaluru	Web OPAC Accessible
3.	Bengaluru Central University	Bengaluru	OPAC not available on the Web
4.	Bengaluru North University	Kolar	OPAC not available on the Web
5.	Davangere University	Davangere	OPAC not available on the Web
6.	Gulbarga University	Kalburagi	Web OPAC Accessible
7.	Kannada University	Hosapet, Bellary	OPAC not available on the Web
8.	Karnataka State Law University	Hubli	Web OPAC accessible, but the records could not be downloaded in MARC format
9.	Karanataka State Open University	Mysuru	Unable to open the OPAC link on the Web
10.	Karnatak University	Dharwad	Unable to open the OPAC link on the Web
11.	Karanataka Veterinary, Animal & Fisheries Science University	Bidar	Unable to open the OPAC link on the Web
12.	Karnataka Folklore University	Haveri	OPAC not available on the Web
13.	Karnataka Sanskrit University	Bengaluru	OPAC not available on the Web
14.	Karnataka State Rural Development and Panchayat Raj University	Gadag	OPAC not available on the Web

Sl. No.	Name of the University	Place	Web OPAC Status
15.	KSGH Music and Performing Arts University	Mysuru	OPAC not available on the Web
16.	Kuvempu University	Shivamogga	Unable to open the OPAC link on the Web
17.	Mangalore University	Mangalore	Web OPAC Accessible
18.	University of Mysore	Mysuru	Web OPAC Accessible
19.	National Law School of India University	Bengaluru	Web OPAC accessible, but the records could not be downloaded in MARC format
20.	Rajiv Gandhi University of Health Sciences	Bengaluru	OPAC not available on the Web
21.	Rani Channamma University	Belagavi	OPAC not available on the Web
22.	Tumkur University	Tumkur	Unable to open the OPAC link on the Web
23.	University of Agricultural Sciences	Bengaluru	Web OPAC Accessible
24.	University of Agricultural Sciences	Dharwad	Web OPAC accessible, but the records could not be downloaded in MARC format
25.	University of Agricultural Sciences	Raichur	OPAC not available on the Web
26.	University of Horticultural Sciences	Bagalkot	Web OPAC Accessible
27.	Visvesvaraya Technological University	Belagavi	Web OPAC Accessible
28.	Vijayanagara Sri Krishna-devaraya University	Bellary	OPAC not available on the Web

Central University of Karnataka

Sl. No.	Name of the University	Place	Web OPAC Status
1.	Central University of Karnataka	Kalaburagi	Unable to open the OPAC link on the Web

State Private Universities of Karnataka

Sl. No.	Name of the University	Place	Web OPAC Status
1.	Alliance University	Bengaluru	Web OPAC Accessible
2.	Azim Premji University	Bengaluru	Web OPAC Accessible
3.	CMR University	Bengaluru	OPAC not available on the Web
4.	Dayananda Sagar University	Bengaluru	Unable to open the OPAC link on the Web
5.	Garden City University	Bengaluru	OPAC not available on the Web
6.	Institute of Trans-Disciplinary Health Sciences and Technology	Bengaluru	OPAC not available on the Web
7.	JSS Science & Technology University	Mysuru	OPAC not available on the Web
8.	KLE Technological University	Hubbali	OPAC not available on the Web
9.	M. S. Ramaiah University of Applied Sciences	Bengaluru	OPAC not available on the Web
10.	PES University	Bengaluru	OPAC not available on the Web
11.	Presidency University	Bengaluru	OPAC not available on the Web
12.	Rai Technology University	Dodda-ballapura	OPAC not available on the Web
13.	Reva University	Bengaluru	OPAC not available on the Web
14.	Sharnbasva University	Kalaburagi	OPAC not available on the Web
15.	Srinivas University	Bengaluru	OPAC not available on the Web