

Evaluating Library Management Systems Through User Experience and System Usability Perspectives

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Abstract: *Library Management Systems have become essential technological platforms for organizing, managing, retrieving, and delivering library resources and services. The effectiveness of an LMS, however, cannot be evaluated solely on the basis of its technical capabilities or the number of functions it provides. User experience and system usability have increasingly become important dimensions for determining whether a library management system actually satisfies the needs and expectations of its users. This review paper examines LMS evaluation from the perspectives of usability, user experience, accessibility, efficiency, learnability, satisfaction, and overall interaction quality.*

The review emphasizes that librarians, students, researchers, faculty members, and administrators interact with LMS platforms differently according to their information requirements and technological competencies. A system may offer advanced cataloguing, circulation, acquisition, reporting, and discovery features while still creating difficulties because of complicated navigation, inconsistent interfaces, slow response, unclear terminology, or inadequate feedback. Therefore, usability-oriented evaluation provides a broader understanding of system effectiveness by examining both functional performance and users' perceptions. The review also considers commonly used evaluation dimensions, including ease of use, effectiveness, efficiency, learnability, error tolerance, accessibility, satisfaction, and perceived usefulness..

Keywords: Library Management System, Information Retrieval, Accessibility, Human-Computer Interaction, Digital Libraries

I. INTRODUCTION

Library Management Systems have transformed traditional library operations by integrating activities such as acquisition, cataloguing, circulation, serials management, membership management, inventory control, reporting, and online resource discovery into a unified technological environment. The transition from manual procedures to computerized systems has improved the speed, consistency, and accessibility of many library services. Nevertheless, the successful implementation of an LMS does not depend exclusively on its technical infrastructure. The extent to which users can understand, navigate, and effectively utilize the system is equally important. Consequently, user experience and usability have emerged as significant criteria for evaluating library technologies.

System usability refers to the degree to which a system enables users to accomplish specified tasks effectively, efficiently, and satisfactorily within a particular context. In a library environment, usability may involve searching for materials, checking availability, renewing resources, placing reservations, accessing electronic resources, managing accounts, generating reports, or performing technical library operations. User experience extends beyond task completion and includes users' perceptions, expectations, emotions, confidence, convenience, and overall interaction with the system. A

positive user experience can encourage regular system use, whereas poor usability can result in frustration, errors, reduced productivity, and avoidance of available services.

An LMS therefore needs to be evaluated from both functional and human perspectives. Librarians may focus on cataloguing, circulation, acquisition, reporting, and administrative functions, while students and researchers may primarily evaluate search functionality, interface clarity, accessibility, response time, and ease of resource discovery. These differences indicate that a comprehensive evaluation should incorporate multiple user groups and multiple usability dimensions. User-centred evaluation can consequently provide libraries with valuable information for improving system design, training, configuration, and service delivery.

CONCEPTUAL PERSPECTIVES OF USER EXPERIENCE AND SYSTEM USABILITY

User experience and system usability are related but distinct concepts. Usability primarily concentrates on whether users can complete tasks accurately, efficiently, and with minimum difficulty. User experience encompasses a broader range of interactions, including satisfaction, trust, perceived usefulness, accessibility, visual presentation, emotional response, and expectations before, during, and after system use.

For library management systems, effectiveness indicates whether users can successfully complete required activities. Efficiency considers the amount of time and effort required to complete those activities. Learnability measures how easily new users understand the system. Error tolerance concerns the system's ability to prevent errors and assist users in recovering from them. Satisfaction represents users' overall evaluation of the system. Accessibility determines whether people with different abilities and technological backgrounds can interact with the system successfully.

The following table summarizes the major evaluation dimensions:

Evaluation Dimension	Meaning in Library Management Systems	Possible Evaluation Indicators
Effectiveness	Ability to complete library-related tasks successfully	Task completion rate, successful searches
Efficiency	Amount of time and effort required	Task completion time, number of steps
Learnability	Ease of learning system functions	Training requirement, first-use performance
Satisfaction	Users' overall perception of the system	Satisfaction ratings, feedback
Accessibility	Ease of use for diverse users	Readability, keyboard access, assistive compatibility
Navigation	Ease of moving between system functions	Menu clarity, search pathways
Error Handling	Ability to prevent and recover from errors	Error messages, recovery options
Responsiveness	Speed and consistency of system responses	Loading time, response time
Perceived Usefulness	Extent to which users believe the system supports their work	Productivity, task support
Overall User Experience	Combined quality of interaction with the system	User perception, preference, continued use

REVIEW OF LITERATURE AND EXISTING EVALUATION APPROACHES

Previous research and evaluation practices in information systems demonstrate that usability assessment is increasingly important for determining the practical effectiveness of digital platforms. In the library context, traditional system evaluation frequently emphasized technical functionality, database performance, integration capabilities, and administrative features. Although these factors remain important, they do not necessarily indicate whether users find a system convenient or understandable.

Usability evaluation approaches generally combine quantitative and qualitative techniques. Questionnaires can be used to measure perceived ease of use, satisfaction, usefulness, and overall experience. Task-based testing can examine

whether users can successfully perform activities such as searching the catalogue, locating an item, renewing a loan, or accessing electronic resources. Observation can identify navigation difficulties and recurring errors that users may not explicitly report. Interviews and focus groups can provide deeper information about expectations, frustrations, preferences, and suggestions for improvement.

Another important consideration is the diversity of LMS users. Students may have limited knowledge of specialized library terminology, whereas professional librarians may possess extensive system experience. Researchers may require advanced search and resource-discovery functions, while administrators may prioritize reporting and management capabilities. Therefore, an evaluation based on only one user group may provide an incomplete picture of system usability.

Modern evaluation should also consider mobile access, responsive interfaces, accessibility, search relevance, personalization, integration with electronic resources, and consistency across different devices. The growing use of cloud-based and web-based library platforms further emphasizes the importance of evaluating the complete user journey rather than isolated system functions.

COMPARATIVE EVALUATION FRAMEWORK FOR LIBRARY MANAGEMENT SYSTEMS

A systematic evaluation framework can combine technical performance with user-centred criteria. The following table presents a comparative framework that can be applied to different library management systems.

Criterion	Low Usability Condition	Moderate Usability Condition	High Usability Condition
Interface Design	Complex and confusing	Generally understandable	Clear, consistent, and intuitive
Search Functionality	Difficult to locate resources	Basic search works adequately	Fast, flexible, and user-friendly
Navigation	Multiple confusing pathways	Acceptable navigation	Simple and predictable navigation
Learnability	Requires extensive training	Moderate learning effort	Easy to learn independently
Task Efficiency	Many unnecessary steps	Reasonable task process	Minimal steps and effort
Error Recovery	Poor or unclear feedback	Basic error messages	Clear guidance and easy recovery
Accessibility	Limited accessibility support	Some accessibility features	Inclusive and accessible design
Response Time	Frequent delays	Acceptable performance	Fast and consistent response
User Satisfaction	Frequent complaints	Generally acceptable	High satisfaction and confidence
Overall Experience	Frustrating	Functional but inconsistent	Smooth, efficient, and engaging

This framework indicates that a technically advanced LMS cannot automatically be considered highly usable. A system may provide extensive functionality but receive poor user evaluations if its interface is difficult to understand. Conversely, a system with fewer functions may achieve higher satisfaction when its most important features are easy to discover and operate. Thus, usability evaluation should consider the relationship between system capabilities and actual user requirements.

CHALLENGES, RESEARCH GAPS, AND FUTURE DIRECTIONS

Several challenges influence the evaluation of library management systems through user experience and usability perspectives. One major challenge is the diversity of users and their varying levels of digital literacy. A system that is convenient for experienced librarians may be difficult for first-time student users. Another challenge is the rapid

development of library technologies. Interfaces, search mechanisms, cloud services, mobile applications, and electronic-resource integrations continually change, making periodic evaluation necessary.

A further limitation is the excessive dependence on self-reported satisfaction. Users may report that a system is satisfactory even when task-based observation reveals substantial difficulties. Consequently, future evaluations should combine subjective and objective measures. Task completion rates, task duration, error frequency, navigation patterns, and satisfaction scores can collectively provide stronger evidence.

There is also a need for greater attention to accessibility and inclusive design. Library systems should accommodate users with different physical, sensory, cognitive, and technological needs. Mobile usability represents another important research area because many users increasingly access library services through smartphones and tablets. Future studies could also investigate personalization, artificial intelligence-supported search, conversational interfaces, recommendation mechanisms, and adaptive user interfaces.

Longitudinal research is particularly valuable because user perceptions may change as users gain experience with an LMS. Comparative studies across institutions can further identify which design features consistently contribute to positive user experiences. Future evaluation models should therefore integrate usability testing, accessibility assessment, behavioural data, satisfaction measures, and qualitative user feedback into a unified framework.

II. CONCLUSION

The evaluation of Library Management Systems should extend beyond technical functionality to include the quality of users' interactions with the system. User experience and system usability provide important perspectives for determining whether an LMS is genuinely effective, efficient, accessible, understandable, and satisfactory. The review demonstrates that factors such as interface design, search functionality, navigation, learnability, task efficiency, error recovery, accessibility, responsiveness, and perceived usefulness collectively influence the acceptance and successful use of library systems. A user-centred evaluation approach can identify problems that may remain hidden in purely technical assessments and can provide practical guidance for system improvement.

Libraries should therefore conduct regular usability assessments involving different categories of users and employ both quantitative and qualitative evaluation techniques. Integrating user feedback into LMS selection, implementation, customization, and continuous improvement can enhance service quality and ensure that technological development remains aligned with actual user needs. Ultimately, the effectiveness of a library management system should be measured not simply by what the system can do, but by how easily, efficiently, and satisfactorily users can accomplish what they need to do.

REFERENCES

1. Nielsen, J. (1994). *Usability engineering*. Morgan Kaufmann.
2. Norman, D. A. (2013). *The design of everyday things: Revised and expanded edition*. Basic Books.
3. Brooke, J. (1996). SUS: A "quick and dirty" usability scale. In P. W. Jordan, B. Thomas, B. A. Weerdmeester, & I. L. McClelland (Eds.), *Usability evaluation in industry* (pp. 189–194). Taylor & Francis.
4. ISO. (2018). *Ergonomics of human-system interaction—Part 11: Usability: Definitions and concepts (ISO 9241-11:2018)*. International Organization for Standardization.
5. Garrett, J. J. (2011). *The elements of user experience: User-centered design for the web and beyond* (2nd ed.). New Riders.
6. Rubin, J., & Chisnell, D. (2008). *Handbook of usability testing: How to plan, design, and conduct effective tests* (2nd ed.). Wiley.
7. Tenopir, C. (2003). Use and users of electronic library resources: An overview and analysis of recent research studies. *Council on Library and Information Resources*.
8. Khoo, M., Rozaklis, L., & Hall, C. (2012). A survey of user perceptions of library information systems. *Library & Information Science Research*, 34(4), 273–280.