

Conceptual Model of Digital Information Dissemination Services in the National Library and Archives of Iran (NLAI)

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Abstract

Purpose: This study aimed to design a comprehensive conceptual model for digital information dissemination services at the NLAI, focusing on improving service efficiency and enhancing users' access to digital information resources.

Methodology: A mixed-methods approach was employed. In the first phase, a meta-synthesis method, combined with a systematic review of previous research, was used to identify the main components of digital information dissemination services. In the second phase, a survey-based analytical method was applied to validate the proposed model using Partial Least Squares (PLS) structural equation modeling. The sample comprised 105 experts in knowledge and information science, as well as users of the NLAI.

Findings: The meta-synthesis identified seven main categories and 34 indicators for digital information dissemination services. The PLS analysis confirmed the validity of all identified components, and the model demonstrated a good fit, indicating significant and robust relationships among the variables.

Conclusion: The proposed model provides a comprehensive framework for delivering effective and personalized digital information dissemination services at the NLAI. By emphasizing components such as user research profiles, digital and digitized resources, efficient collection development, service standardization, diverse dissemination tools, and continuous evaluation, the model can significantly improve user access and satisfaction while also supporting effective managerial decision-making.

Value: The innovation of this research lies in integrating meta-synthesis with PLS analysis to identify and validate the main components of digital information dissemination services. The proposed model, which is adaptable to other libraries and information institutions, provides a transformative and practical framework that supports the advancement of digital information dissemination services.

Keywords: *Information Dissemination, Information Dissemination Services, Digital Dissemination, National Library and Archives of Iran, Conceptual Model*

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Extended Abstract

Introduction: The rapid advancement and widespread adoption of digital technologies have profoundly reshaped the operational landscape of libraries and information management worldwide. Traditionally, libraries primarily served as custodians of physical documents, emphasizing acquisition, cataloging, preservation, and circulation. However, the digital era has transformed libraries into dynamic, interactive hubs that facilitate knowledge access, dissemination, and user-centered service delivery. Digital information dissemination enables users to access vast and diverse resources irrespective of geographical or temporal constraints, thereby promoting research productivity, informed decision-making, and knowledge creation. Contemporary users increasingly demand immediate, seamless access to digitized collections, full-text databases, and interactive tools, highlighting the critical importance of efficiency, accessibility, and user-oriented service design.

Within this evolving context, the National Library and Archives of Iran (NLAI) plays a pivotal role as the custodian of the nation's intellectual heritage and primary information repository. As a national institution, the NLAI is responsible for ensuring equitable and timely access to information, safeguarding cultural and scholarly resources, and supporting research and educational initiatives. Despite notable efforts in digitization and the deployment of digital platforms, a comprehensive, empirically validated framework for guiding the planning, implementation, and continuous improvement of digital information dissemination services remains absent. Previous studies have frequently concentrated on isolated service aspects, specific tools, or singular technological interventions, neglecting the integration of organizational, technological, and user-centered dimensions.

Addressing this gap, the present study develops a holistic conceptual model that systematically identifies, categorizes, and empirically validates the essential components of digital information dissemination services at the NLAI. The proposed model provides theoretical and practical guidance for optimizing service efficiency, ensuring accessibility, and improving user satisfaction.

Purpose: This study aimed to design and empirically validate a comprehensive conceptual model for digital information dissemination services tailored to the operational context of the NLAI. Specifically, the study sought to: (a) identify the core components and measurable indicators of effective digital information dissemination; (b) empirically test the interrelationships among these components; (c) provide a structured, actionable framework to enhance service delivery, accessibility, and user satisfaction; and (d) generate evidence-based insights to inform policy-making, strategic planning, and operational management in library and information services. By integrating technological, organizational, and service-oriented perspectives, the proposed model bridges theoretical understanding and practical implementation, ensuring that digital services meet evolving user expectations while aligning with institutional objectives. The research further emphasizes aligning digital services with strategic goals, ensuring sustainability, and promoting institutional resilience in a rapidly evolving information environment.



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Methodology: A sequential exploratory mixed-methods design was employed, integrating qualitative and quantitative approaches in two complementary phases.

Qualitative Phase: A meta-synthesis was conducted to systematically review the literature on digital information dissemination services within libraries. Initial searches across multiple academic and professional databases retrieved 5,116 potentially relevant studies. After applying inclusion and exclusion criteria and evaluating methodological quality using ten predefined indicators, 37 studies were selected for detailed analysis. The meta-synthesis identified seven principal categories critical to effective digital information dissemination: information services, information resources, research profiles, dissemination tools, service standardization, evaluation and assessment, and collection development. These categories were operationalized into 34 measurable indicators, forming the conceptual foundation of the proposed model. Each indicator was defined to capture aspects of service delivery, infrastructure utilization, and user engagement, providing a comprehensive basis for quantitative validation.

Quantitative Phase: To empirically validate the conceptual model, a descriptive-analytical survey was conducted. A structured questionnaire, derived from the 34 indicators identified in the qualitative phase, was administered to a purposive sample of 105 experts and users affiliated with the NLAI. The instrument underwent rigorous testing for content validity, construct validity, and reliability. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS, chosen for its robustness in evaluating complex relationships among latent constructs and estimating path significance. Model assessment included analyses of convergent validity (Average Variance Extracted, AVE), discriminant validity (Heterotrait-Monotrait, HTMT), internal consistency (Cronbach's Alpha and Composite Reliability), coefficient of determination (R^2), and effect size (f^2). The methodological rigor ensured both theoretical coherence and empirical robustness underlying the proposed framework.

Findings: The quantitative analysis confirmed the validity, reliability, and relevance of all seven core components of digital information dissemination services. These components—information services, informational resources, research profiles, dissemination tools, standardization, evaluation, and collection development—were operationalized through 34 measurable indicators, carefully selected for methodological rigor and relevance to the objectives of digital information dissemination. Table 1 presents the finalized components and indicators.

Table 1: Extracted and Accepted Components and Indicators

Component	Index	Sub-Index
Research Profile	Personal Information	Personal Information, Interests
	Interests	Subject Keywords of Researcher's Interest, Need Prediction
	Requested Resource Type	Types of Resources Including Serials, Books, conference Proceedings, Reports and Patents, Databases
Information Resources	Digital Resources	Subscription to Continuous Services, Scientific, Commercial, or Personal Data, Digital Texts, Video, Abstracts, Indexes, Full-Text Databases, Audio and Digital Tapes
	Digitized Resources	
	Acquisition	



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Component	Index	Sub-Index
Collection Development	Preservation and Conservation	
	Organization	Cataloging, Abstracts, Indexes
	Resource Sharing	
	Resource Updating	
Standardization	Service Standard	
	Personnel Standard	
	Digital Resource Standard	
	Digital Library Standard	
	Bibliographic Standard	
Information Services	Circulation Services	Interlibrary Loan (ILL), In-House Circulation
	Selective Dissemination of Information (SDI)	National, International
	Current Awareness Service (CAS)	Bulletins, Social Networks, Email, SMS
	Reference Services	Referral and Bibliographic Services
	Informational Services	Awareness/Notification (SMS, Email, Social Networks,
	Display and Exhibition	
	Electronic Conference/Webinar	
	Electronic Delivery of Digital Resources	Referral Services, Document Delivery Services, Translation Services
	Databases	
Information Tools	Electronic Mail (Email)	
	World Wide Web	
	Mobile Tools	Social Networks, Video, Audio, Chat, Web Forms, etc.
	Multimedia Information Storage and Retrieval Service	
Evaluation	Evaluation Checklist	
	Evaluation Procedure/Guidelines	
	Feedback	
	Review/Revision	
	Survey Questionnaire	
	Scoring/Rating	

PLS-SEM analysis demonstrated strong and statistically significant relationships between each component and the overarching construct. Effect sizes (f^2) indicated that all components exerted substantial influence on overall service effectiveness. Convergent validity assessments showed high shared variance among indicators within each construct, while discriminant validity confirmed conceptual distinctiveness across the seven components. Reliability analysis indicated high internal consistency for all constructs. The model explained a significant portion of variance in digital information dissemination services (R^2), providing practical guidance for strategic planning, resource allocation, and operational management within the NLAI.

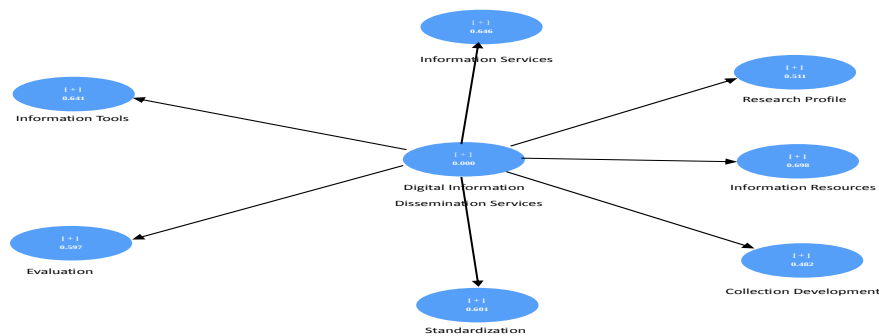


Figure 1: Blindfolding for predictive relevance of constructs

Predictive Relevance Index:

The model demonstrated strong predictive power, with positive Q^2 values for all components and effect sizes (f^2) exceeding 0.35. These findings confirm its ability to predict out-of-sample performance, thereby supporting strategic decision-making, resource prioritization, and effective digital information dissemination.

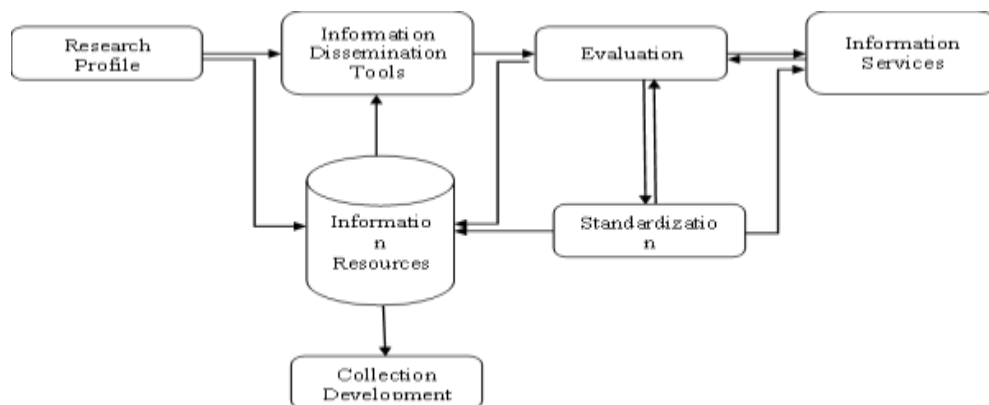


Figure 2: Digital Information Dissemination Service Model of the NLAI

Conclusion: This study provides a comprehensive, empirically validated framework for planning, developing, and managing digital information dissemination services. By integrating technological, organizational, and service-oriented dimensions, the proposed model guides administrators, policymakers, and practitioners in enhancing efficiency, accessibility, and user satisfaction. Seven core components and 34 indicators emerged as critical drivers of effective service delivery, enabling the alignment of infrastructure, workflows, and user needs while optimizing resource allocation and maintaining consistent service standards. The framework is transferable to other library contexts, offering a systematic methodology for academic, national, and public libraries. By emphasizing continuous evaluation, iterative improvement, and adaptation to emerging technologies, the model enhances operational efficiency and overall organizational performance. Future research could integrate artificial intelligence, semantic web tools, and personalized recommendation systems to further improve reach, efficiency, and effectiveness. Overall, this study contributes to both theory and practice by providing a structured, empirically grounded framework for designing, implementing, and evaluating comprehensive digital library services that are responsive, efficient, and user-centered.



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