

Data visualization of book collection for the university of southeastern philippines

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Abstract

The Data Visualization of Book Collection is a web-based system intended for the University of Southeastern Philippines librarian and library staff, faculty, student, and other stakeholders. It is a tool to identify the strength and weaknesses of every subject in the program, serves as a monitoring system in selecting and acquiring library resources, and assists in conducting collection assessments. Furthermore, this study intends to develop a data visualization of book collection through a) development of a module to build a library collection per program and college; b) generate data visualization reports in terms of date of publication, the number of volumes, and titles, resources not used, and per program; and c) generate library collection reports classified by course. This study is anchored on Modified Rapid Application Development (RAD) as a methodology that includes the planning, design and development, and implementation and testing. The system generates reports in terms of date of publication, the number of titles and volumes, resources not used, and resources in specific programs in graphical format using backend and front-end development tools, cloud web hosting, server, and other tools. Moreover, the system also provides an additional function, such as exporting a list of library resources per program in word format. A functionality test was conducted on fifteen (15) selected respondents who participated by librarians, library staff, students, and faculty of the University of Southeastern Philippines. The assessment revealed that most end-users were extremely satisfied with the system's usefulness and reliability in terms of functionalities and capabilities.

Keywords: *Book Data Visualization, Collection Analysis.*

Introduction

This increasing amount of library data and information available in the library are often associated as library statistics or reports. The increasing data in the library leads to engaging in multifaceted data analysis, such as data visualization, to help improve and understand the trends in the library services and collection (Cox, B. L. & Janti, M., 2012). Data visualization communicates and presents data, information, and knowledge that helps librarians to perceive easily, understand, comprehend, and discover large data sets (Purchase et al., 2008; André et al., 2009; Beale, 2007 cited in the study of Mercun, T. & Zumer, M., n.d.). One of the significant issues in the library is also on reports related to collection assessment, where there is a need to develop, maintain and update a list of collections per program and course that shows the total number of titles and volumes present to a subject. The USEP Learning Resource Center (ULRC) consolidates and generates numerous data from the utilization, acquisition, and listing of collection in a particular program and course, which guides the library in delivering information resources to its users (USEP Library Manual, 2019). In conducting collection assessment in the library, the librarian needs to manually consolidate the list of resources per program by copying the bibliographic information from the Online Public Access Catalog (OPAC). The librarian will manually indicate and tally the number of titles and volumes and collection summary per program and subject in the format used by the library. In updating the list, the librarian needs to search the subject again

in the OPAC and perform counterchecking if the resources are added already or not. These problems lead the library to respond longer whenever someone or an accreditor asks for a list of library resources per program, including its graphical representation. This paves the way for the urgency to develop a solution that will streamline the current setup of the library and eventually guide the collection development, reduce the cost of overtime allotted for each staff and librarian in doing manual consolidation and updating the list of collections. And establish good management towards the attainment of the accreditation standard requirements and compliance.

Objectives of the Study

Generally, the main purpose of this study is to:

- Develop a module to build a library collection per college and program.
- Generate data visualization reports of library collection.
- Generate library collection reports classified by course.

Related Literature

Data visualization has become a hot topic over a few years. The University of North Carolina State University Libraries initiates data visualization projects that visualize the usage of reference services, course tools, computer workstations, and group study rooms. The Harvard Library Lab showcases the tools that view the collection size and enable them to group their collection by subjects (Phetteplace, E., 2012). Agee, J. (2005) emphasizes in his study that the use of curriculum guides in evaluating specific subject areas gives the librarian a way to compare the current holdings, determine the number of collections a particular subject has and allows the library to solicit inputs from the faculty. Furthermore, the attainment of the required number of copies of collection or title per program is assessed and seen during accreditation. There are several accrediting agencies and bodies responsible for the conduct of accreditation; one of them is the Accrediting Association of Chartered Colleges and Universities in the Philippines (AACCUP), one of the accreditors of state universities. The focus of the accreditation covers nine (9) areas, one of them is the library (Pila, R. A., et. al., 2016). The standards set by this accrediting agency are also based on the standards set by the Commission on Higher Education (CHED), which aim to guide academic libraries in advancing and sustaining their role as partners of the community (Commission on Higher Education, 2017). Accreditation in academic libraries is essential because it determines if it meets or exceeds the minimum requirement and opens an opportunity for improvement. Furthermore, librarians must understand their role in the information arena, specifically in analyzing and communicating data in an advanced way that can save and reduce the amount of time the energy required and increase the staff capacity in interpreting and analyzing statistical reports (Meyer, A., 2018).

Methodology

The method applied in this study is a modified Rapid Application Development Model that reduces the planning time and measures actual progress that results in faster development (Lucid Content Team, 2021).

The system contains the following: 1) The bibliographic information which plays the main component of the system; 2) The course number, course description, course code from the prospectus, which will be the basis in grouping the library resources per program. The development phase includes implementing the agreed tools and interface. A Functionality Test was also implemented as part of verifying the performance of the system.

Result, discussion/conclusion, and recommendations

Develop a module to build a library collection per college and program

The first step in grouping the library resources per college and program is the creation of the homepage. The homepage in this system serves as the default page when a user accesses the system. An administrator and a user account are created, described, discussed, and explained in Table 1.

ADMIN MODULE	
Content of the System	Description
Admin Content 1	It provides a module that will allow the admin to add, edit, and delete.
Admin Content 2	It contains MARC 21 format for Bibliographic Data for library resources.
Admin Content 3	It contains the name of all colleges, including its respective programs and majors' subjects.
Admin Content 4	The system shall generate statistics or reports.
USER MODULE	
Content of the System	Description
User Content 1	It provides an interface for the user that will allow them to search library resources.

Table 1 Modules of the System

There were eight (8) colleges and one (1) general subjects encoded in the system in this study. One (1) college was selected as a sample. The added departments and college and common MARC Tags are used to add or encode library resources, which is the most important as they will form part of the generation of reports. All the input made by the Librarian will reflect on the homepage of the system.

Generate data visualization reports of library collection

The system has a report generation capability that allows the admin user to generate graphical reports. Generating reports by date of publication is based on the year indicated in the call number of each library resources. The counting of volumes and titles of each resources is based on the number of library resources encoded. Every encoded library resources is equivalent to one title. In terms of volumes, the librarian will input it into the system. Each library resources that any user does not browse is counted as resources not used.

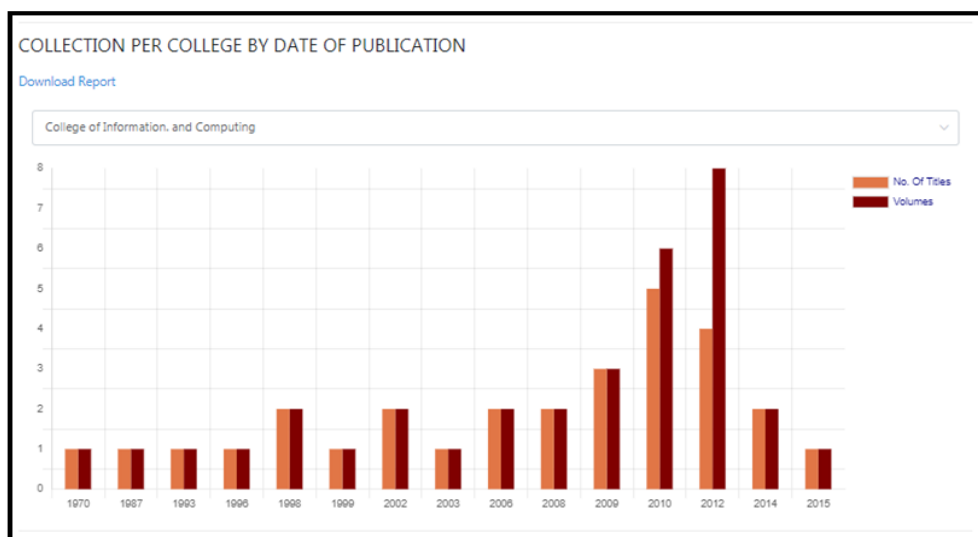


Figure 1. Sample visualization report

Generate library collection reports classified by course

The system also allows generating a list of library resources by program and course. The report generated by the system is based on the collection present in a particular program and course. The report includes call number, book titles, author, accession number, copyright, number of titles, and volumes.

Functionality Testing

There were fifteen (15) randomly selected participants composed of seven (7) librarians or library staff who access the system using the user and administrator account, two (2) faculty, and six (6) students tasked to critique and rate the system based on their observations during the hands-on testing. The questionnaire disseminated to the respondents intends to document the hands-on testing. It is divided into System for Library Collection, System for Report Generation, and System Usability. The respondents will rate the questionnaire using a scale.

Conclusions

Based on the objectives, the following conclusions are given:

- The system provides an admin module that allows grouping of library resources by college and program, and a user interface that enables search engines in terms of author, title, keyword, and subject code;
- The system generates reports in terms of years, volumes and titles, library resources not used, and library resources for specific programs.

Recommendations

The recommendation presented here is based on the observations, comments, and suggestions during the functionality testing of the system. The following recommendations are:

- The system shall allow integration of its functionalities into the existing USEP Library Management System (LMS) or any LMS that the library will use and shall allow remote access;
- The system shall provide an admin account intended for the faculty members that allows them to integrate their syllabus and be able to validate the library resources used as references;
- The system shall allow comparison of library resources against the standard set by the accrediting agencies to quickly determine the required percentage of the collection in terms of recency;
- The system shall allow the grouping of library resources by subject headings to determine the number of titles and volumes.

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