

# TRANSACTION LOG ANALYSIS OF OPAC SEARCHES IN AN ACADEMIC LIBRARY: BASIS FOR OPAC INTERFACE IMPROVEMENT

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## Abstract

*This study aims to look at search patterns in the OPAC and determine the reasons for failure rates. With this study, interface design problems could be addressed and the users' search behavior could be analyzed. Transaction log analysis (TLA) was used to examine search queries extracted from the system. Transaction logs are interactions registered electronically between online systems of information retrieval and the persons who search for information contained in the system. For this study, logs refer to the author, title, call number, keyword (Boolean), and subject queries submitted to the library's OPAC. Errors were identified and coded to determine reasons of failure rates. Search patterns were also analyzed by examining the search strings submitted to the system. Simulated searching was also performed (as deemed necessary) to dig further into the reasons why some queries resulted to zero retrievals. For this study, the data used was limited to logs collected for a period of 35 days as this is the maximum extent of logs the system can keep/store. A total of 244,456 search logs submitted to the system. Results showed that users are oblivious of search limiters and that their manner of searching for items in the OPAC is the same as how they would usually conduct their searches using the Google search box; and presumably expect that the OPAC will return results similar to that of Google.*

**Keywords:** transaction log analysis, online public access catalog (OPAC), user interface

## Introduction

The online public access catalog (OPAC) is considered as the “heart of the system” being the key to the library's collection and the source of most search and research reference queries. With the rise of digital resources, the OPAC has become more integrated yet diverse as bibliographic records resources such as e-books, e-journals, and databases, have been incorporated into

the catalog. Moreover, resources that may be made available to the users through inter-library loan (ILL) and document delivery service (DDS) are now made discoverable through the OPAC (Ortiz-Repiso, Bazán, Ponsati, & Cottureau, 2006).

In the course of searching for information sources, trails of searches made by OPAC users are logged by

the system (Blecic et al., 1998). These are called transaction logs. Transaction logs are interactions registered electronically between a system (which could be a website, an OPAC, a blog, etc.) and its users (Jansen, Taksa, & Spink, 2009). These logs leave behind evidences of how well or how poorly the search transactions were executed (Blecic et al., 1998). Information being logged in an OPAC system usually include the searches performed, the date the searches were executed, the filters and Boolean operators used, the number of results or hits generated, the activities performed (e.g. carting activities) (Malliari & Kyriaki-Manessi, 2007), and the terminal used to perform the search. These logs provide valuable information on the difficulties experienced by the users and help identify patron failures on the use of the OPAC (Blecic et al., 1998). These can serve as bases in identifying areas for improvement in the OPAC and the library's user education program. Likewise, examining searches retrieving zero hits may provide information on the collection development needs of the users and the collection deficiencies of the library.

Since the 1960s, transaction log analysis (TLA) has been used to monitor systems. In the latter part of the 1970s, TLA was likewise employed to analyze how systems are being used. With logs becoming more sophisticated, its use in examining information retrieval systems has become prevalent (Hider, 2007), particularly in libraries.

In the Library of the Alexander Technological Educational Institution of Thessaloniki in Greece, for example, an analysis of transaction logs was carried out to assess the impact of the changes they have instituted into the system based on a previous study conducted, which also made use of TLA. Findings showed that the number of searches and sessions doubled and a positive effect on the search attitude of the patrons was noted (Malliari, Moreleli-Cacouris, & Kapsalis, 2010). Similarly, transaction log analysis of two sets of logs (the first set from the previous OPAC, and the second set from the improved version of the same OPAC) was carried out at the University of Illinois at Chicago within a period of six months to see how the changes

incorporated to the system has helped improve the success rates of searches. Positive changes were noted on the search results after enhancements on the OPAC were made (Blecic et al., 1998).

Nicholas, Huntington, Jamali, Rowlands, and Fieldhouse (2009) compared student information-seeking behavior against other stakeholders (e.g. faculty) through the analysis of log data from two digital journal libraries. The information-seeking behavior of students showed to be distinct from other types of clients. It turned out that the most number of sessions and page views, as well as the longest sessions generated, were performed by the students. Also, through the use of TLA, the search behaviors of students during the conduct of library instruction classes at the University of Illinois at Urbana-Champaign, were analyzed. The study showed that while students were generally following the demonstration searches, difficulty was observed in the application of the search instructions provided by the librarian in the conduct of the student's independent search (Avery & Tracy, 2014). The search behavior of remote users of the University of California's OPAC called MELVYL was also examined using TLA in the study conducted by Millsap and Ferl (1993). Collected logs were likewise cross-tabulated with the demographic data of the remote users which were collected through an online survey. The study revealed that 40% of the users who conducted short search sessions were usually looking for known items hence successfully retrieved results. The 60%, on the contrary, who conducted search sessions that were longer were less successful and have even, at times, generated zero retrievals; committed errors; and, came across navigational problems and system restrictions.

To examine the pattern of website use, TLA was likewise employed, making use of three-month log data gathered from a university website. Heavy in-campus website usage was noted although off-campus usage was likewise significant. The most used resources were free scholarly journals (with usage exceeding that of the subscribed e-journals accessible only on campus), downloadable resources, e-journals, and donated personal collections (Arshad & Ameen,

2015). Brett, German, and Young (2015), on the other hand, looked into the collection of information on user searches, particularly the use of tabbed-search interface for the library website of the University of Houston Libraries through the use of transaction log analysis. The tabbed-search interface proved to be useful to clients in finding the needed information; however, users seemed to have encountered problems with some of the tabs, hence minor enhancements were recommended. Similarly, TLA was employed in examining the web-scale discovery tools at two campuses of the Indiana University, to find out what subjects are being searched by the user and whether they are making use of the advanced search options. Subjects that were most frequently searched turned out to be those under the fields of social sciences and medicine. Moreover, the study revealed that patrons were mostly conducting basic searches and that those who made use of the advanced search option actually did not take advantage of the use of field codes (Cohen & Pusnik, 2018).

TLA was also conducted for the Computer Science Technical Reports Collection of the New Zealand Digital Library to examine the use of operators, look at search limiters used and analyze patterns in query construction and refinement while likewise investigating on the common searching mistakes and the distribution of query terms as manifested in the logs. Sessions conducted showed to be very short and simple. Users unfamiliarity with fielded searching was also noted. Default query showed to be the most adopted query type (Jones, Cunningham, McNab, & Boddie, 2000). OPAC log files were also analyzed at the University of Granada in Spain to see which types of search effect queries are most frequently being used by different types of users. Based on the results, the frequency of browsing and analytical queries were the same, and that specific subject queries only account for 14% of the searches (Villén-Rueda, Senso, & de Moya-Anegón, 2007). To uncover reasons on the difficulty experienced by patrons at University of Oklahoma Libraries in the use of subject searching in the OPAC, on the other hand, transaction log analysis and observation interviews were performed. Findings showed that

subject searches were very seldom used constituting only 4.6% of the total transaction logs where close to half retrieved zero results. Reasons for subject search failures were attributed to the fact that subjects make use of controlled vocabulary which in itself is problematic for the following reasons: subjects assigned present a very limited representation of the given work; updating of subject entries takes time hence they fail to capture new and emerging headings; and, that professional catalogers views and understanding are very much different from library users (Antell & Huang, 2008). In the same way, OPAC search queries of patrons at the College of New Jersey Library, were examined using TLA. Search queries submitted showed to be between one to three terms. The use of Boolean operators also presented to be uncommon comprising only about one-tenth of the time. A significant percentage of the searches retrieved zero hits which suggest that users are having difficulty in the use of the OPAC (Moulaison, 2008). Another investigation on the OPAC logs of an academic library was carried out by Peters (1989) to determine failure rates (searches with zero hits), look at usage patterns and identify common problems encountered by patrons in the use of the OPAC. Usage patterns and failures appeared to be common and with very little variations noted over time as well as from terminal to terminal. However, the probable cause of user problems proved to be varied from terminal to terminal.

This study is similar to that of Peters (1989) and Jones et al. (2000) as it likewise examined OPAC transaction logs of a big academic library in Manila to look at search patterns and determine reasons for failure rates in the use of the OPAC. The purpose of which is to ascertain problems with the OPAC interface design and look into users' searching behaviors which could be used as a basis in identifying solutions to address difficulties being encountered by library patrons.

## Methods

TLA was used to examine search queries extracted from the integrated library system. TLA was chosen because it is unobtrusive, hence "the collection of

the data ... [will] not interfere with the natural flow of behavior and events” (Jansen et al., 2009). The logs consisted of queries collected from the OPAC of a big academic library in Manila, Philippines. These covered searches submitted through the different search limiters such as author, title, call number, keyword, and subject. While the system offers searching by government document number, this was excluded from the study primarily because there were no searches recorded that made use of this parameter.

A total of 255,674 search logs were initially examined. Out of the 255,674 logs extracted, 1653 were excluded from the analysis as they turned out to be invalid logs or trash. Thus, the total number of logs analyzed was 254,021 broken down as follows:

Data extraction was performed on January 24, 2019. As the system can only store transactions submitted within a period of 35 days, examined data covered searches performed from December 23, 2018 to January 24, 2019. Data examined were limited to searches performed using the main catalog. Note that the OPAC has two databases—the main catalog and the local index. The main catalog consists of bibliographic records of items physically available in the library like books, DVDs, and printed serials; as well as those virtually available to the users such as eBooks and e-journal subscriptions. The said catalog is scoped by type of material (e.g. books, serials, audiovisual materials) allowing users to further limit searching by material type. Users, though, may opt to choose the View Entire Collection to search for any type of material in all collections and locations simultaneously. The local index, on the other hand, covers indexes of works

**Table 1**  
*Breakdown of Logs Analyzed*

| Search Parameters Used | Number of Logs Extracted | Invalid Logs | Number of Logs Analyzed |
|------------------------|--------------------------|--------------|-------------------------|
| Title                  | 67,604                   |              | 67,604                  |
| Author                 | 63,447                   |              | 63,447                  |
| Keyword                | 62,436                   | 1,235        | 61,201                  |
| Call Number            | 45,074                   | 76           | 44,998                  |
| Subject                | 16,606                   | 186          | 16,420                  |
| ISBN                   | 507                      | 156          | 351                     |
| <b>TOTAL</b>           | <b>255,674</b>           | <b>1,653</b> | <b>254,021</b>          |

**Table 2**  
*Failure Rates (Zero Hits)*

| A                      | B                       | C              | D                        |
|------------------------|-------------------------|----------------|--------------------------|
| Search Parameters Used | Number of Logs Analyzed | Zero Hits      | % of Zero Hits (C/B)*100 |
| Title                  | 67,604                  | 41,234         | 60.99                    |
| Author                 | 63,447                  | 45,899         | 72.34                    |
| Keyword                | 61,201                  | 11,627         | 19.00                    |
| Call Number            | 44,998                  | 392            | 0.87                     |
| Subject                | 16,420                  | 2,276          | 13.86                    |
| ISBN                   | 351                     | 197            | 56.13                    |
| <b>TOTAL</b>           | <b>254,021</b>          | <b>101,625</b> | <b>40.01</b>             |

contained in an item (e.g., an article published in a journal, a poem included in a book containing compiled works of an author, etc.). Similar to the main catalog, the local database is also scoped. The scoping is by index type (e.g., article index, literary index, histodex, archival materials) which allow users to limit search by type of index. However, there is no way for the entire local database to be searched as one as it does not have a View Entire Collection option. Transaction logs submitted to the local index were excluded from the study.

In the analysis of search logs, both quantitative and qualitative or mixed methods approach was used. Errors specifically of queries returning no direct hits (zero results) were coded to determine reasons for failure rates. Simulated searching was also performed on selected search queries (as deemed necessary) to dig further into the reasons why these resulted in zero retrievals. Search patterns, on the other hand,

were analyzed by examining the search strings.

### **Results and Discussion: Failure Rates (Zero Hits)**

The percentage of zero hits was 40.01%. This is higher compared to the results of previous studies which reported between 30% to 35% zero hits (Blecic et al., 1998; Holloma, 1999; Moulaison, 2008). On the contrary, it is lower compared to the study conducted by Lau and Goh (2006) where the number of failure rates reached 49.5085%. Generally speaking, though, failure rates are usually at 30% (Yu & Margo, 2004). Hence, the 40.01% zero hits are considered higher than the usual. Searches submitted using the author search limit returned the most number of zero hits.

### **Use of Wrong Search Option**

Examining searches retrieving zero hits showed that the use of wrong search option (e.g., a keyword search submitted through the author delimiter)



caused 76% of failure rates, which accounted for the largest percentage of problematic searches. Majority of these searches were keywords submitted through the author or title limiters. While it is common for users to encounter problems using this OPAC feature (Lau & Goh, 2006) this proportion is definitely high.

Also noted were conceptual errors arising from misconceptions on the use of search limiters (Trapido, 2016). Examples of this are queries specifying titles of research databases (e.g., ScienceDirect) which are actually made easily accessible to the users through the link situated just below the library's discovery service found on the main page of the library (see Figure 1). This suggests that users are confused with the difference between the OPAC and online databases. Search logs specifying URLs, which is more suitably searched for through the Net and not the OPAC, were likewise noted. This implies that users also cannot distinguish between the Internet and the OPAC. This infers that users think that the OPAC serves as the portal to all of the library's resources (Trapido, 2016) and the World Wide Web as well.

Given the significant number of search terms submitted using the wrong search limiter, it is evident that library users do not pay attention to the field delimiter that they are using or are probably not even aware that such exist and that they actually need to make use of the appropriate limiter to retrieve relevant results.

Today's generation of users search for items in the OPAC in the same way that they would usually

perform searches using the Google search box or Google-like discovery tools (Dougan, 2018). Their adeptness on the use of single search boxes may be attributed to the fact that Internet sites serve as the primary sources of information for students nowadays. Moreover, the Google search box is very easy and convenient to use (Mi & Weng, 2008) as it does not require users to shift from a keyword search limiter to an author limiter when searching for authors names; or a title limiter when looking for titles of works. Rather, that single search box accommodates everything; does not differentiate between types of search terms; and, even accepts misspelled words while retrieving relevant results for the corrected spelling.

Despite the supposed transformation of the traditional card catalog into its electronic version, the OPAC, it has remained faithful to Cutter's model of looking for items in the library. Moreover, since the said model was introduced in 1876, with the printed catalog in mind (Mi & Weng, 2008), it no longer is expedient in the online environment.

### Acceptance of "Default" Setting

Keyword is the OPAC's default delimiter. Yet, the number of search terms submitted using title and author limiters showed to be greater than the number of searches using keyword limiter implying that the users did change the default setting. This contradicts the findings of Jones et al. (2000) that it is uncommon for users to change the default setting. A close look at the queries though, proved that majority were keywords submitted to the wrong search

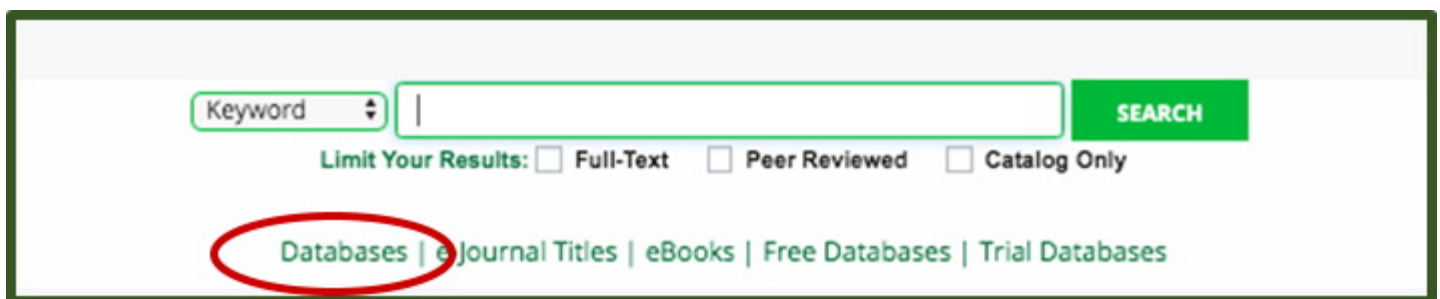


Figure 1. The library's Discovery Service.

option. If keyword is the default setting and majority of the searches were keywords, what could have been the reason for the mismatch? The assumption is that some users (who may have been well versed with how the system works) changed the default limiter (which is keyword) into another field limiter (author or title, for example) and conducted a search and left the OPAC screen at the results page. The next user conducted another search without clearing out the search refinements from the previous search. This scenario is repeated a number of times a day, causing the failure rates to balloon. This, being the most probable scenario, brings us back into maintaining the notion that majority of the users do not actually change the default setting (Jones et al., 2000) or that users are not aware that they need to enter query terms into the appropriate search field to retrieve relevant search results.

### **Misspellings, Abbreviations and Typographical Errors**

Misspellings, abbreviations and typographical errors accounted for 1.40% of failure rates. This number is much lower compared to the results of previous studies conducted abroad where misspellings and typographical errors comprised between 15% (Holloma, 1999) to 20.8% (Blecic et al., 1998; Peters, 1989) of failure rates.

### **Malformed Queries**

The number of malformed queries made-up 3.72% of failure rates (for author, title, ISBN, call number searches; keyword excluded). For search queries to return successful results the correct query syntax should be formed. An author search, for example, requires that the author's name be entered with the last name first. For a user, therefore, who is looking for a work authored by Jose Rizal, the correct search query would be "Rizal, Jose." For title searches, initial articles should be disregarded; thus, the correct search query for the work *The reign of greed* is "reign of greed." Subject searches, on the other hand, does not require much as far as the query syntax is concerned. A user may enter as many words or as little words as he/she wants. However, it entails familiarity with the controlled vocabulary being used by the library like the Library of Congress Subject

Headings (LCSH), for example. Controlled vocabularies are standardized words or phrases used by librarians in indexing content, thus can at times be very technical as it follows certain rules and structures. The correct search query for a book on "EDSA revolution," for example is "Philippines—History—1986-." In this example, the difference between what the user perceives the subject to be is very different from the subject that the librarian assigned to the book, following the LCSH. Users who are not familiar with how librarians assign subject headings will, therefore, find it very difficult to formulate the correct search strategy using subject search. It is for this particular reason that subject access is considered to be the most problematic of all (Sridhar, 2004). ISBN and ISSN, on the other hand, require that the exact number (minus the punctuations) be entered into the system to retrieve relevant results. Keyword searches, though, may be entered in any way the user desires provided they are spelled correctly and at the right level of granularity as OPACs, usually do not support very specific searches (i.e., article-level searching much like citations or queries that combine keywords with an author's name or date of publication) (Trapido, 2016). Thus, keyword searches in this level are most likely to generate zero hits.

### **Erroneous Search Terms**

Erroneous search terms consisted of 0.18% of the failure rates where the majority were wrong titles. This indicates that users usually search for terms the way they may have heard or remember it without going through the verification process. The query "Fermans room," for example, turned out to be "Fermat's room" after verification. Note that the difference between the two search queries is actually just one letter (disregarding the punctuation). However, that one-letter mistake makes a big difference since OPACs do not have error recovery features similar to the "Did you mean ..." suggestions on web search engines (Trapido, 2016).

### **Unavailable Items**

Queries for items not held in the collection accounted to 7.80%. This percentage represents author, title, ISBN, and call number searches only.

Said searches are supposed to be exact searches (as opposed to keywords), making it easily identifiable if indeed these items are available or not in the library's holdings. Recurring queries for items not held by the library indicate the need to make these materials accessible to users, thus calls for a collection development decision.

### Search Patterns

Although the default search parameter is keyword, title and author searches appeared to be the most frequently used search limiters. It is assumed, therefore, that the users already have in mind exactly what they are looking for as title and author searches require precise search terms to be entered into the system for it to draw the desired result (that is, granting the title/author is available in the library's holdings). This upholds Borgman's observation that OPACs are commonly used in finding known items (Sridhar, 2004) and keeps with Cutter's model of finding known items through the catalog (Mi & Weng, 2008).

Keyword searches (uncontrolled vocabulary), on the other hand, showed to be more favored compared to subject searches (controlled vocabulary). This is similar to the observation of Matthews, Lawrence, and Ferguson that patrons prefer the use of uncontrolled vocabulary (Peters, 1989), most likely because keyword searches provide more flexibility. As observed, some of the keyword searches actually make use natural language, which in reality is a search type not supported by the OPAC.

Search queries were brief, averaging to 3.11 terms per

query. This, though, is a bit longer compared to the results of previous studies done for the New Zealand Digital Library which averaged to 2.43 search terms per query and that of the ResearchIndex (RI) which has an average of 2.32 terms per query (Lau & Goh, 2006) as well as that conducted for the Stanford University which was at 2.9 terms per query (Trapido, 2016).

Use of Boolean operators was relatively low. This is most likely because library users are typically proficient Web users and as such, are not accustomed to using Boolean operators (Lau & Goh, 2006). Among those who made use of Boolean operators, the use of AND showed to be the most popular.

Out of 254,021 search queries submitted to the system, the number of unique search terms summed up to 61,958 only. This means that 75.61% of the total number of queries were identical search strings submitted multiple times. The example below shows that the search string "harter s 1996 historical roots of contemporary issues involving self c" was submitted 12 times in 6 different days, usually in two or three successions. It is also most likely that only one person submitted said string considering the precision and the consistency in the level of granularity. This demonstrates the persistence of the users in submitting queries in looking for materials that they badly need, giving the impression that users seemed to be in a state of disbelief as to why their searches returned zero hits.

Twenty (20) query terms surfaced to be the most frequently searched terms. A close examination of these terms showed that some of the queries submitted using the different search delimiters

### Sample Identical Search Queries Submitted Multiple Times

| Search Query   | Date and Time of Execution   |
|--|------------------------------|
| harter s 1996 historical roots of contemporary issues involving self c | Friday January 25 09:52AM    |
| harter s 1996 historical roots of contemporary issues involving self c | Friday January 25 09:53AM    |
| harter s 1996 historical roots of contemporary issues involving self c | Monday January 28 09:52AM    |
| harter s 1996 historical roots of contemporary issues involving self c | Monday January 28 09:53AM    |
| harter s 1996 historical roots of contemporary issues involving self c | Saturday January 26 09:50AM  |
| harter s 1996 historical roots of contemporary issues involving self c | Saturday January 26 09:51AM  |
| harter s 1996 historical roots of contemporary issues involving self c | Sunday January 27 09:51AM    |
| harter s 1996 historical roots of contemporary issues involving self c | Sunday January 27 09:52AM    |
| harter s 1996 historical roots of contemporary issues involving self c | Thursday January 24 09:51AM  |
| harter s 1996 historical roots of contemporary issues involving self c | Thursday January 24 09:53AM  |
| harter s 1996 historical roots of contemporary issues involving self c | Thursday January 24 11:55AM  |
| harter s 1996 historical roots of contemporary issues involving self c | Wednesday January 23 10:22PM |



**Table 3**  
*Most Frequently Searched Terms*

| Search Query  | Search Delimiter Used | Frequency | Hits |
|---|-----------------------|-----------|------|
| drama films   | subject               | 546       | 430  |
| english language rhetoric   | subject               | 448       | 43   |
| sustainable buildings juvenile literature   | subject               | 436       | 1    |
| report writing  | subject               | 435       | 25   |
| engineering economy   | subject               | 375       | 8    |
| world book inc  | author                | 332       | 46   |
| ge300 .l48 v.4 [title: Green buildings]   | call number           | 317       | 1    |
| park chan s   | author                | 299       | 10   |
| headrick paul 1957  | author                | 280       | 1    |
| ta177.4 .p39 2004 [title: Fundamentals of engineering economics / Chan S. Park]               | call number           | 277       | 1    |
| pe1479.c7 h4 2014 [title: The Wiley guide to writing essays about literature / Paul Headrick] | call number           | 275       | 1    |
| living green v 4  | title                 | 256       | 1    |
| jensen frank  | author                | 254       | 2    |
| cd15933 [title: Batman v Superman : dawn of justice]  | call number           | 101       | 1    |
| cd15867 [title: Big hero 6]   | call number           | 96        | 1    |
| paramount pictures corporation  | author                | 93        | 2    |
| subject headings used in the dictionary catalogues of the library of congress                 | title                 | 83        | 1    |
| principles of economics   | title                 | 72        | 10   |
| library of congress subject headings  | title                 | 68        | 2    |
| sikolohiyang pilipino   | title                 | 67        | 4    |

actually pertain to the same items in the catalog. Search query numbers 3, 7, and 12 (see Table 3), for example, which were submitted through subject, call number, and title limiters, respectively refer to just one item—a book entitled *Green buildings* published by World Book, Inc. Thus, it is also possible that query number 6 relates to the same item. Summing up the number of searches submitted for this item alone will give us a total of 1341 submissions. The

same holds true for search query numbers 8 and 10, which is also a book entitled *Fundamentals of engineering economics* by Chan S. Park which gathered a total of 576 submissions. There are also search queries that appear related to each other like numbers 1, 14, 15 and 16 which are searches demonstrating interest in motion pictures. This trend provides a glimpse of how much the community is in need of these items, thus calls for sensible collection

development decisions.

### The Next Generation Catalog

All the above problems encountered in the process of log analysis only proved to show that the current OPAC, fell short of what is called the next generation catalog, which based on Marshall Breeding and Peter Murray possess the following characteristics (Yang & Hofmann, 2011):

1. Single point of entry for all library materials – allows retrieval of all library materials (including online databases and other electronic and digital resources)
2. State-of-the-art web interface – modern design resembling that of popular e-commerce sites like Google, Amazon and Netflix
3. Enriched content/User contribution – allows patrons to leave comments, add descriptions, summaries, reviews, criticism and to assign tags; also includes book cover images
4. Faceted navigation – offers easy navigation; displays results in sets of easily identifiable categories or limiters like subject, author, keyword, language, etc.
5. Simple keyword search box with a link to advanced search on every page – provides a simple Google-like search box while at the same time offering a link to advanced search on every page thus affording patrons to refine search at any point
6. Relevancy – makes available options to sort results by relevancy ranking, providing circulation statistics as one of the alternatives in sorting out search results
7. Did you mean ...? – offers spell-checking feature so that misspelled words could easily be identified through pop-up spelling suggestions
8. Recommendations/related materials – based on transaction logs, recommendations of items that may be of interest to the users are offered
9. RSS (really simple syndication) feeds – provides updates on new content to users who opt to subscribe which could be sent in the form of new acquisition lists or most frequently circulated/accessed items
10. Integration with social networking sites –

facilitates sharing of links to library items between users of social networking sites

11. Persistent links – provides a stable URL which could be copied and pasted as a permanent link to a particular record

Considering the above, the OPAC being studied showed to be deficient as far as the next generation is concerned as it was only able to fulfill numbers 1, 4 and 5 features fully and feature numbers 3 and 6, on a limited extent. Note, however, that based on the study conducted by Yang and Hofmann (2011), which looked into the “compliance” of OPACs of 260 libraries in the USA and Canada to the above features of what the next generation catalog should be, only 3% of the total number of OPACs were able to meet seven or more of the above cited features where majority of those that conformed were actually discovery tools. This, therefore, only confirms that today’s OPAC per se, still has a long way to go to achieve what could be considered as an “ideal” OPAC.

### Conclusion and Recommendations

The findings suggest that users are experiencing difficulties with the current OPAC interface mainly because they are accustomed to using Web search engines. As such, they expect the OPAC to be able to draw out relevant results even for queries that are inaccurate, erroneous or at the article-level search strings. Also, as users regard the OPAC as the portal to all the library’s resources and that of the Web, metasearch technology is the way to go. This should be easy to implement since the library is already subscribing to a discovery service (made accessible through the library homepage and usually being used by those outside of the library). Instead of providing classic OPAC terminals for the use of patrons who are inside the library, the discovery service may be made available to them. This is expected to minimize problematic searches as the discovery service incorporates the OPAC and subscribed databases into one single search, similar to that of the Google search box.

Alternatively, the Library is urged to provide clear instructions on how to properly conduct searches

using the different limiters as this is expected to help acquaint users on how to form and execute the correct query syntax, to ease use of the existing OPAC. The creation of cross references especially for popular and emerging terms would likewise be desirable to point users to the “correct” search terms. This is expected to help reduce search failures.

Finally, the Library should seriously consider exploring all the pages and screens of the OPAC through the conduct of trial searches to experience how the system actually works as only by putting one’s foot into the shoe of the users can the Library fully understand and grasp the reasons behind failed searches.

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