Reframing Library Marketing for the Digital Society: A Conceptual Model of Strategic Innovation and Engagement

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ABSTRACT

The rapid acceleration of the digital society, characterized by information saturation and technological integration, compels libraries to undergo a fundamental strategic reframing. This paper argues that, to effectively counteract the narrative of obsolescence, libraries must transition from demonstrating value through passive, internal metrics (such as collection size or output statistics) to quantifying their tangible, outcome-based contribution to institutional mission. Despite empirical confirmation that digital marketing practices are significantly more effective than traditional methods in driving service utilization, the full integration of Library and Information Science theory with modern marketing frameworks remains a persistent challenge. This paper proposes the Digital Engagement and Innovation Framework (DEIF), a new conceptual model designed to bridge this gap. The DEIF synthesizes foundational marketing strategy (Segmentation, Targeting, and Positioning) with the library-centric 4S strategic model, operationalized through three interdependent pillars: Data-Driven Intelligence, which utilizes AI and predictive analytics for personalized services; User-Centric Design, which mandates the application of User Experience principles to all service touchpoints; and an Adaptive Organizational Structure, which formalizes marketing roles and addresses critical skills gaps and resistance to change. This framework positions strategic marketing as synonymous with outcome-based planning, emphasizing the collection of verifiable Return on Investment and Key Performance Indicators to justify fiscal commitment. The paper concludes by recommending the DEIF for rigorous empirical validation across diverse library sectors to ensure its effectiveness as a model for sustainable strategic innovation and engagement.

Keywords— Library Marketing, Conceptual Model, Digital Transformation, User Experience, Content Marketing

INTRODUCTION

The modern library operates within an environment fundamentally transformed by digital acceleration and information abundance. This landscape is shaped by the rapid adoption of advanced technologies, including artificial intelligence (AI), machine learning, and new media, which necessitate continuous innovation and adaptation in marketing strategies across all sectors [1], [2], [3], [4], [5], [6]. For information organizations, this transition is particularly acute. The traditional operational context, historically focused on the preservation and circulation of physical collections, is being rapidly superseded by an environment characterized by rapid technological advancement and highly diversified user needs and expectations [2], [3], [5], [6]. This paradigm shift mandates a fundamental re-evaluation of how libraries define, generate, and communicate their core value to stakeholders.

The rise of digital platforms and remote access capabilities, notably amplified by global digital transformation, has resulted in a fundamental, long-term shift toward virtual services, requiring the rethinking of long-held operational paradigms [7]. In response to this acceleration, library marketing must transition from being a peripheral function to becoming a strategic administrative instrument focused on identifying and fulfilling

client requirements. The challenge is to optimize resource utilization and ensure service relevance, aligning library activities directly with the strategic goals of the parent academic or institutional body [8].

The Strategic Challenge: Moving from Cost Center to Value Creator

As non-profit organizations, libraries must prioritize the creation and delivery of measurable value, focusing on meeting and even anticipating user needs, rather than pursuing profit generation [2], [3], [5], [6]. A critical obstacle in the current climate is the prevalence of the false narrative that libraries are obsolete relics due to the widespread availability of online information [9]. Mitigating this risk requires a profound intellectual and cultural shift within the profession. The strategic focus must move from minimizing costs and emphasizing cost containment to proactively pursuing value creation.

This reframing involves shifting the library's primary value proposition away from simply counting resource collections or output statistics. Instead, the recognized value must be anchored in the intangible intellectual capital assets of its professional staff [9]. Librarians are evolving into essential knowledge facilitators, required to communicate the value of information and research outcomes through effective communication about knowledge transactions [9], [10]. The transition demands that libraries become better communicators, proactively emphasizing intangibles and highlighting user satisfaction to effectively counteract narratives questioning their continued relevance [11], [12], [13].

Report Goal and Conceptual Model Overview

The inability to fully integrate library science theory with modern marketing frameworks represents a long-standing challenge in the discipline [1], [2], [4], [6]. This structural gap is often attributed to the historical focus on internal metrics (input/output) rather than external, outcome-based value creation metrics [14].

This report addresses this gap by proposing the Digital Engagement and Innovation Framework (DEIF), a comprehensive conceptual model designed to integrate classical strategic planning with contemporary digital practices. The DEIF synthesizes established library strategic dimensions, specifically the 4S technique (Scope, Site, Synergy, and System), with foundational marketing theory (Segmentation, Targeting, and Positioning) [5], [15]. This integration is structured across three core pillars of digital transformation: Data-Driven Intelligence (DDI), User-Centric Design (UCD), and Adaptive Organizational Structure (AOS). The framework's ultimate goal is to enable verifiable, outcome-based performance measurement (KPIs and ROI), thereby quantifying the library's measurable contribution to institutional strategic goals.

THEORETICAL FOUNDATIONS AND THE REFRAMED LIS MARKETING MIX

The Application and Limitations of Traditional Marketing Models

The application of marketing concepts to library promotion and construction has yielded valuable practical experience in developed nations [4], [5], [15], [16]. The traditional marketing mix, often expanded from the 4Ps (Product, Price, Place, Promotion) to the 7Ps, remains a central consideration for libraries developing a marketing plan [17], [18]. These seven elements include Product, Price, Place, Promotion, Participants, Physical Evidence, and Process [5], [8], [16].

However, the efficacy of this mix in the digital society depends entirely on its reinterpretation to account for modern technological realities. For instance, the 'Product' must be understood as encompassing not just physical books or electronic journals, but intangible, value-added services such as personal research assistance, referral services, document delivery, and interlibrary loan [5], [8], [16]. Similarly, 'Place' can no longer be limited to the physical library building; it must strongly incorporate the digital 'Site,' which includes comprehensive digital library infrastructure and electronic access that allows users access to information without conventional geographical or temporal limits[8]. The component of 'Physical Evidence,' while important for creating welcoming and comfortable physical spaces [19], is often in structural tension with the need to optimize and prioritize virtual service delivery channels. A successful conceptual model must design a seamless, cross-platform experience that integrates both the physical and the virtual.

Strategic Core: Segmentation, Targeting, and Positioning

Moving beyond mere promotional activities, a systematic strategic analysis of library operation and management must be anchored in classic marketing frameworks such as the Segmentation, Targeting, and Positioning theory [5], [12], [16]. The integration of this theory in library strategy development highlights that marketing is a core administrative function aimed at achieving comprehensive client satisfaction.

The Segmentation, Targeting, and Positioning framework enables libraries to address the diversification of user needs [5], [12], [16] by identifying distinct user segments (e.g., faculty, undergraduate students, researchers, community partners. This segmentation allows for the precise tailoring of products and services to meet the specific, discrete information needs and desires of these groups. The positioning component is crucial, as it defines the unique image, benefits, and competitive advantages that the library seeks to establish in the mind of the customer. This strategic focus ensures that marketing efforts are not generic but are highly specific and impactful in communicating value.

The Foundational Scaffolding: The 4S Strategic Model

The 4S technique—Scope, Site, Synergy, and System offers a high-level conceptual framework for aligning library services with the multifaceted demands of the digital context [5], [15].

Scope: This element refers to the innovative activities developed by the library to serve evolving user information needs. This often involves proactive measures, such as assisting users in reaching the broader community through effective use of digital media.

Site: This dimension covers the activities that provide necessary user channels. Crucially, the 'Site' now equally encompasses both the physical rooms within the library building and the robust digital library infrastructure required to allow users to access information seamlessly and without limits.

Synergy: This concept implies the necessary integration of internal resources, external partnerships, and collaborative efforts required to deliver holistic, cross-functional services.

System: This refers to the underlying technological infrastructure, workflows, and protocols necessary for the efficient and effective delivery of all library services.

The DEIF incorporates these four foundational points, specifically formalizing the technological 'System' dimension through Data-Driven Intelligence and the spatial/access 'Site' dimension through User-Centric Design.

Conceptual Model Proposal: The Digital Engagement and Innovation Framework (DEIF)

The DEIF is proposed as a conceptual model that reframes library marketing by shifting the measure of success from internal outputs to the verifiable, measurable contribution of technology-enabled, user-centric services to overarching institutional strategic outcomes (Value). The model is constructed upon three interactive and interdependent pillars: DDI, UCD, and AOS.

Pillar 1: Data-Driven Intelligence (DDI)

The DDI pillar focuses on the strategic deployment of library data—including transaction logs, resource usage metrics, and user behavior analytics—to enable a shift from reactive service delivery to proactive, predictive strategic management service delivery [3], [20]. This approach leverages advanced techniques like machine learning and predictive analytics for personalized recommendation systems, targeted collection development, and natural language processing [3]. A systematic approach to analytics adoption requires distinguishing between data analytics (examining raw data), business analytics (using data to inform decisions), and business intelligence (synthesizing data for strategic insight), recognizing that the integration of all three is vital for strategic management.

By integrating predictive analytics with AI, libraries can effectively anticipate user expectations, rigorously optimize resource utilization, and identify emerging trends, thereby ensuring that services remain fully aligned with the continually evolving needs of the academic community [8].

Pillar 2: User-Centric Design (UCD)

The UCD pillar mandates that all aspects of the library, including services, programs, and both physical and virtual environments, must be designed and assessed based on how they are experienced and perceived by the patron [12], [21]. This requires information professionals to intentionally adopt and apply core user experience principles, such as curiosity, empathy, observation, communication, and collaboration [13].

A fundamental tenet of UCD is the concept that "you are not the user," which obligates information professionals to design services from the user's perspective to avoid falling short in developing efficient and desirable products. This requires active evaluation of all user touchpoints and channels (McDonald, 2025). For virtual services, this involves ongoing user testing (e.g., usability studies on the Books & Media Catalog or online information literacy tutorials [13] . The UCD philosophy also extends to physical spaces, demanding guidance on design, aesthetics, furniture arrangement, wayfinding, and sensory elements to optimize functionality, safety, and comfort for users. The application of user experience evaluation models, such as the User Experience Questionnaire Shortn [13], ensures that service improvements are data-driven.

Pillar 3: Adaptive Organizational Structure (AOS)

The academic library environment is characterized by a rapid pace of change, meaning fixed organizational structures are no longer sustainable [22]. The AOS pillar emphasizes continuous organizational evolution to remain relevant. This often involves organizational restructuring, based on thorough assessment of new and emerging work, staff resources, budget constraints, and space requirements, while maintaining user needs as the constant priority[22], [23].

The AOS mandates the formalization of marketing efforts, shifting organizational function from relying on ad hoc committee-based work to structured positions guided by a formal organizational marketing plan [24]. This restructuring, which may involve moving toward a program-based matrix model, centralizes and streamlines marketing and communication efforts, which were previously conducted by employees lacking formal marketing training [25]. The organization's ability to successfully navigate change, manage professional stress, and maintain staff focus on user needs is a direct precursor to its success in the DDI and UCD domains [23].

The Symbiotic Interdependence of the DEIF Pillars: The three pillars of the DEIF operate in a continuous, symbiotic loop, ensuring strategic coherence and minimizing risk. The DDI pillar, utilizing data analytics, identifies what users are currently doing, what resources are underutilized, and how institutional resources can be optimized [8], [25]. The UCD pillar then takes this quantitative information and determines how the service should be designed, refined, or delivered for maximum usability and engagement, focusing on user empathy and removing friction points (McDonald, 2025). Crucially, the AOS pillar provides the necessary human capital and policy structure to execute the DDI and UCD strategies effectively [25]). If the organization lacks the required technical skills or the structural capacity to collaborate across traditionally siloed functions, both data analysis and service redesign efforts will be undermined [24], [26]. Furthermore, the integration of UCD principles (emphasizing empathy, safety, and human interaction (McDonald, 2025) acts as a necessary counter-balance to the raw efficiency of AI and DDI, ensuring that the essential human and educational aspects of library service delivery are maintained.

Operationalizing Strategic Innovation: Technology and Ethics

AI and Data Analytics for Hyper-Personalization

The potential for AI and machine learning to fundamentally revolutionize library services is significant, offering capabilities such as personalized recommendation systems, predictive analytics for collection management, and enhanced information discovery through natural language processing. This technology-

driven innovation allows libraries to effectively navigate budget limitations and strategically enhance their services and collections [8].

Specific tools, such as AI-based chatbots and virtual assistants, offer crucial operational advantages by providing guided assistance to users, which improves the overall user experience and facilitates effortless access to library resources [8], [21]. By integrating predictive analytics, AI enables libraries to anticipate user expectations and emerging trends, keeping services dynamically aligned with the sophisticated requirements of the academic community [8].

The Integrated Framework for AI Adoption

The successful implementation of the DDI pillar relies on addressing internal organizational barriers through a structured policy and skills framework. Table I lists the integrated framework for the adoption of AI in library services [20], [27] emphasizes four critical components, outlined below:

TABLEI AI ADOPTION FRAMEWORK FOR LIBRARY SERVICES

Component	Strategic Rationale	Operational Metrics - Implementation	Success Indicators
AI Skills	Closes technical skills gaps for future workforce readiness.	Ensuring training completion rate	Rate of AI tool use in daily work, Reduced AI-related errors.
AI Policy Initiators	Supports ethical standards, access, and modern digital learning.	Policy development efficiency. Compliance audit pass rate.	New ethical policy documentation
AI Awareness	Reduces staff resistance to change and dispels fears.	Survey results on change perception	Successful AI pilot project scaling
AI Access	Ensures equitable AI adoption by addressing financial/digital barriers.	Calculated ROI/Benefit-Cost Ratio for infrastructure, Digital equity usage reports.	Market penetration of new services, Fewer reported access barriers.

Navigating Ethical and Financial Barriers

Despite the transformative potential of AI, its implementation is hindered by critical organizational and resource barriers. Financial constraints are explicitly listed as a barrier to AI implementation, with advances in technology often leading to financial uncertainty that slows efficient adoption, particularly in resource-limited environments [20], [28], [29].

Equally significant are the non-technical barriers, which include a lack of awareness and major ethical concerns [30]. Libraries must proactively address security considerations and work to ensure the intelligibility of AI-driven decisions [21]. Librarians must advocate for the responsible use of AI to ensure that foundational standards of education, innovation, and broad access to information are preserved. The operational requirement to balance technological automation with personalized human interactions remains essential to maintain the foundational quality of library services [28].

The existence of funding limitations and the ongoing challenge of the digital divide [28] directly exacerbate the ‘AI Access’ challenge specified in the adoption framework [21]. Furthermore, the continuous professional development necessary to address technical skills gaps is a critical prerequisite for successfully meeting the AI Skills mandate of the framework.

Enforcing User Privacy and Data Transparency

The shift toward proactive, predictive services under the DDI pillar relies heavily on leveraging library data, including transaction logs and user behavior analytics, potentially generating large amounts of personal data [7]. Therefore, the successful implementation of personalized services must be balanced with robust data governance. The manuscript must introduce a dedicated focus on the imperative for transparency and accountability in AI deployment [8]. Libraries must proactively establish clear policies articulating what data is collected, how it is stored, and for what duration. Furthermore, implementing user consent forms or formal agreements is crucial, granting patrons control over their personalized data usage, which is vital for maintaining the library's role as an inclusive and trustworthy institution. This integration of transparent policies must be structured under the AOS pillar to ensure consistent, ethical standards across all institutional units.

Operationalizing Strategic Engagement: User Experience and Content Marketing

The Content Marketing Imperative

In the competitive information landscape, libraries must vigorously compete for the limited attention of busy students and faculty. This necessity mandates the development of dedicated channels of engagement, making content-driven activities essential for sustained relevance[12], [31]. Content marketing, encompassing a range of output from social media posts and blogs to newsletters, serves as an innovative strategy to create long-term engagement and reinforce the availability and utility of library resources.

Different types of content serve distinct purposes: social media content is optimally visual and concise, while content created for newsletters or blogs can be more elaborate and topically diverse [12]. Regardless of the format, content should be designed to be interchangeable and communicated strategically across multiple platforms and channels. The creation of effective content demands an engagement-based workflow, requiring library professionals to adopt competencies traditionally associated with marketing and communication specialists [26], [27].

Social Media and Community Engagement

Social media platforms are now integral to global communication and interaction, serving as powerful tools that bring libraries closer to their patrons. These channels promote user engagement by facilitating the creation, connection, discourse, and knowledge exchange necessary for building digital communities [32]. Social media is indispensable for marketing library resources and services, and for enabling real-time interaction with online users, often supporting programs like distance learning [9], [21], [32].

Specifically, visual platforms like Instagram are widely utilized by academic libraries to build community and increase visibility among the key college-aged demographic. Data indicates that Instagram's format options—including Feed, Reels, and Stories—are ideal for library marketing, particularly because engagement rates are highest for accounts with fewer than 10,000 followers, which describes the majority of academic libraries [16], [33]. Strategies to maximize reach involve continuous audience engagement, prioritizing content quality over quantity, and using interactive techniques such as giveaways [10].

Holistic Community Engagement

Strategic digital engagement must be complemented by a holistic view of the library's role as a physical and virtual community hub. Community engagement in libraries involves intentional effort and collaboration with community members in the design, implementation, and evaluation of all services and programs [21]. This approach moves beyond simply providing resources; it actively seeks to create meaningful connections and empower individuals, establishing the library as a catalyst for knowledge sharing[16].

The success of user engagement strategies is inherently linked to the UCD pillar. User experience evaluation tools, such as performing usability studies on new interfaces or applying systematic evaluation models [13],

provide direct, actionable feedback. This feedback loop ensures that the content marketed and the services provided truly meet the expectations and established journeys of the users [20].

Measuring Value and Demonstrating Return on Investment (ROI)

Redefining Metrics: From Output to Outcome

Strategic marketing success requires measurable proof of value to stakeholders. This necessitates a transition from simply reporting input or output statistics (e.g., counting program attendance or volume of books issued) to utilizing Key Performance Indicators (KPIs) that demonstrate accountability and measure outcomes [14]. Service excellence is achieved not merely through traditional quality assurance, but through strategic planning that aligns library goals with the desired outcomes of users and the institution.

Outcome measures are crucial because they evaluate the quantifiable impact or benefit of library services on users and the community, such as documented improvements in literacy, digital skill acquisition, or tangible research success [3], [13].

Quantifying Institutional Value and ROI

The library's value becomes strategically meaningful to institutional leadership when it is demonstrated in the context of its positive effect on the parent institution. This quantification requires libraries to connect high-level services—such as expert search functions, repository management, or resource provision—directly to core institutional activities, including supporting grant acquisition, enhancing patient care quality, developing educational programs, and accelerating knowledge discovery [34].

ROI Calculation and Evidence-Based Value: Return on Investment (ROI) and Benefit-Cost ratios are established and compelling methods for quantifying the library's worth [34], [35]. The ROI formula calculates the value of benefits relative to the total costs incurred to produce those benefits [36]. Research demonstrates that library-provided access to scholarly e-journal collections directly supports faculty research productivity, publishing, and successful grant application activities. Such analyses provide crucial external validation of library expenditure. A powerful complementary approach is Contingent Valuation, which reframes the conversation by assessing what the cost would be if the library ceased to exist[37]. This method shifts stakeholder focus away from questions of cost-cutting and toward the long-term value generated by the institution.

Digital Assessment and Data Integration: The evaluation of digital services requires technical assessment tools such as transactional log analysis, which collects quantitative data essential for appraising digital library usage, including user types, specific resources accessed, and session duration [38]. This log data must be systematically paired with qualitative assessment tools, such as user interviews or the application of specialized user experience assessment models, to fully understand usability and user experience [13], [38].

Table II illustrates the necessary shift in measurement focus required by the DEIF, moving from easily measurable, but contextually thin, traditional metrics to sophisticated, outcome-focused KPIs.

table II Transitioning from Traditional Measures to Digital KPIs

Traditional Metric (Output/Input)	Reframed KPI (Outcome/Impact)	Rationale for Reframing
Program Attendance	Measurable Impact on Digital Skill Development or Research Success	Evaluates the actual transformative effect of the service rather than just participation volume
Volume of Database Searches (Usage)	Conversion Rate of Expert Search to Reportable Institutional Outcome (e.g., successful grant or clinical	Connects resource utilization directly to high-level strategic

	guideline development)	results
Social Media Follower Count (Input)	Average Engagement Rate (Likes, Shares, Comments, Saves) per 1,000 Followers	Measures meaningful, active interaction and community building; lower follower accounts often yield higher rates
Total Budget Allocation (Input)	Calculated Return on Investment (ROI%) or Benefit-Cost Ratio	Expresses financial efficiency and tangible value created relative to institutional investment

The ability to prove the value of innovative digital services is highly dependent on the rigorous qualitative assessment methods mandated by the UCD pillar (user interviews, log analysis) [38] and the internal communication and staffing structures provided by the AOS pillar (dedicated staff, marketing communication strategy) [25]. The necessity for outcome validation is particularly pronounced following major shifts, such as the pandemic-induced move to predominantly virtual services, which fundamentally challenged long-held operational paradigms.

Organizational Transformation and Professional Competencies

The Evolving Role of the LIS Professional

The 21st-century librarian is fundamentally different from the traditional professional. They are no longer simply responsible for circulation or managing static collections, but have evolved into versatile professionals serving as vital navigators in an environment defined by information saturation [13], [29].

The academic librarian role now requires an expanded, boundary-spanning skillset, moving towards increased focus on relationship building, developing digital capabilities, and mastering areas like data visualization and systematic reviews. Essential competencies required for future librarianship include technological proficiency, particularly in handling AI and big data, alongside communication, research, leadership, and cultural competence [28], [30]. This expansion of responsibilities necessitates that expertise is shared across the team rather than residing with individuals, ensuring scalable services capable of handling increasing demand [26].

Addressing Skills Gaps and Continuous Development

Continuous professional development is critical for equipping librarians with the technical skills necessary to support and advance strategic initiatives, such as open access and research data management within the Open Science framework [13], [27]. The failure to provide ongoing professional development exacerbates the existing skills gaps, which are frequently reported as a key challenge in LIS literature.

To effectively manage the DDI and UCD pillars, libraries must adopt formalized marketing programs. This often means implementing structural shifts, such as moving from a traditional top-down hierarchy to a program-based matrix model, to centralize, formalize, and streamline marketing and outreach work that was previously carried out ad hoc [25]. This organizational shift demonstrates a recognition that marketing is a necessary function that cannot be deprioritized.

Formalizing Staff Upskilling for Operational Success

To ensure the successful operationalization of the DEIF, the AOS pillar must ensure continuous staff upskilling programs focused on data literacy, marketing communication, and user experience design. This ensures that the staff capacity exists to execute both DDI and UCD strategies effectively, confirming the necessity of a structural shift away from ad hoc committee work [1]. The operational success is dependent upon targeted training programs structured to support each pillar:

Data Literacy (Supporting DDI): Training must focus on foundational data literacy competencies, ethical data handling, and translating raw data into business intelligence. Librarians must be equipped to use tools for predictive analytics and measure outcomes effectively. Programs should prioritize hands-on learning and mentorship, moving beyond theoretical concepts [22].

User-Centric Design (Supporting UCD): The integration of UCD principles requires experiential training. Workshops must be interactive and highly practical, covering the full user experience process: research (observation, user tours, interviews), analysis, rapid idea generation, and prototyping. These programs ensure that service design decisions are based on user empathy and the reduction of friction points, optimizing functionality and user acceptance.

Strategic Marketing Communication (Supporting AOS): Since marketing is transitioning from a peripheral function to a core administrative instrument, staff require training in professional communication competencies. Modules should cover strategic marketing principles, including audience segmentation, identifying and simplifying key messages, maximizing engagement across multiple platforms, and developing the necessary public relations and media training skills for library leaders.

CONCLUSION AND FUTURE RESEARCH DIRECTIONS

Synthesis of the DEIF Model

The DEIF provides a necessary conceptual structure for reframing library marketing in the digital society. The model moves beyond defining the library as a mere storehouse of books and establishes it as a dynamic knowledge facilitator. By integrating the theoretical rigor of STP and the 4S structure with the three interdependent operational pillars, DDI, UCD, and AOS. The DEIF effectively shifts the focus of library administration from process management to the measurable demonstration of institutional value. Strategic marketing, in this context, becomes synonymous with outcome-based planning, ensuring that all innovative services and engagement methods directly contribute to the mission of the parent institution.

Designing the Mixed-Methods Empirical Validation Study

As a conceptual model, the DEIF requires rigorous empirical validation to confirm the synergy and interdependence of its core pillars (DDI, UCD, and AOS).1 Future research must prioritize a detailed, three-phase mixed-methods approach, utilizing qualitative data to explore phenomena and quantitative data to confirm the validity of the conceptual relationships.

The methodological design focuses on empirically confirming the functional interdependence:

DDI Validation: Primarily quantitative, utilizing performance analytics and transactional log analysis to measure resource utilization, session duration, and the effectiveness of predictive systems.

UCD Validation: A blend of quantitative usability metrics (surveys, user ratings) combined with qualitative techniques (interviews, observation) to understand user pain points and cultural acceptance.

AOS Validation: Primarily qualitative, focusing on staff and management interviews to assess organizational resistance, the effectiveness of formalized marketing roles, and the communication strategy's impact on cultural change.

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REFERENCES

1. Islam, M. N., Hu, G., Ashiq, M., and Ahmad, S., [2024]. Exploring the landscape of big data applications in librarianship: A bibliometric analysis of research trends and patterns, Library Hi Tech.
2. Crilly, J., [2024]. Diversifying, decentering and decolonising academic libraries: a literature review, New Review of Academic Librarianship, vol. 30, no. 2–3, pp. 112–152.
3. Okunlaya, R. O., Syed Abdullah, N., and Alias, R. A., [2022]. Artificial intelligence (AI) library services innovative conceptual framework for the digital transformation of university education, Library Hi Tech, vol. 40, no. 6, pp. 1869–1892.
4. Lu, C., and Jimei, Z., [2024]. Visualizing the construction of subject librarianship in Chinese higher education libraries: A knowledge graph-based analysis, Journal of Librarianship and Information Science, p. 09610006241259494.
5. Wang, J., Wang, S., and Liu, Y., [2025]. A study on the current status and driving force of library marketing in the digital age, Publications, vol. 13, no. 2, p. 21.
6. Chang, Y.-W., [2018]. Exploring the interdisciplinary characteristics of library and information science (LIS) from the perspective of interdisciplinary LIS authors, Library and Information Science Research, vol. 40, no. 2, pp. 125–134.
7. Raevskikh, E., Khalid, U., and Benghozi, P. J., [2022]. Culture in times of COVID-19: Resilience, recovery and revival.
8. Tawalbeh, A. K., [2025]. Influence of AI on marketing strategies for university libraries.
9. Bedford, D. A. D., Donley, J. K., and Lensenmayer, N., [2015]. The role of librarians in a knowledge society: Valuing our intellectual capital assets, Current Issues in Libraries, Information Science and Related Fields, vol. 39, pp. 81–113.
10. Hendrix, K. G., and Wilson, C., [2014]. Virtual invisibility: Race and communication education, Communication Education, vol. 63, no. 4, pp. 405–428.
11. Olaniran, B. A., [2018]. Social media as communication channel in emerging economies: a closer look at cultural implications, Journal of Advances in Management Research, vol. 15, no. 2, pp. 130–145.
12. Yu, W., Jiang, Y., and Fu, T., [2025]. Digital reading: a bibliometric and visualization analysis, Library Hi Tech, vol. 43, no. 2–3, pp. 513–541.
13. Deschenes, A. H., McMahon, M., and DeMarco, C., [2025]. Designing content for impact: A content strategy approach for libraries and beyond, Weave: Journal of Library User Experience, vol. 8, no. 2.
14. Chigwada, J. P., [2020]. Librarian skillsets in the 21st century: The changing role of librarians in the digital era, Managing and Adapting Library Information Services for Future Users, pp. 41–58.
15. Amoah, G. B., and Minishi-Majanja, M. K., [2022]. Key performance indicators (KPIs) in Ghanaian university libraries: developing outcome-based metrics for staff performance, Performance Measurement and Metrics, vol. 23, no. 2, pp. 41–52.
16. Chu, V., and Luke, B., [2023]. NPO web-based accountability: how can we know if NPOs are doing good things?, Nonprofit and Voluntary Sector Quarterly, vol. 52, no. 1, pp. 75–105.
17. So, K. K. F., Li, J., King, C., and Hollebeek, L. D., [2024]. Social media marketing activities, customer engagement, and customer stickiness: A longitudinal investigation, Psychology and Marketing, vol. 41, no. 7, pp. 1597–1613.
18. Sinha, R., [2018]. A comparative analysis of traditional marketing vs digital marketing, Journal of Management Research and Analysis, vol. 5, no. 4, pp. 234–243.
19. Karim, R., Latip, N. A., Marzuki, A., Haider, S., Nelofar, M., and Muhammad, F., [2021]. The impact of 4Ps marketing mix in tourism development in the mountain areas: A case study, International Journal of Economics and Business Administration, vol. 9, no. 2, pp. 231–245.
20. McDonald, C., [2022]. User experience. Rowman & Littlefield Publishers: ProQuest Ebook Central,
21. Nkomo, S., and Matli, W., [2025]. Adoption of artificial intelligence for library services at universities in Africa: are we there yet?, South African Journal of Libraries and Information Science, vol. 91, no. 2, pp. 1–12.
22. Khan, Z. I., [2025]. Exploring the influence of aesthetic design on user engagement in libraries: A quantitative analysis of UAE librarians' perspectives, Journal of Librarianship and Information Science, p. 09610006251335312.

23. Farid, G., Warraich, N. F., and Iftikhar, S., [2025]. Digital information security management policy in academic libraries: A systematic review (2010–2022), Journal of Information Science, vol. 51, no. 4, pp. 1000–1014.
24. Cox, J., [2023]. The position and prospects of academic libraries: Weaknesses, threats and proposed strategic directions, New Review of Academic Librarianship, vol. 29, no. 3, pp. 263–287.
25. Fowler, E. R., Pothier, W. G., and Dow, D., [2025]. Growing organizational marketing, publicity, and outreach strategies with intention, Marketing Libraries Journal.
26. Roy, P., [2025]. Transforming higher education libraries with data analytics, business intelligence, and business analytics: A review, Journal of Librarianship and Information Science, p. 09610006241307028.
27. Williams, R. D., and Willett, R., [2019]. Makerspaces and boundary work: The role of librarians as educators in public library makerspaces, Journal of Librarianship and Information Science, vol. 51, no. 3, pp. 801–813.
28. Siddiqui, Z. A., [2025]. The future of libraries: Skills, challenges, and innovative visions for future, Proceedings of the International Conference on Marching Beyond the Libraries (ICMBL): Leadership, Creativity, and Innovation, p. 78.
29. Ibrahim, S. E. A., [2025]. Lost in the algorithm: navigating the ethical maze of AI in libraries, South African Journal of Libraries and Information Science, vol. 91, no. 1, pp. 1–11.
30. Singh, S. K., [2024]. Librarian behaviour: Roles, responsibilities, and ethical considerations.
31. Lund, B. D., et al., [2023]. Barriers to scholarly publishing among library and information science researchers: International perspectives, Information Development, vol. 39, no. 2, pp. 376–389.
32. Tickle, R. E., [2024]. Librarians for the study of the African-American experience: A content analysis of position announcements, 1970–2019, College and Research Libraries, vol. 85, no. 3, p. 316
33. Abu Eid, E. M., and Hussin, A. R. C., [2025]. Toward a library corporate social responsibility model: An empirical study, Journal of Librarianship and Information Science, vol. 57, no. 2, pp. 450–469.
34. Aichner, T., Grünfelder, M., Maurer, O., and Jegeni, D., [2021]. Twenty-five years of social media: A review of social media applications and definitions from 1994 to 2019, Cyberpsychology, Behavior and Social Networking, vol. 24, no. 4, pp. 215–222.
35. Tenopir, C., King, D. W., Mays, R., Wu, L., and Baer, A., [2010]. Measuring value and return on investment of academic libraries, Serials, vol. 23, no. 3.
36. Kingma, B., and McClure, K., [2015]. Lib-value: Values, outcomes, and return on investment of academic libraries, phase III: ROI of the Syracuse University Library, College and Research Libraries, vol. 76, no. 1, pp. 63–80.
37. Kelly, B., Hamasu, C., and Jones, B., [2012]. Applying return on investment (ROI) in libraries, Journal of Library Administration, vol. 52, no. 8, pp. 656–671.
38. Arshad, A., Ameen, K., and Jabeen, S., [2021]. Trends of print books usage among academic communities: A transactional log analysis, Qualitative and Quantitative Methods in Libraries, vol. 10, no. 1, pp. 49–66.