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Article

Development of Book Analysis System: A Tool for Collection Assessment

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Abstract: The study outlines the design, development and system evaluation of a rule-based Book Analysis System to support collection assessment in an educational library. The was designed in response to the problems commonly encountered in manual assessment of library holdings, particularly in monitoring CHED and LEB standards concerning the adequacy, relevance and currency of library materials. Using a Modified Rapid Application Development (RAD) method, a web-based system was created with features such as outdated books identification, subject gap analysis, duplication detection feature and automated numerical report generation to assist the librarians in collection assessment and decision making process.

The system was pilot-tested across selected academic programs and evaluated through purposive sampling involving expert user. System performance was tested using a controlled validation dataset and assessed through the use of accuracy, precision, recall and F1 score. Study finding revealed full agreement between the system-generated results and expert validation within the pilot dataset, particularly in the identification of library material relevance and recency. Acceptability evaluation was also tested, it showed positive responses in terms of perceived usefulness, ease of use and overall user satisfaction.

Findings from the study show that the system has potential to assist academic libraries in conducting collection assessment more efficiently. Though the study is limited to a single institutional context and a bounded pilot dataset, it offers an initial framework that may be used to strengthen library compliance monitoring, improve efficiency in collection assessment, and can support evidence-based collection management practices in higher education libraries.

Keywords: Academic libraries, Library collection assessment, Library automation, Data analytics, Information system, CHED/LEB requirements

1. Introduction

Academic libraries serve an important role in higher education by supporting instruction, research and learning through the provision of relevant and up-to-date library materials. To maintain the quality of these resources, academic libraries regularly update and conduct collection assessment to determine the whether existing collection continue to meet curricular and institutional needs. Collection assessment also assists librarians in making informed decision regarding section, acquisition, retention and weeding of library materials. However, the growing volumes of publications, changing academic requirements and limitation in manpower and time have made collection assessment increasingly difficult to manage though manual operation and traditional approach.

In the Philippines, collection assessment practices in higher education libraries are based on standards issued by the Commission on Higher Education (CHED). In this CHED Memorandum Order No.22, Series of 2021, emphasized the need for adequate, relevant, and updated library resources that supports academic programs and the objectives of an institution. In the case of law libraries, the Legal Education Board (LEB) also imposes academic requirements that involves the availability of updated legal references, codals, textbooks, and other materials needed for legal instruction and accreditation.

Libraries are expected to provide at least five relevant book titles per subject area, published within the last five years, in both print and purchased electronic format, depending of institutional provisions. While exceptions may apply for field where new editions are not regularly produces, compliance with these standards remains essentials for program accreditation and quality assurance. Despite existing guidelines, many academic institutions continue to face

difficulties in consistently monitoring and evaluating their library collections, largely due to the absence of dedicated automated assessment tools.

In law programs, the requirements are particularly strict under the Legal Education Board. Law libraries are expected to maintain extensive and regularly updated resources, including general references, primary legal materials such as statutes and regulations, and secondary sources like codals and law compilations published within the last five years. They are also required to provide access to Supreme Court decisions from 1901 up to the present, updated textbook's, bar review materials, and subscriptions to at least two local law journals. These resources are essential in supporting legal instruction and in adequately preparing students for the bar examinations.

Though these standards are clearly defined by regulatory bodies, many academic libraries still rely on manual approaches in conducting collection assessment. Common practices includes the use of printed inventories, spreadsheet, and individual catalog verification. While functional, these methods become increasingly inefficient when dealing with large volumes of materials, often requiring substantial time and effort. As a result, issues such as delayed identification of outdated titles, duplicate records, and gaps in subject coverage may arise, affecting the overall effectiveness of collection evaluation.

Over time, libraries have adopted various automated systems, particularly for cataloging, circulation, and inventory management. However, despite these advancement, there is still limited development of systems specifically designed for automated collection assessment within Philippine academic libraries. Most existing platforms focus on general library operations and provide minimal support for compliance-based evaluation aligned with the CHED and LEB standards.

In the case of the participating academic institution, library operations remain largely manual, relying on spreadsheets, printed catalogs and physical inventory cards. This setup make it difficult to efficiently track acquisition, detect outdated resources. And produce accurate reports needed for compliance purposes. Given that the institutions offers law and business programs, maintaining an updated and curriculum-aligned collection is essential. Yet without an automated solution, the process of evaluating the collections remains time-consuming and susceptible to inconsistencies.

To address this gap, the study develop and pilot-tested a rule-based Book Analysis system for collection assessment.

2. Review of Literature

The increasingly integration of automation and digital technologies in academic libraries has significantly transformed the management and access of library collections. Over time, library operation have gradually shifted from traditional manual procedures to more data-driven and technology-supported system that enhance efficiency, accessibility, and accuracy in information management. Collection assessment remains vital aspect of academic librarianship, as it ensures that library holdings continuously align with institutional curricula, research needs, and accreditation requirements (Gorman & Clayton; IFLA, 2023). Despite these advancements, many academic libraries – particularly in developing countries- still rely on manual methods of collection assessment, highlighting the ongoing need for automated solutions (Lagas & Isip, 2023).

In the Philippine context, Orbeta, Paqueo, and Francisco-Abrigo (2020) noted that many educational institutions continue to face challenges in meeting quality education standards. Their study emphasized that adequate learning resources, especially well-developed library collections, play a crucial role in supporting student learning and improving academic performance. They further pointed out the need for institutions to strengthen existing systems and practices to enhance overall educational quality and development.

Similarly, Puerta-Guardo et.al (2026) explained that institutional accreditation in higher education is strongly dependent on effective quality assurance mechanisms across various academic services, including libraries. Their findings underscored the important of systematic evaluation and monitoring tool in sustaining accreditation standards, thereby reinforcing the need for reliable systems that assist libraries in tracking and assessing library collections in line with educational standards.

In terms of system development, appropriate methodologies are essential in designing effective library automation tools. H. Dogiparthi (2019) describe Rapid Application Development (RAD) as a software development approach that prioritize rapid prototyping, iterative development, and continuous user feedback. These methods is

widely applied in information system development due to its ability to reduce development time while improving system flexibility and user responsiveness.

In relation to emerging technologies, V.K. Sandhya Rani Aakundi et.al (2024) emphasized that modern librarianship is increasingly influenced by artificial intelligence and data science. Their study highlighted how these technologies are reshaping library operations and expanding the role of librarians in managing technology-driven information environments.

One of the major concerns in academic library management is maintaining compliance standards established by regulatory agencies such as the Commission on Higher Education (CHED) and the Legal Education Boad (LEB). These agencies require academic libraries to maintain collections that are adequate, relevant, and updated in support of academic programs and accreditations requirements (CHED, 2021). Previous studies have emphasized that compliance with these standards contributes significantly to institutional quality assurance and academic performance (Marigondon, 2025; Puerta-Guardo et.al, 2026). However, collection assessment processes that rely heavily on spreadsheets, printed inventories, and manual checking are often time-consuming and susceptible to inconsistencies and human error (Corpuz, 2020)

Several studies have identified automation as an effective approach to improving library operations and collection assessment processes. Automated library system can reduce repetitive manual work, lessen encoding errors, and improve processing and retrieval or collection data in real time (Bagewadi et.al., 2025; Rajwanti, 2025). Research also shows that integrated library systemhelp improve workflow and service delivery in academic institutions (Omeluzor & Oyovwe-Tinouye, 2016). In addition, automation helps libraries use data and analytics in decision making related to collection assessment (Mojjada & Aakundi, 2025; Sukula et.al, 2023). However, many available system are designed for well-funded institutions and may not fully fit the needs of libraries in developing countries, showing the importance of developing localized systems (Torres &Dery, 2024).

Recent studies also explored the use of analytics and automated tools in library collection assessment. Suttoh et.al. (2024), discussed how text mining and data analysis can support collection assessment by analyzing course catalog and curriculum requirements. Ponera and Kyumana (2024) also highlighted the growing use of big data analytic tools in academic libraries to support evidence-based management practices.

The issue of outdated and inadequate resources remains a concern in many academic libraries. Corpuz (2020) emphasized that libraries must continuously update their collections to remain functional and responsive to the needs of users in the digital age. Marigondon (2025) also explained that compliance with library standards remains an important factor in institutional accreditation among higher education institutions.

Others studies also highlighted the importance of evidence-based practices and analytics in improving library management. Echeverria and Bustamante (2023) discussed the use of library metrics in assessing ebooks usage, while Bogus et.al (2023) explored models for determining optioma copies of monographd in shared print collections. These studies show that modern librarian increasingly rely on data and analytics to support decision making.

The reviewed literature and studies show that collection assessment, automation, and data-driven decision making are essentials components of modern academic library assessment and management. Existing studies emphasize the importance of maintaining updated and relevant collection, complying with accreditation standards, and improving operational efficiency though automated system. While several studies discusses library automation and analytics, limited research focuses specifically on automated collection assessment systems tailored to Philippine academies libraries and legal education requirements.

Based on these gaps, the development of a Book Analysis System that fits institutional and compliance needs can contribute to improving library collection assessment. The proposed study seeks to address these challenges by providing librarians with a more efficient and evidence-based approach to evaluating and managing library collections.

3. Objectives of the Study

The study aimed to design, develop, and evaluate a rule-based Book Analysis System for collection assessment. Specifically, it sought to:

1. Design a collection assessment module capable of identifying outdated resources.
2. Develop a gap analysis feature that determines inadequacies in subject coverage based on CHED and LEB standards.
3. To integrate a duplication detection feature to assist in collection acquisition.

4. To generate automated numerical reports that provide data-driven support for acquisition and weeding decisions.
5. To evaluate the performance and usability of the system in terms of its usefulness, ease of use, accuracy of collection assessment and reporting, and overall user satisfaction.

4. Scope and Limitation of the Study

The study covers the design and pilot implementation of a rule-based Book Analysis System intended to support automated collection assessment in a participating academic institution. For confidentiality purposes, the name of the institution is not disclosed. The system was implemented and tested using collections from two academic programs, namely the Juris Doctor (JD) and Bachelor of Business Administration (BSBA), major in Financial Management. The assessment of the library materials was based on standards and requirements issued by the Commission on Higher Education (CHED) and the Legal Education Board (LEB).

The developed web-based system includes only four primary functions: identification of outdated library resources, subject coverage gap analysis, duplication detection, and automated numerical report generation to assist collection assessment, acquisition and weeding decisions.

The study is limited to the assessment of printed and electronic academic books only, other library materials such as journals, theses, dissertations, multimedia resources were not included in the scope of the system. It does not also evaluate the intellectual instructional value, or circulation frequency of library materials.

The application is primarily optimized for desktop and laptop use. Although it can still be accessible through mobile device, some functions and display features may not work properly due to limited mobile responsiveness. Furthermore, external users such as students. Publishers, and suppliers are not allowed to modify or manage bibliographic records in order to maintain data accuracy, consistency, and security.

Since the system was conducted within a single institution using a limited pilot dataset, the findings may not be fully generalizable to their academic library settings. Despite these limitations, the Book Analysis System is expected to serve as a practical and standards-based tool for supporting collection assessment, improving decision-making, and helping ensure that the library collections remains updated, adequate, and compliant with institutional and regulatory requirements.

5. Theoretical/Conceptual Framework

The study is anchored on Technology Acceptance Model (TAM) and Collection Development Theory, which together guide the design and evaluation of the Book Analysis System

The Technology Acceptance Model (TAM), introduced by Davis (1989), explains that people accept or reject a system based on how useful and easy they think it is to use. In library setting, this model is often used to understand whether librarians will actually use a system in their work. In this study, TAM was used as a guide to make sure the system is simple, useful, and practical for collection assessment task.

Collection Development Theory focuses on how libraries select, evaluate, and maintain their resources. It highlights the importance of keeping library collections updated, relevant, and aligned with academic needs and accreditation standards. As emphasized by the International Federation of Library Association and Institutions (IFLA), a good collection should always support teaching, learning, and research by providing current and relevant materials.

The study also follows an Input-Process-Output (IPO) model. The inputs include the library books records, program curricula, and standards from Commission on Higher Education (CHED) and the Legal Education Board (LEB). The process involves system development using Modified Rapid Application Development (RAD) approach, which includes designing, building, and testing the system with expert users. The output is a Book Analysis System that can help assess collections, identify gaps, detect duplicates, and generate reports. This support better decision making in collection assessment and helps libraries follow required standards

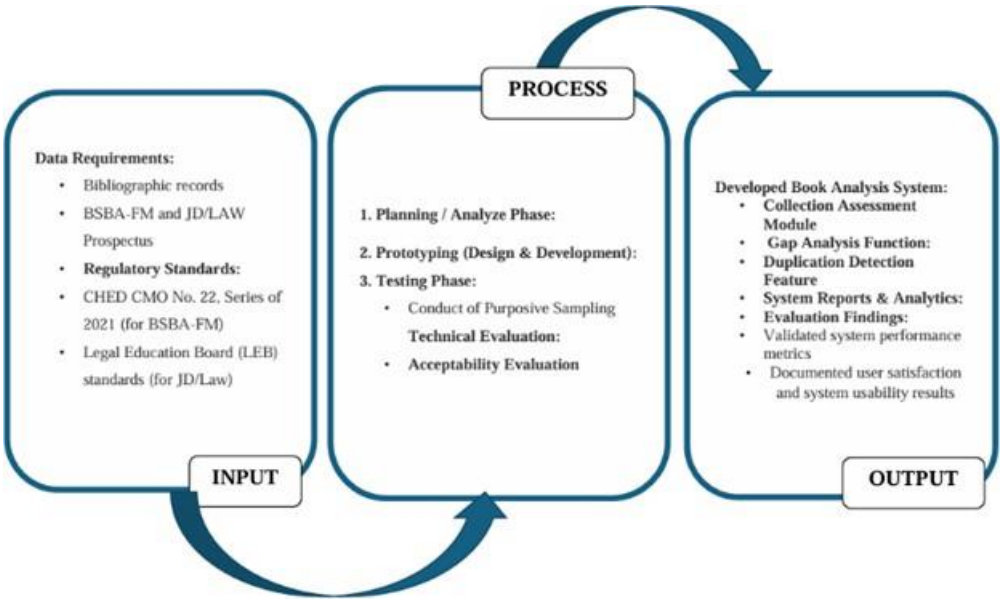


Figure 1. IPO diagram

6. Methodology

The study employed a Modified Rapid Application Development (RAD) approach in the design, development and evaluation of the proposed library system. The modified RAD model was chosen as it allows continues improvement of the system through user feedback and repeated refinement during the development. This approach was suitable for the study since the proposed system required regular consultation with librarians and faculty members to ensure that the features and functions met the actual needs of the institutions.

The methodology consisted of three major phases: Planning and Analysis Phase, Design and Development Phase, and Testing Phase.

- During the planning and analysis phase, the researcher identified the system requirements, operational goals, workflow processes, and limitation related to collection assessment practices. Existing procedures in assessing library collections were examined to determine the common problems encountered by librarians, particularly in identifying outdated library materials, duplicated books, and subject gaps. The research also conducted consultations with faculty members, and administrators to gather information about the current collection assessment process and the needed improvements.

Bibliographic data requirements were examined and aligned with the standards prescribe under CHED CMO No. 22, Series of 2021, as well as the requirements of Legal Education Board (LEB).

In this phase, the researcher also worked closely with the system developer in conceptualizing the overall structure and flow of the Book Analysis System. The major components of the system were identified, including the Collection Assessment Module, Data Entry, and Analytics and Reporting module. The Collection Assessment module was designed to allow the librarians and administrators to manage book records, validate encoded data, and oversee the system operations. The Data Entry module enabled the librarians and faculty members to input bibliographic records and recommend books while preventing duplicated entries through automatic duplication checking. The Analytics and Reporting module focused on generating numerical reports related to outdated resources, duplicate materials, and subject compliance based on CHED and LEB requirements.

- In the Design and Development phase, the overall system functionalities were created and refined though iterative prototyping. Revisions were continuously applied based on feedback gathered during the development process to improve functionality and usability. The system was developed using PHP for backend processing and HTML for the user interface, while XAMPP and phpMyAdmin were utilized for database management and local server operations. Sublime text was used as the code editor during the system development. A prototype of the system was first created and then repeatedly modified based on comments and suggestions from the librarians and selected faculty members. This process helped identify design flaws, improve system navigation,

and refine the output reports generated by the system. Not all features from early prototypes were retained in the final version since some functions were revised or removed to improve the overall performance and usability of the system.

- Lastly, the testing phase focused on checking the functionality and accuracy of the developed system. A controlled set of test book was used to evaluate the system performance, and the generated results were compared with expert validations and evaluations. The testing process included unit testing and integration testing. Unit testing was conducted to examine whether individual modules such as data input, duplicate detection, outdated resources identification, and report generation were functioning properly and correctly. Integration system was also performed to ensure that all system components worked together properly and produced consistent and accurate result.

The system performance was measured using accuracy, precision, recall and F1-score. These metrics were used to determine the effectiveness of the system in identifying relevant, irrelevant, updated, and outdated library materials. Accuracy measured the overall correctness of the classifications generated by the system. Precision measured the percentage of correctly identified records among all records flagged by the system. Recall determined the ability of the system to identify all relevant records. F-1 score provided a balanced measurement between precision, and recall, especially useful when dealing with uneven classifications.

For the acceptability evaluation, the used a survey instrument adapted from Christie and Devi (2025). The instrument measured perceived usefulness, ease of use, and user satisfaction using a 5-point likert scale. The respondents included librarians and faculty members involved in collection assessments and library operations. Reliability testing produced a Cronbach's Alpha value of 0.939, which indicated excellent internal consistency and showed that the instruments was suitable for evaluating user acceptance of the system. The results of the evaluation helped determine whether the Book Analysis System was acceptable, functional, and beneficial for improving collection assessment practices in academic libraries.

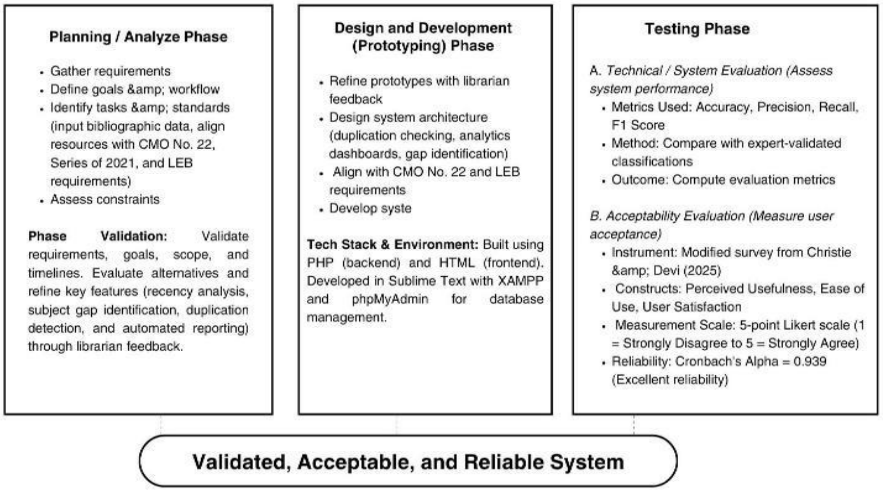


Figure 2. Methodology Overview

7. RESULT & DISCUSSION

The section presents the analysis, interpretation, and discussion of the data gathered in the study based on the major functions and objectives of the Book Analysis System. It discusses the system's ability to identify outdated library materials, conduct subject analysis, detect duplicate entries, generate automated numerical reports, and evaluate system usability and performance.

1.1 Design A Collection Assessment Module Capable Of Identifying Outdated Resources.

The developed system successfully implemented a rule-based collection assessment module capable of identifying outdated library materials, thereby making collection assessment more efficient and aligned with Commission on Higher Education (CHED), and Legal Education Board (LEB) standards. The classification process was based on the formula *Current Year – Publication Year*, applying a five-year threshold consistent with the standards

of CHED and Legal Education Board. SQL-based filtering and automated conditions enabled efficient and accurate classification of materials stored in the database.

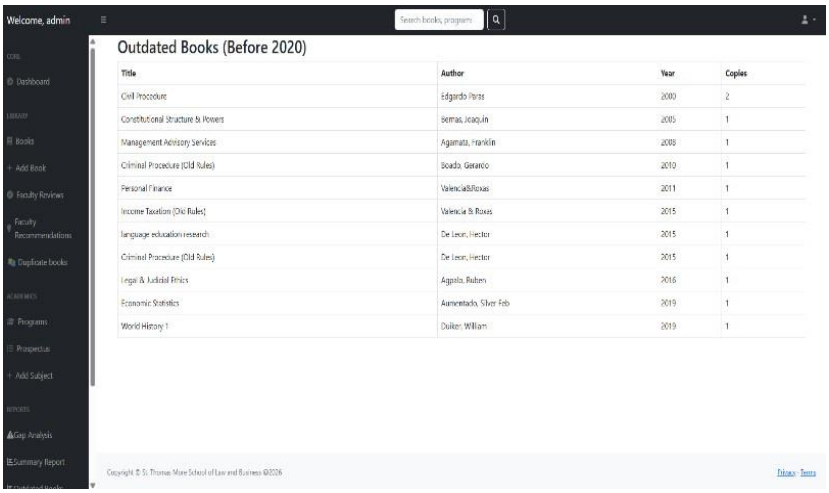


Figure 3. Outdated Resources Report

After logging into the system, users are directed to the dashboard where collection assessment results are displayed. One of the generated output is the Outdated Book Report, which lists books no longer satisfy the required recency standard. The process begins with the encoding of bibliographic information, once stored in the database, the system retrieves the publication year and computes the age of each collection based on the current year. Using predefined rule-based conditions, the system automatically determines whether a material is updated or outdated, this allows the librarians to identify resources that may require replacement, updating or removal from the collection

Through this feature, librarians can easily review which books no longer updated and determine whether these materials should be replaced, removed, or recommended for new acquisition. This reduces the time and effort needed in manually checking publication dates and evaluating the condition of the library collections.

The generated reports also helps librarians organize and monitor library resources more efficiently since the system presents the information in a clear and structured manner. By automating the identification process, the possibility of human error is minimized, resulting in more accurate collection assessment. The findings therefore show that the system is capable of supporting librarians in maintaining updated and relevant library collections.

1.2 Develop A Gap Analysis Feature That Determines Inadequacies In Subject Coverage Based On CHED And LEB Standards.

A keyword-matching and rule-based classification process was used to assign books to appropriate subject categories aligned with CHED and LEB academic standards. Compliance was evaluated using two criteria: the availability of at least five titles per subject area and adherence to the five-year recency requirement.

This automatically categorizes books according to predefined subject keywords, validates encoded information, and generate compliance reports identifying subject deficiencies.

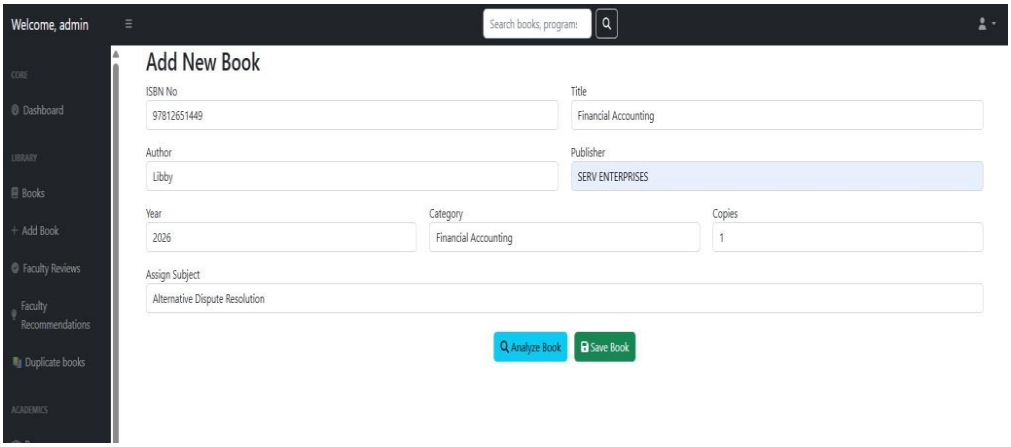


Figure 4. Book Entry Interface

The figure show the system's automatic matching features. When a user enters a book title such as *"Financial Accounting",* the system analyzes the input and matches it to the appropriate academic subject, in this case *Fundamentals of Accounting 1*. This help ensure that book records are correctly classified, which is important for gap analysis and compliance reporting.

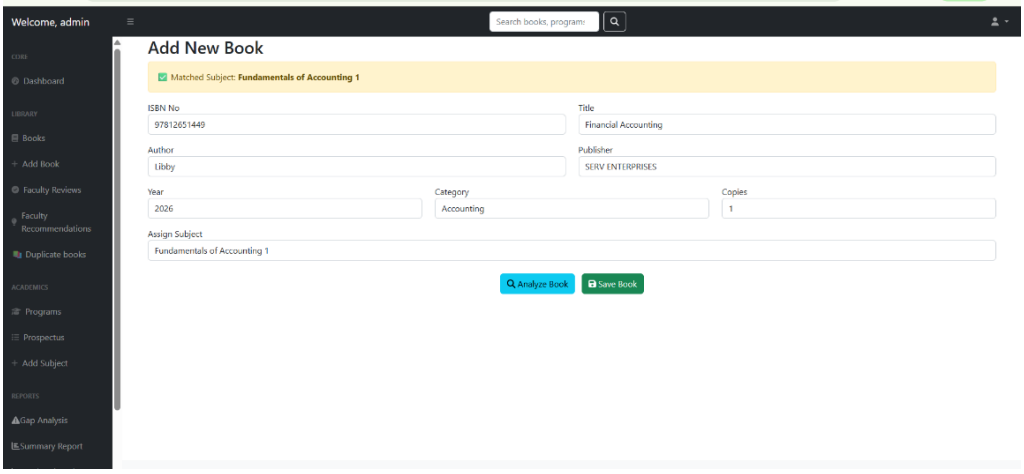


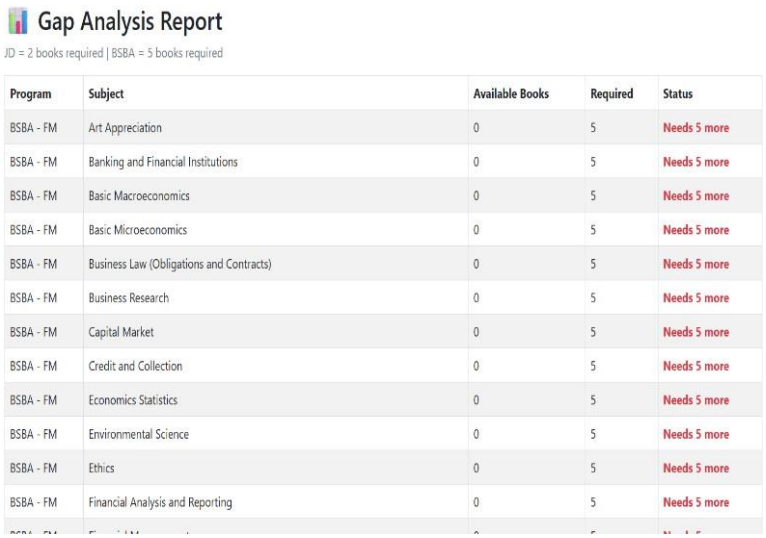
Figure 5. Subject Matching

The gap analysis function works through an automated matching process to check subject coverage and compliance with required standards. The process starts when the librarian enters the book details into the system. The system then refers to a built-in database of subjects based on Commission on Higher Education (CHED) and Legal Education Board (LED0 standards, where each subject is linked with related keywords.

After this, the system scans the entered book information and compares it with the subject database. It then identifies the closest match using keyword comparison and predefined rules.

If a subject is manually selected, the system check whether it matched its own classification. If there are differences, the system corrects or updates the subject to ensure accuracy. Once confirmed, the book is assigned to the correct subject area in the database. The system then counts how many valid titles are available under each subject to check if the minimum requirement of five titles is met. It also checks the publication year to ensure that only book published within the last five years are included in the count.

After this, the system performs the final gap analysis by determining whether each subject is complete or lacking required materials. Finally, it displays the results, showing whether a subject is *Compliant* or indicating how many additional titles are needed (for example, "Needs 5 more titles").



Gap Analysis Report

JD = 2 books required | BSBA = 5 books required

Program	Subject	Available Books	Required	Status
BSBA - FM	Art Appreciation	0	5	Needs 5 more
BSBA - FM	Banking and Financial Institutions	0	5	Needs 5 more
BSBA - FM	Basic Macroeconomics	0	5	Needs 5 more
BSBA - FM	Basic Microeconomics	0	5	Needs 5 more
BSBA - FM	Business Law (Obligations and Contracts)	0	5	Needs 5 more
BSBA - FM	Business Research	0	5	Needs 5 more
BSBA - FM	Capital Market	0	5	Needs 5 more
BSBA - FM	Credit and Collection	0	5	Needs 5 more
BSBA - FM	Economics Statistics	0	5	Needs 5 more
BSBA - FM	Environmental Science	0	5	Needs 5 more
BSBA - FM	Ethics	0	5	Needs 5 more
BSBA - FM	Financial Analysis and Reporting	0	5	Needs 5 more

Figure 6. Gap Analysis Report

The process begins with the entry of book information into the database, and the system then references a predefined subject list with associated keywords and scans the encoded records for possible matches. Once classification is completed, the system counts the number of titles under each subject category and checks whether minimum requirements has been met.

1.3 To Integrate A Duplication Detection Feature To Assist In Collection Acquisition.

To help minimize duplicate records and unnecessary acquisition, the system included a duplication detection feature using title and ISBN matching. When a book with the same title or ISBM already exists in the database, the system automatically detects the duplicate entry and prevents the record from being added again.

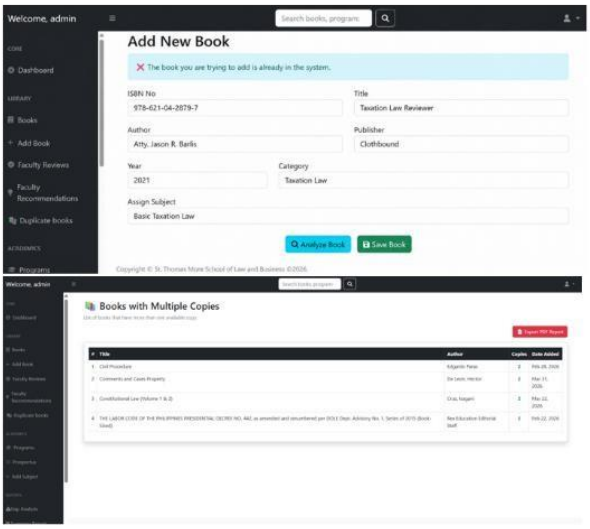


Figure 7. Duplicate Entry Prevention/ Multiple Copies Report

The figure shows the duplication detection feature process and the generation of the multiple copies report. The report helps the librarian review books with multiple copies and support acquisition decisions.

The system also provides librarians and administrators with a complete overview of the existing book collection before acquiring additional materials. To maintain accurate inventory records, the system includes an “Edit Book” function that enables librarians to update the quantity of copies or modify bibliographic details of an existing title

instead of creating another record. It also illustrates how inventory adjusted can be made manually, helping maintain a clean and organized database while reducing duplicate entries.

Another feature that supports duplication prevention is the Faculty Book Recommendations, through this module, faculty members may submit suggested titles for acquisition together with relevant details such as subject are, title, author, and validation status. Recommendations may be tagged as Pending, Validated, or Invalidated depending on the evaluation conducted by faculty reviewers. Before approving a request, librarians can verify whether the recommended title already exists in the collection. This process helps prevents unnecessary purchases and ensures that acquisitions remain aligned with academic and institutional needs.

Overall, these features strengthen inventory control and support efficient collection management and assessment. By minimizing duplicate records and integrating faculty recommendations into acquisition workflow, the system improves the accuracy of library records and contributes to the development of a more balanced and updated collection.

1.4 To Generate Automated Numerical Reports That Provide Data-Driven Support For Acquisition And Weeding Decisions.

The system generates automated numerical reports using SQL aggregation functions such as *COUNT* and *GROUP BY*, combined with dashboard-based analytics. Generated outputs include collection summaries, subject compliance reports, and duplicate holdings reports.

The system provides librarians with real-time access to collection data through visual dashboards, charts, and downloadable reports. These reports support collection development activities such as acquisition planning, weeding, budgeting and accreditation preparation. It also promotes evidence-based decision-making and improves the efficiency of collection assessment processes.

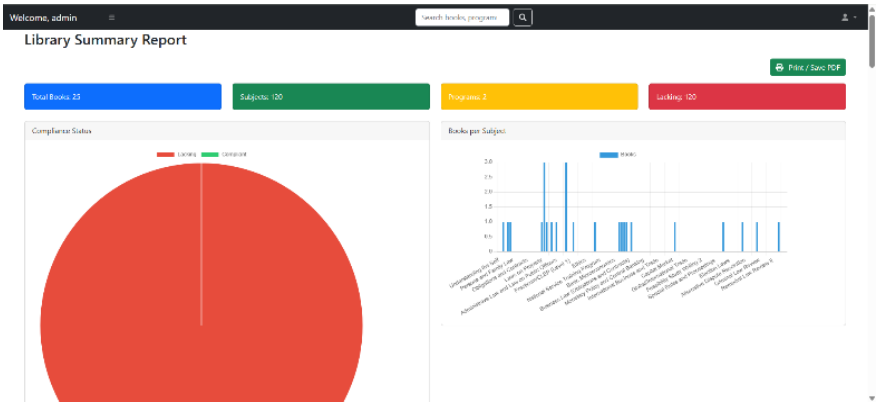


Figure 8. Library Summary Report

The figures presents the Library Summary Report, an overview of the library collection and related assessment metrics. Included within the report are the subject coverage, and compliance report, the subject distribution graph, and the multiple copies report. These outputs display the number of titles available per subject area, indicate compliance with minimum collection requirements, and identify duplicate holdings within the collection.

The availability of automated reports enables librarians to efficiently monitor collection status, and maintain updated and balanced collections that comply with institutional and regulatory requirements.

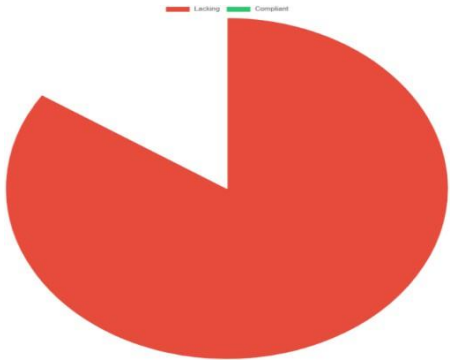


Figure 9. Compliance Status Chart

The chart provides a visual presentation of the overall compliance status of the library collection based on subject requirements set by Commission on Higher Education (CHED) and Legal Education Board (LED0 standards. Subjects are grouped into two categories, "Compliant." Shown in green, and "Lacking," shown in red. Though this feature, librarians and administrators cam immediately determine which subject areas already meet the required number of book titles and which subjects still need additional resources.

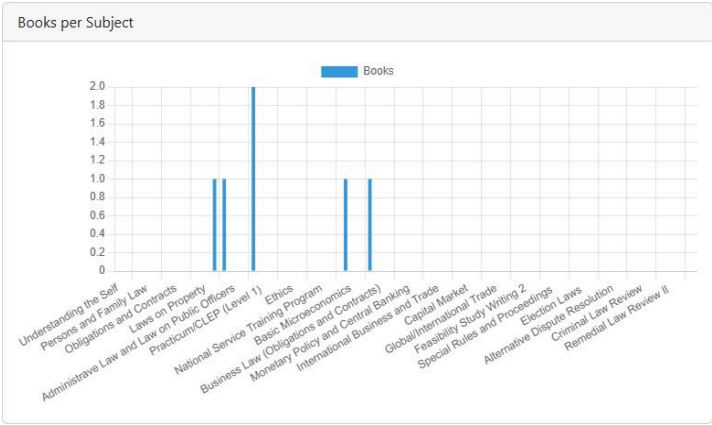


Figure 10. Subject Distribution Graph

The graph highlights subjects with sufficient resources as well as subject with limited or no available materials. For example, some subjects such as "Practicum/CLEP (Level 1)" contain a larger number of books, while other subjects still have very few or zero entries. Though this presentation, the book analysis system allows user to easily identify gaps in the collection, and prepare reports for accreditation and compliance purposes since the graph clearly presents evidence of collection distribution.

1.5 To Evaluate The Performance And Usability Of The System In Terms Of Its Usefulness, Ease Of Use, Accuracy Of Collection Assessment And Reporting, And Overall User Satisfaction.

The developed system was further evaluated in terms of usability, usefulness, user satisfaction and accuracy of collection assessment and reporting.

Perceived Ease of Use

Results showed that the rule-based Book Analysis System obtained an overall mean score of 4.32, interpreted as *Very High* while computed standard deviation of 0.72 reflected relatively consistent responses among participants. Participants generally found the system easy to learn, understandable, and convenient to navigate. Responses also indicated that users experience minimal difficulty in operating system functions.

Among the indicator, the highest mean score was 4.5833 for the statement "*Overall, the Book Analysis System is easy to use",* followed by 4.5000 for "*The Book Analysis System is clear and easy to understand".* Meanwhile, the

lowest mean score was 3.7500 for "*I do not require much effort to use the Book Analysis System*", although it was still interpreted as High. T

The results suggest that users experienced little difficulty while using the system. Most respondents agreed that the system was easy to learn, understandable, and accessible whenever assistant was needed. Overall, the findings indicate that the system was designed in a way that supports easy navigation and user-friendly interaction.

The findings support the Technology Acceptance Model (TAM), which explains that users are more likely to accept and use a system when it is easy to operate.

1.5.1 Perceived Ease of Use of the Book Analysis System.

Table 1.

Item	Standard Deviation (SD)	Mean	Interpretation
Q1 I do not require much effort to use the Book Analysis System.	1.13818	3.7500	High
Q2 I am able to quickly learn how to use the Book Analysis System.	0.49237	4.3333	Very High
Q3 The Book Analysis System is clear and easy to understand.	0.67420	4.5000	Very High
Q4 I find it easy to obtain assistance when using the Book Analysis System	0.79296	4.4167	Very High
Q5 Overall, the Book Analysis System is easy to use.	0.51493	4.5833	Very High
Overall	0.56862	4.32	Very High

Perceived Usefulness

Responses reported that the system improved the efficiency of collection assessment practices and simplified the process of evaluating library materials with an overall mean score of 4.55, corresponding to a *Very High* interpretation, while computed standard deviation of 0.57.

The highest mean score of 4.6667 was obtained by the statement *"The Book Analysis System makes the book analysis process easier*". Other indicators also received very high ratings, including saving time, improving efficiency, and helping user complete analysis task more effectively.

The findings show that the system helps improve the efficiency of collection assessment activities. Respondents agreed that the system reduces the time needed to perform book analysis, and simplifies tasks that are usually done manually. The consistently high ratings also suggest that the system cam support librarians and faculty member in making quicker and more informed decisions related to collection assessment.

1.5.2 Perceived Usefulness of the Book Analysis System.

Table 2.

Item	Standard Deviation (SD)	Mean	Interpretation
Q1 The Book Analysis System saves time and helps complete book analysis tasks quickly.	0.67420	4.5000	Very High

Q2 The Book Analysis System increases the efficiency of library collection assessment	0.51493	4.5833	Very High
Q3 The Book Analysis System makes the book analysis process easier	0.49237	4.6667	Very High
Q4 The Book Analysis System gives me control over completing the analysis process.	0.51493	4.4167	Very High
Q5 Overall, the Book Analysis System is very useful.	0.66856	4.5833	Very High
Overall	0.46807	4.55	Very High

User Satisfaction

Findings further revealed a high level of user satisfaction with the developed system, obtaining an overall mean score of 4.32 interpreted as *Very High.* Participants expressed positive feedback regarding the system's functionality, usability and relevance to collection assessment needs.

The highest mean score of 4.5000 was obtained by the statement *"I feel pleased when using the Book Analysis System".* On the other hand, the statement *"The experience of using the Book Analysis System is enjoyable*" obtained the lowest mean score of 4.0833, although it was still interpreted as High.

The result show that respondent had a positive experience while using the system. Most users agreed that the system met their expectation and provided features that were useful for their needs. Overall, the findings suggest that the system provides a satisfactory user experience and effectively support collection assessment practices.

1.5.3 User Satisfaction with the Book Analysis System.

Table 3.

Item	Standard Deviation (SD)	Mean	Interpretation
Q1 I feel pleased when using the Book Analysis System.	0.52223	4.5000	Very High
Q2 The experience of using the Book Analysis System is enjoyable.	0.99620	4.0833	High
Q3 Overall, I am satisfied with the Book Analysis System.	0.65134	4.3333	Very High
Q4 The Book Analysis System meets or exceeds my expectations.	0.75378	4.2500	Very High
Q5 The features of the Book Analysis System meet my needs.	0.66856	4.4167	Very High

Accuracy of Collection Assessment and Reporting

Table 4 and 5 present the performance results of a rule-based Book Analysis System in terms of subject relevance classification and outdated resource detection. Based on the evaluation using dataset, the system achieved perfect classification results. All items were correctly identified, resulting in 12 true positives and 13 true negatives, with no recorded false positive or false negatives.

The findings suggest that the Book Analysis system provides reliable and accurate results in evaluating library collections. The system can help librarians make evidence-based decisions regarding collection assessment, weeding, and compliance monitoring.

1.5.4 Confusion Matrix – Subject Relevance

Table 4.

	Predicted Relevant	Predicted Irrelevant
Actual Relevant	TP = 12	FN = 0
Actual Irrelevant	FP = 0	TN = 13
Total		25 Books

1.5.5 Confusion Matrix – Outdated Books

Table 5.

	Predicted Relevant	Predicted Irrelevant
Actual Relevant	TP = 12	FN = 0
Actual Irrelevant	FP = 0	TN = 13

8. Conclusion

The results of the study demonstrated the potential of digital automation in enhancing collection assessment practices in academic libraries. Though the development and pilot evaluation of the Book Analysis System, the study revealed that yule-based and data-driven features can assist librarians in performing collection assessment task in a more efficient and systematic manner. By automating process that are traditionally done manually, they system significantly reduced time and effort required in assessing library resources while improving the consistence and reliability of assessment results.

The developed system successfully integrated key functions essential for collection assessment, including identification of outdated materials, gap analysis, duplication detection features, and automated reporting. The collection assessment modules allowed the librarians to easily determine which materials required updating or replacement. The gap analysis feature supported the identification of subject areas that did not meet the CHED ns Legal Education Board requirements in terms of required titles. In addition, the duplication detection feature helped minimize redundant entries and improved accuracy of library records. The automated reporting function provided clear and structured outputs that could support decision-making in acquisition, weeding, and overall collection assessment and management.

The usability evaluation further indicated that the system was generally well accepted by the participants. High ratings in usefulness, ease of use, and user satisfaction suggest that the system is practical and user-friendly for academic library environment. This implies that the system is not only functional but also accessible and easy to learn, increasing the likelihood of continuous use in actual library operations.

Overall, study highlights the importance of institution-based and evidence-driven system development in addressing challenges in library collection assessment. Through automation and collection analytics, libraries can improve compliance motoring, enhance collection quality, and support more informed decision-making for teaching, learning and research.

Implications

The findings of this study have several important implication for academic libraries, librarians, and higher education institutions. The development of Book Analysis system shows that collection assessment can be carried out more efficiently though automation rather than relying solely on manual processes such as spreadsheets and printed lists. With the use of the system, tasks like identifying outdated materials, detecting duplicate entries, and analyzing subject coverage can be completed more quickly and with greater accuracy.

For academic libraries, this means that collection assessment can be more organized, updated and reliable. Libraries can more easily identified strengths and weaknesses within their collections, allowing for better planning in terms of acquisitions, and deaccessioning. This also support the development of a balanced collections that aligns with the needs of academic programs and students.

For librarians, the study implies a reduction in manual workload and improved accuracy in routine tasks. Instead of spending significant time on repetitive checking and verification, librarians can focus more on collection assessment, user support and service improvement. The system also facilitates the generation of reports that can be used for accreditation and monitoring purposes, making documentation more efficient and dependable.

For higher education institution, the study emphasizes the importance of integrating technology into library services. Since the libraries play a crucial role in supporting instruction and research, improving system directly contributes to overall academic quality. It also strengthens compliance with accreditation requirements and educational standards.

For future researcher in Library and Information Science, this study may serve as a reference for the development of similar system of fore enhancing existing library technologies. It also opens opportunities for further exploration of advanced features such as artificial intelligence-based analysis and broader integration with digital resources.

Recommendations

Based on the findings of the study, several recommendations are proposed to further improve library collections assessment and system use. First, academic libraries are encouraged to adopt the Book Analysis System or similar tools to improve the efficiency and accuracy of collection assessment. The use of automated system in place of manual methods can significantly reduce workloads, minimize errors, and improve overall data management.

Second, libraries should be provided with proper training on the effective use of the system. This includes training on generating reports, interpreting analytical results, and applying findings in collection development decisions. Continuous training will ensure that library staff can fully utilize the system's features in their daily operations.

Third, library administrators and institutional leaders should provide more support for the successful implementation of such system. Administrative support is essential to ensure consistent use, long-term sustainability, and integration into existing library workflows.

Lastly, future researcher are encourage to further enhace the system by incorporating more advanced functionalities such as predictive analysis, artificial intelligence-based recommendations, and expansion to other resource types such as journals, theses, and digital materials. Conducting studies on other academic institution is also recommended to evaluate the system's effectiveness in different environments.

Overall, these recommendations aim to strengthen library services and support more effective academic resource management and assessment.

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