

Subject Approach to Information Retrieval with Special Reference to Bengali Documents: A Critical Study

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ABSTRACT

The library provides its services to satisfy the user's approach. Naturally, the development of library services may determine by considering the satisfaction of users. It traces users' perceptions regarding subject access highlighting problems in the retrieval of Bengali documents by subject. This study has designed to assess users' attitudes towards the retrievals of Bengali documents in OPAC through subject headings. For a collection of data, a representative sample has drawn from a large and heterogeneous population consisting of users in university libraries of West Bengal using a stratified sampling technique. Subsequently, under each of the universities, users' community was stratified into students, research scholars, and faculty members. Under each stratum, the sample selected on a random basis. The users met personally to collect relevant data, while they came to the library and went on to search OPAC. A structured schedule, prepared for the purpose, was presented before library users and consequently, interviews and interpretations recorded systematically. In this manner, several factors have identified concerning subject searching and retrieval performance for Bengali documents. This study explores the access using subject headings in multilingual information retrieval systems. Moreover, the suitability of subject headings for retrieval of Bengali resources has ascertained from the users' point of view. The findings demand standard principles and rules for the construction of Bengali subject headings to maintain uniformity and consistency.

1. Introduction

For ages, the library has established as a resource of knowledge of human civilization. The development of technology and its application in various fields is increasing steadily. Nowadays, libraries are gradually transforming themselves by using web-based tools and techniques for the organization of information and services. Using integrated library management software (ILMS), libraries can perform technically as well as administrative jobs effectively. Nowadays, some of the libraries are

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running with manual and automated systems simultaneously, some of them have already terminated the dual system. Subject metadata, a controlled vocabulary, is considered a vital element in a bibliographic record to enhance the precision of information search results. Yet, the subject search is the most complicated searching task for end-users. However, the information scientists or institutions have endeavored to formulate language-specific subject headings according to their requirements, but due to lack of coordination among them, uniformity and consistency not sustained. The subject catalogue plays a crucial role to satisfy the unknown approach, i.e. subject approach of the user community. Therefore, due to the unavailability of standard Bengali subject headings, the subject access to OPAC is not satisfied enough while searching for databases.

Because of the above deliberation, it deemed necessary to assess users' attitudes towards the effectiveness of subject headings for retrieval of Bengali documents in OPAC. This paper uncovers the existing practices of assigning subject headings for Bengali documents to perform the subject search in online catalogues. Moreover, the suitability of subject headings for retrieval of Bengali resources has ascertained from the users' point of view.

The present study attempts to assess the attitude of the users towards the use and effectiveness of subject headings for Bengali documents in the Online Public Access Catalogue. The present study endeavored to comprehend the users' attitudes precisely through the following tasks.

- (a) To examine the user's approach to OPACs for retrieval of documents;
- (b) To determine and identify the search patterns for retrieving Bengali documents in OPACs as well as their success rate;
- (c) To assess the effectiveness of the subject headings in OPACs for retrieval of Bengali documents;
- (d) To measure the level of satisfaction of users of OPACs for retrieval of Bengali documents by subject;
- (e) To know the users' opinions towards improving the performances of the OPACs for retrieval of Bengali documents by its subject.

2. Literature Review

The functionality of language in library databases is one of the most crucial issues where the concept of "global village" comes up. Albarillo (2016) identified that the term written in Roman fonts are useful when searching databases but in non-Roman characters such as Russian, Arabic, Hebrew, Chinese, etc. are not supported properly. Alzofon and Van Pulis (1984) explored the success rate of finding information in the online public access catalogue (OPAC). Another research work of Guo and Huang (2011) provides a comparative study of subject headings and subject search. Similarly, a research study reveals that "the language used by patrons when searching for LGBT topics is different than the language used by the Library of Congress to control access to that information" (Colbert, 2017). Miller and McCarthy (2010) edited the 20th edition of Sears List of Subject Headings (SLSH). It is a comprehensive work that provides a controlled vocabulary of preferred and non-preferred subject headings. SLSH provides patterns, necessary instructions,

and examples of subject headings for the English language. However, the study of the literature reveals that there are more than 4000 titles published annually in the Bengali language from West Bengal. University libraries in West Bengal collect these Bengali language publications extensively. The organization of these publications is an enormous task for university libraries. Although OPAC has recently emerged from the physical form of the library catalogue, subject access has not very popular and attractive (Sridhar, 2004). A pioneering attempt in compiling “Bisay Shironam”, a list of Bengali subject headings, was enunciated by Krishnamay Bhattacharyay (n.d.)¹⁾, but it is not up-to-date. However, Rolla (2011) stated that “if the unnatural language in subject headings impedes access, then the headings should be updated.” On the other hand, Lehtinen (2013) advocated that “the language of the document should have no influence on the indexing language nor on the language used for searching.”

Alternative work of Bengali subject heading list entitled “Bijnan: Bishay Shironam” written by Mukhopadhyay (2001). This work has prepared a Subject Headings List on the subject science only. Besides, Ratna Banyapahyay wrote a book entitled “Bishay Shironam Gathan Pahati: Darshan, Sahitya, Shilpa Kala” in 2004. Bandyapadhyay (2001) finds that the rate of publication of Bengali documents is growing and the collection of those Bengali books, journals, etc. is increasing. However, many of the libraries comprehensively lack subject catalogue for retrieval of documents. Halder (2015) studied different aspects associated with searching for Bengali documents using subject headings in the online catalogue. Where ever Bengali subject headings are assigned, there are not complete or proper entries, and these also lack standardized principles.

Satija (2008) ascertained that vocabulary control is significant for facilitating subject access to the documents in libraries and databases. Subject descriptors or names of the subjects must be uniform and standardized for assigning subject headings to term otherwise information retrieval system will be chaotic and inefficient. In terms of information retrieval, “social tags in the information science domain still possess limitations in terms of uncontrolled terms, where inconsistencies and noisy usages exist” (Wu et al., 2013).

3. Methodology

To fulfill the objectives of this study, it has intended to adopt the survey method. For the collection of data, a representative sample has drawn from a large and heterogeneous population consisting of users in university libraries of West Bengal using a stratified sampling technique. The selection of samples on which the survey conducted consists of four Indian universities located in the Bengali-speaking State of West Bengal, i.e. University of Calcutta, Jadavpur University, University of Kalyani, and Vidyasagar University. In the first step, four university libraries have selected out of which two universities have selected from urban areas, and the other two were from suburban or rural areas. Subsequently, under each of the universities, users’ community was stratified into

1) Krishnamay Bhattacharyay enunciated a Bengali book entitled “Bisay Shironam” [Subject Headings] in the Bengali calendar year 1370.

students, research scholars, and faculty members. Under each stratum, the sample has selected on a random basis. The users have met personally, to collect data, while they came to the library and went on to search OPAC databases. A structured schedule, prepared for this purpose, was presented before them. Subsequently, interviews and interpretations have made as and when required. A total of 800 schedules (200 each for the selected university libraries) were distributed to record the primary data, out of which 680 (85%) schedules have received till the end of data collection.

Table 1. Sample selected from the population of OPAC users

Sl. No.	Category of users	*Population of OPAC users	Selected sample (5% of the population)
1	Students	11140	557
2	Research Scholars	1420	71
3	Faculty Members	1040	52
Total		13600	680

* Population of OPAC users has determined from the data available in Transaction Log of the university libraries.

In this manner, several factors concerning subject searching in OPAC and retrieval performance for Bengali documents have identified. Besides, relevant data have collected from observation of the libraries, and their annual report, etc. The quantitative data obtained by the methods described above were analyzed, classified, tabulated, compared, and interpreted duly keeping in view the objective of this study.

4. Results and Discussion

Since there are two components of any information retrieval system, one is the information resource, and another is the users' query. So, the matter of user satisfaction is very much significant to evaluate the system. The statistical analysis of data obtained from the survey and the necessary discussion is as follows:

4.1 User's approach to OPACs for retrieving documents

Users' attitude towards the acceptability of OPACs for retrieving documents has presented in two sub-categories.

4.1.1 Frequency of OPAC usage

It shows from Table 2 that maximum (48.38%) of the respondents uses OPAC five or more times per week, followed by 23.38% of the respondents uses it 2-4 times per month, 12.50% of the respondents use it 2 to 4 times per week, and 15.74% of the respondents use it less than 6 times per year.

Table 2. Frequency-wise distribution of usage of library OPAC

Sl. No.	Frequency	User	Percentage (%)
1	5 or more times per week	329	48.38
2	2 to 4 times per week	85	12.50
3	2 to 4 times per month	159	23.38
4	Less than 6 times per year	107	15.74
Total		680	100.00

4.1.2 Users' preference to get access to OPAC

Table 3 given below presents the distribution of respondents by their preference to access OPAC. The result of the study clearly shows that out of 680 respondents, the maximum number, i.e., 61.03% gets access to OPAC from inside the library. Besides, 33.82% of them search the OPAC from remote places through the Internet. Remaining 5.15% of the respondents prefer to get access to OPAC through campus-wide local area networks.

Table 3. Users' preference to get access to OPAC

Sl. No.	Preference to access to OPAC	Category of users			Total
		Student	Research scholars	Faculty members	
1	Inside the library	352 (63.20%)	46 (64.79%)	17 (32.69%)	415 (61.03%)
2	Campus-wide Local Area Network (LAN)	26 (4.67%)	4 (5.63%)	5 (9.62%)	35 (5.15%)
3	Remote access through the Internet	179 (32.14%)	21 (29.58%)	30 (57.69%)	230 (33.82%)
Total		557 (100%)	71 (100%)	52 (100%)	680 (100%)

4.2 Search pattern and success rate

Users' attitude towards search patterns and success rate of different searches in OPACs for retrieving Bengali documents has presented below.

4.2.1 Search approaches to OPACs

Fig. 1 given below shows that the maximum of the search approaches for retrieval of known items is through the title of the document, i.e. 17.35%. Besides, 13.82% of the users prefer to search by author. However, the combined search (14.56%) of the author and title is a little higher than the author's search approach. Altogether, the known-items search is 45.73% of the total number of searches performed.

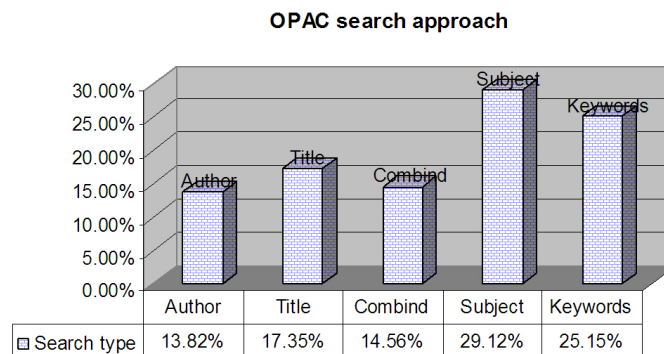


Fig. 1. Search approaches to OPACs

As a whole, Fig. 1 demonstrates that preference to search approach to OPACs varies among the respondents. Searching by Subject Headings is 29.12% of the total search approaches, which is highest among all. This finding agrees with the assertion of Halder (2015) that the subject approach is maximum in OPAC search. Whereas 25.15% of search approaches by the respondents made by keywords, i.e., search for the unknown document. Therefore it can be inferred that a large number of users' search approaches to OPAC are either made by subject headings or by keywords. Altogether the unknown document search by subject headings or by keywords is 54.27%.

4.2.2 Document retrieval from subject search and keyword search

The results of searches by using subject headings and keywords have compared. Concerning search by the subject headings, 42.50% got zero results, followed by 30.44% got 1-100 results, 20% got 100-499 results, and 7.06% got 500 or more results. For a keyword search, 8.97% got zero results, 25.74% got 1-100 results, 31.76% got 100-499 results, and 33.53% got 500 or more results (see Fig. 2).

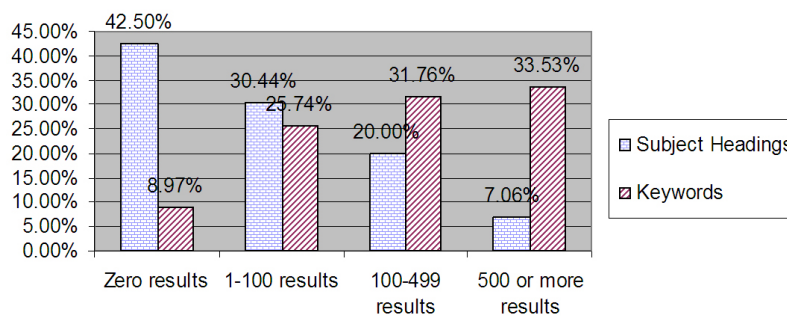


Fig. 2. Rate of document retrieval in OPAC

Comparison between searches by using subject headings and by keywords reveals 42.50% of searches by subject headings have shown zero results. On the other hand, 33.53% of searches

by keywords have retrieved 500 or more documents, and only 7.06% of search approaches by using subject headings have retrieved 500 or more documents. Therefore, the retrieval rate of keyword searches is much more than subject headings searches. Abdoulaye (2002) similarly argued that “the end-users felt that more subject headings and bibliographic information of missing material should be provided.”

4.2.3 Impact of zero search results

Subject searches are unknown-item searches. It means that users do not know whether a specific document exists or not in the database. Subject search requires some special database searching techniques for retrieval of documents. As far as skills of terminology selection and effectiveness of searching databases are concerned, this type of search is more complicated than a known item search. It reveals from the analysis of data that various techniques have been applied by the respondents to retrieve documents (see Fig. 3).

It explicitly shows from Fig. 3 that when search result becomes zero, 61.18% of the respondents prefer to change search terms for searching OPAC. However, 25.88% of the respondents take help from automatically suggested search terms available in the interface of the OPACs and rest 12.94% of the respondents go back to use the search terms already used.

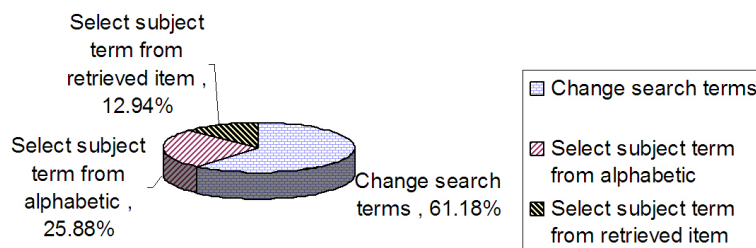


Fig. 3. Adjustment of search terms when search results are zero

4.3 Acceptability of the Bengali subject headings

It has emerged that the libraries have individually assigned subject headings for Bengali documents in their catalogues. Attempts have made to find out how subject headings applied when searching for Bengali documents? User’s attitude towards acceptability of the Bengali subject headings presented below.

4.3.1 Problems in the retrieval of Bengali documents by subjects

Retrievals of Bengali documents by subject in OPAC involve various difficulties. It reveals from Table 4 that the respondents have marked several issues in searching Bengali documents by subjects. The maximum of the respondents (60.44%) has indicated that the OPAC is unable to retrieve their

desired document. Besides, 59.85% of the respondents have felt that OPAC shows incomplete subject headings for Bengali documents. Due to the problems of synonyms, near-synonyms, and homonyms, translation of subject phrase for resources from Bengali to English word or phrase is a complicated task.

A considerable number of respondents (43.24%) have mentioned that equivalent English terms do not match in the course of subject searching. Another problematic area is the Romanization of subject headings from one language to another. It reveals that 20.29% of the respondents have indicated Romanization of terms does not match for subject retrieval in OPACs. Besides, the syntax of the subject headings has considered as an utmost important factor in vocabulary control. Due to the unavailability of uniform and standard controlled vocabulary devices in the Bengali language, the assignment of subject headings lacks consistency. A good number of respondents (43.09%) have indicated that the syntax of subject headings does not match in the course of searching. However, 20.44% of the respondents have faced the problem of Bengali typewriting to enter a search term in the OPAC system.

Table 4. Difficulties faced by users in searching Bengali documents by subject

Sl. No.	Difficulties faced	Category of users			Total N=680
		Students N=557	Research scholars N=71	Faculty members N=52	
1	Unable to find out desired documents	332 (59.61%)	41 (57.75%)	38 (73.08%)	411 (60.44%)
2	Equivalent English terms do not match	249 (44.70%)	28 (39.44%)	17 (32.69%)	294 (43.24%)
3	Romanization of terminology does not match	116 (20.83%)	14 (19.72%)	8 (15.38%)	138 (20.29%)
4	Syntax of subject headings do not match	242 (43.45%)	36 (50.70%)	15 (28.85%)	293 (43.09%)
5	Incomplete subject headings	313 (56.19%)	49 (69.01%)	45 (86.54%)	407 (59.85%)
6	The problem in Bengali typewriting	115 (20.65%)	15 (21.13%)	9 (17.31%)	139 (20.44%)

Note: Multiple responses against each of the parameters have received from each of the different categories of users. Therefore, responses did not denote any preferred order; they were independent as well as mutually exclusive. Responses were analyzed and tabulated accordingly. Measurement of multiple responses against each of the parameters received from different categories of users have shown in percentage terms is, therefore, independent as well as mutually exclusive.

The success of a subject search depends on the matching of subject entries existing in the OPAC database with the query term entered by the user. The users get satisfied when they can successfully retrieve their required documents. The study has revealed category-wise users' perception of the difficulties in OPAC search. It is worth noting that problems encountered by the students in the course of searching are not always the same as the problems of research scholars and faculty members.

Most of the responses received from research scholars (69.01%) and faculty members (86.54%) have identified incomplete subject headings in OPAC as difficulty in retrievals of documents. However, most of the students (59.61%) have indicated that they do not get their desired result in OPAC database search. It can infer that searching and retrieval of Bengali documents in OPACs involve several lacunas.

4.3.2 Results of unsuccessful subject search

Respondents have asked to respond to the question that if the search results were not satisfactory what action they would choose. Table 5 given below reveals that maximum (43.09%) of the respondents opt to give up when search results are not satisfactory, and 22.94% of the respondents seek librarian's assistance to retrieve required documents. Besides, the study shows that 13.97% of the respondents prefer to consult the card catalogue, and 13.53% of the respondents will go to browse the shelves if the search results are unsatisfactory. A few (6.47%) of the respondents will seek help from the faculty members.

However, in case of searching web-based OPAC form remote places, unsuccessful search results may lead the users to divert. So, the attitudes of the users were different in the course of subject search and unsatisfactory search results.

Table 5. User's course of action next to unsuccessful subject search

Sl. No.	User's course of action	No. of respondents	Percentage (%)
1	Give up	293	43.09
2	Browse the shelves	92	13.53
3	Ask a librarian	156	22.94
4	Ask a faculty member	44	06.47
5	Consult card catalogue	95	13.97
Total		680	100

4.4 Level of satisfaction of the users

The level of satisfaction of the users in searching and retrieval process has tried to uncover. Respondents asked to put marks on a five-point scale, i.e. Very Unsatisfied-> 1, 2, 3, 4, 5 <-Very Satisfied. Results indicate that search performance using subject headings is not satisfactory, as only 12.35% of the respondents are satisfied with this process. Nevertheless, the keyword search technique often used to obtain a required document(s), and only 9.85% of the respondents are found least satisfied with this process. Besides, the combined search using subject headings and keywords widely used search technique; 24.26% of the users have given 4 marks out of 5, and 23.68% of the users have given 3 marks out of 5. Simultaneously 16.03% of the users are found least satisfied, and 16.62% of the users have satisfied with this search experience (see Fig. 4).

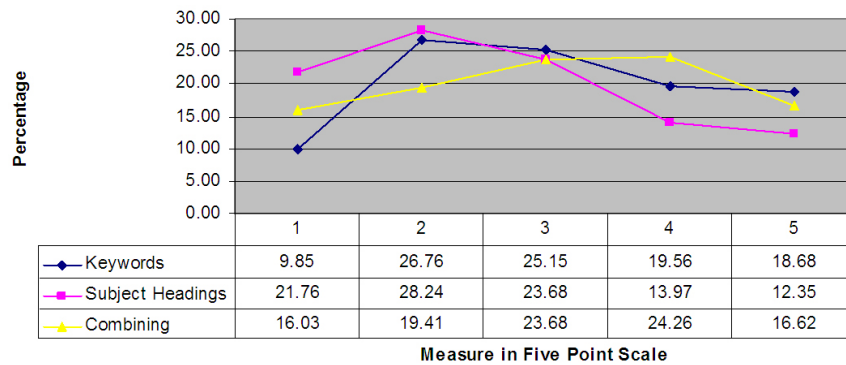


Fig. 4. Comparison of satisfaction level of the users

4.5 Users' suggestions regarding improvement of performances of OPAC

4.5.1 Initiatives for promoting the use of OPAC

Due to a lack of adequate knowledge about the principles, tools, and techniques of searching and retrieval, end-users very often encounter difficulties in the course of OPAC searching. However, some user awareness program may be useful for the effective utilization of the OPACs. A study of the users of library catalogue conducted to get the opinions of the users in this regard. Table 6 presents the users' attitudes towards promoting the use of OPAC.

Table 6. Users' opinion towards promoting the use of OPAC

Sl. No.	Promotional program	Category of users			Total
		Students	Research scholars	Faculty members	
1	Library orientation program	352 (63.20%)	34 (47.89%)	33 (63.46%)	419 (61.62%)
2	Seminar/workshop	143 (25.67%)	17 (23.94%)	10 (19.23%)	170 (25.00%)
3	Online instructions	39 (7.00%)	16 (22.54%)	7 (13.46%)	62 (9.12%)
4	Personnel services	21 (3.77%)	4 (5.63%)	2 (3.85%)	27 (3.97%)
5	Other programs	2 (0.36%)	0 (0.00%)	0 (0.00%)	2 (0.29%)
Total		557 (100.00%)	71 (100.00%)	52 (100.00%)	680 (100.00%)

It reveals from Table 6 that a pretty good number of respondents (61.62%) like to have a library orientation program to know about the library. Besides, 25% of the respondents like a seminar or workshop for the promotion of library services. However, 9.12% of respondents prefer an online

instruction program for this purpose. Few respondents (3.97%) seek the personnel services from the library staff in the course of OPAC searching.

4.5.2 Opinions of the users about the advantages of OPAC

In this study, users have asked to opine some advantages of OPAC for information retrieval. Table 7 presents the opinion of the users regarding the suitability of OPAC for searching for the documents.

Table 7. Advantages of OPAC

Sl. No.	Advantages of OPAC	Category of users			Total N=680
		Students N=557	Research scholars N=71	Faculty members N=52	
1	It saves time to search required documents	313 (56.19%)	51 (71.83%)	45 (86.54%)	409 (60.15%)
2	It can retrieve specific document at least possible time	109 (19.57%)	24 (33.80%)	17 (32.69%)	150 (22.06%)
3	It facilitates multimodal search options	123 (22.08%)	35 (49.30%)	15 (28.85%)	173 (25.44%)
4	Easy to get access and search can be done even from remote places	239 (42.91%)	37 (52.11%)	34 (65.38%)	310 (45.59%)

Note: Multiple responses against each of the parameters have received from each of the different categories of users. Therefore, responses did not denote any preferred order; they were independent as well as mutually exclusive. Responses were analyzed and tabulated accordingly. Measurement of multiple responses against each of the parameters received from different categories of users has shown in percentage terms, therefore, independent as well as mutually exclusive.

It shows from Table 7, maximum users (56.19% students, 71.83% research scholar, and 86.54% faculty members) feel OPAC saves time to search and retrieve required library documents. This finding concurs with the assertion of Halder (2015) that the online catalogue saves user's valuable time. Besides, 42.91% of the students, 52.11% of the research scholars, and 65.38% of the faculty members feel that it is easy to get access and search can be done even from remote places. However, out of a total of 680 respondents, 60.15% feel that it saves time to search and retrieve required documents; 22.06% of respondents felt that it find out a specific term in the least possible time. Besides, 25.44% appreciated that it facilitates multimodal search options. Finally, 45.59% feel that OPAC makes it easy to access resources; as well it can search from remote places. El-Sherbini and Chen (2011) noted that "end-users and librarians want a system that is more open to multilingual subject headings."

4.5.3 Opinions of the users regarding the retrieval of Bengali documents by subject

A large number of respondents feel the need for improvement of the capability of the OPACs

for searching and retrieval of Bengali documents by subject. In the users' point of view, OPAC functionalities need to be more user-friendly for subject search. Another group of users opines that the OPAC system should incorporate the federated search facility. As far as technological development is concerned, the library users want OPAC with new features like Web 2.0, word cloud, relevance tagging, to make search more user-friendly.

5. Conclusion

In a nutshell, the attitude of library users toward the use of subject headings for Bengali documents in OPAC has determined and identified. The subject headings have found ambiguous semantically and syntactically conflicting. Concerning vocabulary control, lack of accuracy, consistency, exhaustivity, and specificity have ascertained. It has observed that a large number of respondents opine to improve non-Roman subject access in the OPAC.

It has resolved that some features of OPACs need to improve and thereby to satisfy users' requirements. Besides, relevant instructions and aid to use the controlled vocabulary may include in OPAC interface. Such a facility can help the users to learn the search strategy and retrieval of documents from the catalogue. The library must provide on-site personnel help and make arrangements for the user education program regularly. However, implementation of automated correction of spelling and system prompts to the users in the OPAC interface will minimize unsuccessful search results. It has determined that the assignment of Bengali subject headings in the online catalogue lacks uniformity and consistency. The decision table for cataloguing needs to maintain properly to cope up with a local variation.

This study recommends that the framework compatible with international standards accommodate the authority control in the multilingual systems. Besides, this study confirms that the principles and rules are a fundamental requirement for optimal use of subject headings for Bengali documents. Thus the web-enabled uniform subject authority control can be applied intelligently for retrieval of resources.

Nevertheless, recall, precision, relevance, and related terms matters must apply to the Bengali language in determining subject headings. However, for different variations in Bengali terms, it is crucial to maintain uniformity and particularly coordination between semantics and synonyms, which cannot be solved by transliteration alone. Hopefully, an effective and efficient OPAC system, as well as the access using subject headings, can be settled by consideration of the above observations and deliberations.

References

- Abdoulaye, K. (2002). Perceptions of Cataloguers and End-users towards Bilingual Authority Files. *The Electronic Library*, 20(3), 202-210. <https://doi.org/10.1108/02640470210432348>
- Albarillo, F. (2016). Evaluating Language Functionality in Library Databases. *International Information*
-

- & *Library Review*, 48(1), 1-10. <https://doi.org/10.1080/10572317.2016.1146036>
- Alzofon, S. R., & Van Pulis, N. (1984). Patterns of Searching and Success Rates in an Online Public Access Catalogue. *College & Research Libraries*, 45(2), 110-115.
<http://crl.acrl.org/index.php/crl/article/download/13984/15430>
- Bandyapadhyay, R. (2001). *Suchikaran [Cataloguing]*. Kolkata: Bangiya Granthagar Parisad.
- Bhattacharyay, K. (n.d.). *Bishay Shiranam [Subject Headings]*. Kolkata: Bangiya Sahitya Parishad.
- Colbert, J. L. (2017). *Comparing Library of Congress Subject Headings to Keyword Searches Involving LGBT Topics: a Pilot Study* [Master's thesis, University of Illinois at Urbana-Champaign]. IDEALS. <http://hdl.handle.net/2142/97437>
- El-Sherbini, M., & Chen, S. (2011). An Assessment of the Need to Provide Non-Roman Subject Access to the Library Online Catalog. *Cataloging & classification quarterly*, 49(6), 457-483.
<https://doi.org/10.1080/01639374.2011.603108>
- Guo, J., & Huang, J. (2011). Subject Headings and Subject Search: A Comparative Study. *Chinese Librarianship: an International Electronic Journal*, 31.
<http://www.iclc.us/cliej/cl31GH.pdf>
- Halder, S. N. (2015). *The Use of Subject Headings for Bengali Documents in Online Public Access Catalog* [Doctoral dissertation, Jadavpur University]. Shodhganga.
<https://shodhganga.inflibnet.ac.in/handle/10603/199116>
- Lehtinen, R. (2013). Multilingual and Multi-Character Set Data in Library Systems and Networks: Experiences and Perspectives from Switzerland and Finland. In *Multi-script, Multilingual, Multi-character Issues for the Online Environment: Proceedings of a Workshop Sponsored by the IFLA Section on Cataloguing, Istanbul, Turkey, August 24, 1995* (Vol. 85, p. 67). Walter de Gruyter.
- Miller, J., & McCarthy, S. (Eds). (2010). *Sears List of Subject Headings*. New York: The H. W. Wilson Company.
- Mukhopadhyay, P. (2001). *Bijnan: Bishay Shironam [Science: subject headings]*. Kolkata: Bona.
- Rolla, P. J. (2011). User tags versus subject headings. *Library Resources & Technical Services*, 53(3), 174-184. <https://doi.org/10.5860/lrts.53n3.174>
- Satija, M. P. (2008). Sears List of Subject Headings: An Introduction to the Nineteenth Edition (2007). *Pakistan Journal of Library and Information Science*, 9, 31-48.
<http://111.68.103.26/journals/index.php/pjimpl/article/view/809/444>
- Sridhar, M. S. (2004). Subject Searching in the OPAC of a Special Library: Problems and Issues. *OCLC Systems & Services: International digital library perspectives*, 20(4), 183-191.
<https://doi.org/10.1108/10650750410564691>
- Wu, D., He, D., Qiu, J., Lin, R., & Liu, Y. (2013). Comparing Social Tags with Subject Headings on Annotating Books: A Study Comparing the Information Science Domain in English and Chinese. *Journal of Information Science*, 39(2), 169-187.
<https://doi.org/10.1177/0165551512451808>
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[About the author]

Sambhu Nath Halder has consumed nearly two decades exploring principles of information retrieval in organizing and disseminating information in a multilingual environment. Beyond liability of Librarian, he is the Director of IQAC and the Nodal Officer of RUSA at Shimurali Sachinandan College of Education, West Bengal, India.

Annexure – I

Structured Schedule for Survey of Users

This survey is intended to investigate the usability of Bengali Subject Headings in library Online Public Access Catalogue.

1. University Status (Please check one)

- a) Undergraduate Student b) Master Student c) Doctoral Student
d) Postdoctoral Student e) Faculty f) Other _____

2. Gender (Check one)

- a) Male b) Female

3. Years of Computer Experience (Please check one)

- a) < 1 Year b) 1-2 Years c) 2-3 Years d) 3-5 Years e) > 5 Years

4. Years of Database Searching Experience (Please check one)

- a) < 1 Year b) 1-2 Years c) 2-3 Years d) 3-5 Years e) > 5 Years

5. What kinds of database you usually use?

6. How often do you use Database for searching?

7. Experience using library catalogues (Please check one)

- a) 5 or more times per week
b) 2 to 4 times per week
c) 2 times per month
d) Less than 6 times per year

8. Where do you prefer to access online public access catalogue?

- a) Inside the library
b) Campus-wide Local Area Network (LAN)
c) Remote access through Internet

9. What methods you generally use to find out required documents?

- a) Keywords search
-

- b) Title search
- c) Author search
- d) Subject search
- e) Combined search

10. Before this search experiment, did you understand or feel familiar with keyword or subject headings terminology?

11. Before this search experiment, have you ever used keyword and/or subject headings for your search?

Yes No

If so, which (Please check one)?

a) Keyword only b) Subject Headings only c) Both

12. After this search experiment, what is your preference for search? (Please check one)

a) Keyword only b) Subject Headings only c) Combining both

13. Compare the three search sessions when you answer the following questions:

A. Keyword search

(1) How satisfied were you with finding the information you sought?

On a scale of 1-5, how easy was it to find the book? (Please circle one)

Very Unsatisfied-> 1 2 3 4 5 <-Very Satisfied

(2) Please list the reasons why you gave the answer

(3) How satisfied were you with the search process? (Please circle one)

Very Unsatisfied-> 1 2 3 4 5 <-Very Satisfied

(4) Please list the reasons why you gave the answer

B. Subject Headings Search

(1) How satisfied were you with finding the information you sought?

On a scale of 1-5, how easy was it to find the book? (Please circle one)

Very Unsatisfied-> 1 2 3 4 5 <-Very Satisfied

(2) Please list the reasons why you gave the answer

(3) How satisfied were you with the search process? (Please circle one)

Very Unsatisfied-> 1 2 3 4 5 <-Very Satisfied

(4) Please list the reasons why you gave the answer

C. Combining Search

- (1) How satisfied were you with finding the information you sought?
 On a scale of 1-5, how easy was it to find the book? (Please circle one)
 Very Unsatisfied-> 1 2 3 4 5 <-Very Satisfied
- (2) Please list the reasons why you gave the answer
-
- (3) How satisfied were you with the search process? (Please circle one)
 Very Unsatisfied-> 1 2 3 4 5 <-Very Satisfied
- (4) Please list the reasons why you gave the answer
-

14. How do you search subject headings or keywords which are in languages written in non-Roman script?

Search Criteria	Search in English or Romanization.	Search in the original non-Roman script.	Search both
Subject Headings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Keywords	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

15. How you adjust search terms when search results are zero

- a) Change search terms
- b) Select subject terms from alphabetic
- c) Select subject terms from retrieved item

16. How do you find searching the OPAC by controlled Headings?

On a scale of 1-5, how easy was it to find the book? (Please circle one)
 Very Unsatisfied-> 1 2 3 4 5 <-Very Satisfied

17. What are some difficulties you encounter when you search Bengali items by controlled English subject access? Choose all that apply.

- a) Unable to find out desired documents
- b) Equivalent English terms not matched
- c) Romanization of terms not matched
- d) Syntax of subject headings not matched
- e) Incomplete subject headings
- f) Problem in Bengali typewriting
- g) Others _____

18. Do you find that the presence of controlled English subject headings in bibliographic records helps you find and identify the Bengali items you need?

On a scale of 1-5, how easy was it to find the book? (Please circle one)
 Very Unsatisfied-> 1 2 3 4 5 <-Very Satisfied

19. Do you think it would be useful to add subject searching capability in Bengali language to the library OPAC?

- a) Yes
- b) No
- c) Not

20. Do you think it is a good idea to make a library catalogue open for end user tagging?

- a) Yes
- b) No
- c) Not

21. What are the advantage(s) of the OPAC regarding retrieval of Bengali documents by subject? Choose all that apply.

- a) It saves time to search required documents
- b) It can retrieve specific documents at least possible time
- c) It facilitates multimodal search options
- d) Easy to get access and search can be done even from remote places
- e) Others, if any _____

22. List your favourite ideas or suggestions regarding retrieval of Bengali documents by subject in the OPAC.

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*** Thank you for assisting in this study. Your responses will help to draw the present scenarios of library OPAC and subject searching for library resources.