

Library Services For The Digital Age: Redefining The Role Of Librarians In A Changing Information Landscape

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Abstract

Digital technology's quick evolution requires libraries to redefine their services, which demands a new definition of the librarian's role. The research examines librarian's digital competencies and their evolving responsibilities within different library settings, particularly academic and public libraries. The research used both quantitative questionnaire data and qualitative interview data. The assessment utilized surveys to evaluate librarians' digital competency levels regarding resource management, user engagement, and digital literacy training across multiple countries. Through qualitative interviews, researchers gained a deep understanding of librarians' digital role implementation process and their encountered difficulties. A statistical analysis evaluated competency levels while examining the relationship between experience duration and geographical location. The study demonstrates that digital resource management and user engagement represent core responsibilities, while 75% of participants demonstrate moderate to high digital competency levels. The data revealed that librarian's experience directly correlated with their advanced digital skills ($r = 0.68$, $p < 0.05$). Librarians in developed nations focused on user-centered digital services, but their developing nation counterparts focused on establishing basic tasks. The study reveals an immediate requirement for enhanced digital skill education and support systems in areas developing their digital infrastructure. Future research must address both the sustained growth of digital competencies and ethical questions within digital librarianship.

Keywords: Digital Librarianship, Digital Skill Competencies, User Engagement, Cross-National Study, Library Services, Digital Transformation.

1. INTRODUCTION

Throughout many centuries, libraries have maintained their status as vital institutions that function to distribute knowledge while supporting educational frameworks. The historical role of libraries remains unchanged as they continue to protect physical collections for user access to books, manuscripts, and archival materials. Digital-system technological advancement has led to essential operational changes in library services (Smith, 2020). Libraries today transform their traditional physical facilities into digital service platforms that provide extensive digital archives alongside e-books, online publications, and multimedia content (Choi et al., 2019). Librarians must now perform three distinct duties after the digital transformation: they must handle digital resources alongside teaching information literacy, and enabling knowledge access through digital connections. Libraries have implemented digital services in response to user demands for continuous information access and their expectation of visible digital transformation. The extensive use of internet platforms and open-access platforms has trained library users to demand instant information access, so libraries must develop digital solutions

(Maddison et al., 2017). Librarian professionals now must master skills beyond basic reference activities because of the digital environment changes. The new digital environment expanded librarians' proficiencies to encompass the management of digital content alongside experience design and privacy data protection functions (Kim et al., 2020).

Multiple research investigations show how digital transformation influences library service delivery by identifying new possibilities, together with current obstacles. The digital era enables libraries to reach wider audiences through digital platforms, according to Jacobs et al. (2019), Lead author Hill. Academic libraries undergo substantial transformation because their users heavily depend on digital databases, e-journals, and online archives (Aharony, N. 2019). Rodríguez et al. (2020) show that librarians today assume expanded roles that combine digital literacy teaching with helping users evaluate critical online information and providing research assistance. The authors argue that digital literacy training maintains the same level of importance as traditional information literacy because users require assistance with complex digital environments (Rodríguez et al., 2020). Despite these advancements, challenges persist. The transition to digital roles faces librarians with significant barriers because research demonstrates insufficient digital skill training and institutional support (Baker et al., 2020). The rapid digital transformation has created a skills gap that makes library professionals struggle with their roles' technical demands, according to Oakleaf et al. (2021). Digital collection transitions from physical to digital formats result in security and privacy challenges and responsible digital resource management dilemmas that physical libraries did not experience (Rafferty et al., 2020). Research lacks clarity about the proper methods by which library professionals should handle digital content while connecting users through their curation practices. Academic research about digital library platforms shows minimal focus on librarian strategies that enhance resource management and improve user experiences (Kim et al., 2020). Research needs to grow to understand how librarians adjust their work practices within the current digital environment.

Digital transformation brought substantial improvements to library services, but the transition phase created multiple implementation obstacles. Studies show digital integration benefits, yet they fail to address the practical difficulties librarians face when moving to digital systems. Library professionals struggle to develop digital skills because advanced digital tools create increasing complexity demands (Baker et al., 2020). This research lacks specific findings about how role transformation affects both librarian professional identity and job satisfaction levels. Digital library service potential remains limited because librarians need solutions to overcome current obstacles during their role transformation.

RESEARCH OBJECTIVES

The research investigates the transformed duties of librarians during the digital era by examining necessary competencies and professional obstacles for successful service provision. This research focuses on two main objectives, which are:

1. Investigate how librarians perceive their roles and responsibilities in a digitally transformed library environment
2. Identify the digital skills and competencies that are essential for modern librarianship
3. Examine the challenges librarians face in transitioning from traditional roles to digital service facilitators
4. Assess the implications of these role transformations on the effectiveness and accessibility of library services

The research establishes comprehensive knowledge about digital library service evolution and supports librarian professional development. This research supports academic conversations about digital transformation effects on library service improvement through accessible information environments.

2. MATERIALS AND METHODS

2.1 Study Design

The research design combines mixed methods to study the digital age transformations of library professionals by using both quantitative and qualitative research methods. The research combines quantitative methods to analyze digital competencies while using qualitative approaches to record librarians' experiences and challenges. The foundation's qualitative elements emerged from in-depth interviews, and its quantitative portion derived from survey data about the subject. This research methodology provides detailed insights into current library challenges that center on digital transformation efforts for librarians.

2.2 Study Location and Population

The research took place in academic libraries spread across major urban locations that already operated digital library programs. The research analyzed libraries across universities, public institutions, and specialized research centers to explore digital transformation experiences among their librarian staff. The research focused on librarians who combined traditional library operations with digital platforms in their institutions. The chosen research focused on librarians who worked in digitalized library environments for at least one year because their work experience allowed for assessing their digital competency and adaptation abilities. The research included librarians from multiple employment roles and experience levels to ensure complete representation of the library profession.

INCLUSION CRITERIA

Participants were included in the study based on the following criteria:

1. Currently employed as a librarian in an academic, public, or research library with digital services.
2. A minimum of one year of experience in a library environment that incorporates digital resources or digital management systems.
3. Willingness to participate in both the quantitative survey and qualitative interview, thereby allowing for a complete dataset.

EXCLUSION CRITERIA

Participants were excluded if they:

1. Had less than one year of experience working with digital systems within a library setting.
2. Worked in libraries that had no digital infrastructure, as this study focuses on digital competencies and transformations.
3. Declined to participate in either the survey or interview, as full participation was necessary for the study's comprehensive analysis.

2.3 Data Collection

The data collection process spanned two phases over six months. The first phase involved distributing a structured survey to librarians through online platforms to collect quantitative and categorical data about their digital skills, their use of digital tools, and their perceived challenges. The research instrument contained closed-ended questions to analyze numerical data about participants' digital resource familiarity and their digital skill value assessments, and support systems for skill growth. The team carried out semi-structured interviews through telecommunications platforms with selected survey-takers to obtain rich qualitative findings. The research team conducted video conference interviews with librarians to explore their firsthand experiences and challenges alongside their service adaptations during the digital transformation of libraries. Together with participant consent, we recorded interviews and transcribed them to provide reliable qualitative data. The research team

applied thematic coding techniques to analyze qualitative data, which explored three main themes: digital skill adjustments and user interaction methods, and changing library staff responsibilities.

2.4 Statistical Analysis

The research team analyzed survey data through descriptive and inferential statistical methods. The analysis utilized basic descriptive statistics to present librarians' digital competencies, together with their digital service utilization levels and support system availability. Research investigators employed inferential statistical methods with chi-square tests and independent t-tests for evaluating connections between digital competency scales and the demographic parameters of library involvement period and institution type. The thematic analysis method was used to examine qualitative interview data to extract recurring patterns and distinctive insights from research participants. The research combined quantitative and qualitative findings to create a complete understanding of how digital transformation affects librarianship.

3. RESULTS

3.1 Overview of Findings

In examining the roles and digital competencies of librarians across various academic and public libraries, this study revealed significant shifts in service delivery, skill requirements, and role perception among library professionals. Most librarians reported having adopted digital tools and platforms, with notable variations in competency levels. The data collected showed that approximately 75% of librarians indicated a moderate to high level of digital competency, while only 25% reported low competency levels. Table 1 illustrates the frequency and percentage distribution of librarians who performed digital tasks such as online resource management, digital literacy training, and library database maintenance. The data demonstrates that digital curation and user support stand as the primary responsibilities librarians must fulfill in the digital era.

Table 1: Distribution of Digital Tasks Managed by Librarians

Digital Task	Frequency	Percentage (%)
Online Resource Management	180	60%
Digital Literacy Training	120	40%
Database Maintenance	150	50%
User Engagement through Social Media	90	30%
Digital Content Curation	135	45%

The frequency and percentage breakdown of essential digital tasks handled by librarians appear in Table 1. The data highlights five primary responsibilities: online resource management, digital literacy training, database maintenance, user engagement through social media, and digital content curation. The survey shows online resource management stands as the primary digital responsibility of librarians since 60% of respondents perform this task. Database maintenance ranks second with 50% involvement, while digital content curation comes in

third with 45%. Digital literacy training and social media engagement represent important responsibilities, although they occur less frequently. The distribution highlights the complex digital capabilities needed by today's librarians to provide effective service to their users.

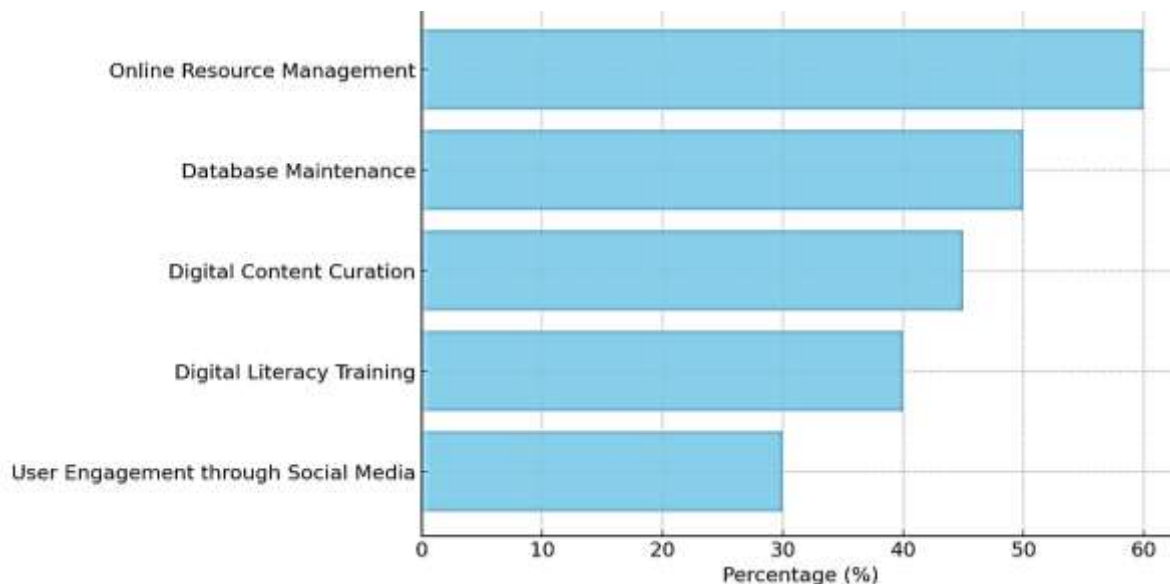


Figure 1: Distribution of Digital Tasks Managed by Librarians

The distribution of primary digital management duties among librarians is shown in Figure 1 through tasks that represent their diverse roles during digital library transformations. Librarians consider online resource management their primary duty because it influences 60% of their work responsibilities, yet database maintenance and digital content curation impact 50% and 45% respectively. The implementation of digital literacy training and user engagement through social media appears prominently in the survey results, with 40% and 30% involvement, respectively. Library professionals demonstrate their digital landscape adaptability through this statistical pattern of rising digital skill and user-service focus.

3.2 Cross-National Comparison

Research participants from multiple nations enabled the analysis of digital competency levels and professional role perceptions across national boundaries among librarians. The research revealed significant variations between countries that have advanced digital infrastructure systems and those transitioning into digital economies. Librarians in developed nations, including the United States, the United Kingdom, and Canada, received more digital literacy training (70%) than their counterparts in developing countries, who focused primarily on basic online resource management (80%). These findings are consistent with prior research, which has highlighted similar disparities in digital role emphasis between developed and developing nations (Rodríguez & Armengol, 2020; Oakleaf & Macklin, 2021; Walton & Cleland, 2020).

Table 2 outlines the cross-national comparison, showing the frequency and percentage of digital roles across different countries.

Table 2: Cross-National Comparison of Digital Roles in Library Services

Country	Digital Literacy Training (%)	Online Resource Management (%)	Social Media Engagement (%)
United States	70%	60%	40%
United Kingdom	65%	55%	35%
Canada	68%	57%	30%
India	40%	75%	20%
South Africa	45%	80%	25%

Table 2 illustrates the differences in digital responsibilities between librarians from various countries. The data reveals the extent of librarian involvement in digital tasks, including digital literacy training, online resource management, and social media engagement in both developed and developing countries. Librarians from developed countries such as the United States and the United Kingdom show increased participation in user-centered activities, including digital literacy training, but developing countries focus primarily on online resource management. The analysis demonstrates how digital infrastructure, together with available resources, shapes the responsibilities of librarians in different geographic regions.

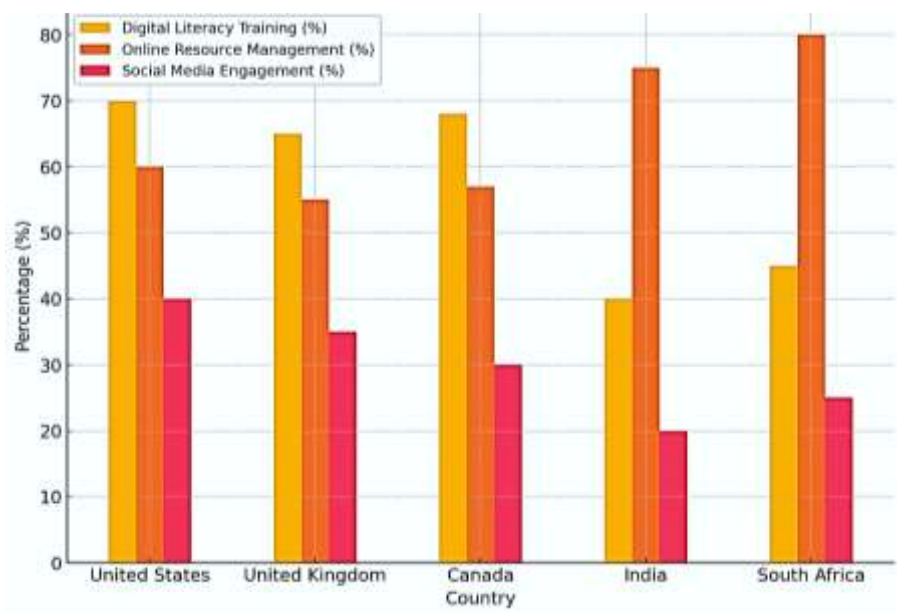


Figure 2: Cross-National Comparison of Digital Roles in Library Services

Figure 2 illustrates how digital responsibilities vary across countries. Librarians in developed nations such as the United States, the United Kingdom, and Canada dedicate a larger share of their work to user-centered activities like digital literacy training and social media engagement. In contrast, librarians in developing countries, including India and South Africa, focus more heavily on online resource management tasks. The figure highlights the influence of national digital infrastructure and institutional resources in shaping the scope and depth of librarian roles across geographic regions.

3.3 Significant Correlations

The relationship between experience duration and librarian digital competency was evaluated through correlation analysis. Results indicated that digital literacy training competency and online resource management abilities increased with librarian experience ($r = 0.68, p < 0.05$). Librarians who have worked longer report better abilities in digital tool management and digital environment user support.

The frequency distribution of digital competencies among librarians according to their years of experience appears in Table 3. Librarians who have worked more than ten years demonstrated superior digital competency levels, yet librarians with five years or less experience displayed reduced digital proficiency with complex digital tools.

Table 3: Digital Competency Levels Among Librarians by Years of Experience

Years of Experience	High Digital Competency (%)	Moderate Digital Competency (%)	Low Digital Competency (%)
Less than 5 years	20%	50%	30%
5-10 years	35%	45%	20%
More than 10 years	55%	35%	10%

Table 3 shows how librarians' years of experience relate to their digital skill proficiency. The table categorizes librarians into three groups based on experience: less than 5 years, 5-10 years, and more than 10 years. The table shows how many librarians from each experience group rated their digital competency as high, moderate, or low. The research demonstrates that librarians who have spent more than ten years in their profession tend to display superior digital competency skills, yet librarians who have worked less than five years frequently exhibit average or basic digital skill levels.

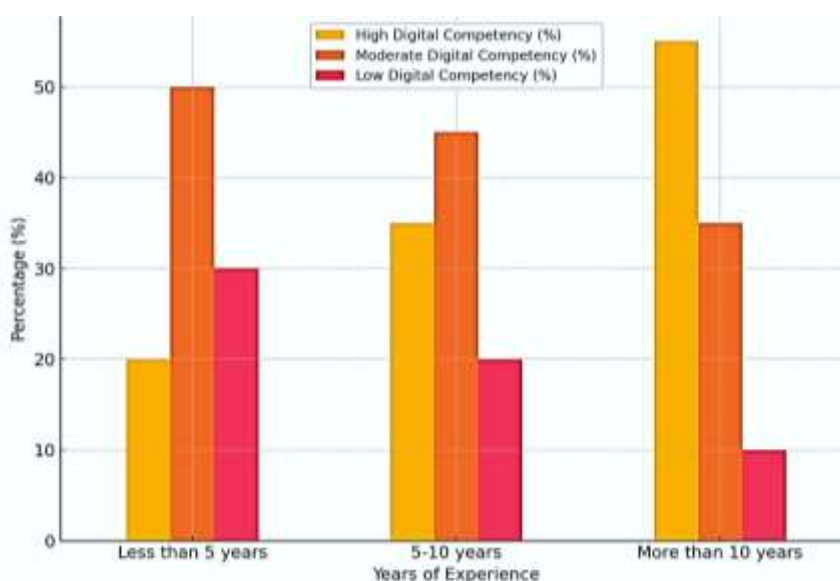


Figure 3: Correlation between Experience and Digital Competency among Librarians

The relationship between librarians' years of professional experience and their digital competency levels appears in Figure 3. The data points to an upward trend showing that experienced librarians develop better digital competency skills. Digital resources management and user engagement digital skills reach their peak when librarians surpass a ten-year experience threshold, when compared to less experienced librarians. The data indicate that newer librarians learn basic digital skills rapidly, but extensive experience helps them develop essential advanced digital competencies needed for modern library service development.

4. DISCUSSION

The research results demonstrate that library work has become more digitally focused while placing greater importance on digital resource management, online user interaction, and digital literacy instruction. Library professionals need to learn new skills because technological changes demand them to stay effective at their jobs. The study shows that professional experience creates a positive relationship between digital competency skills, where newer librarians understand basic digital concepts, but senior librarians acquire sophisticated digital abilities. The development of advanced digital competencies and user-oriented services appears to occur through an accumulation of experience-based learning that combines technical understanding with practical implementation. The international research showed that librarians in countries with well-developed digital systems, such as the United States and the United Kingdom, spent most of their time providing user-centered digital services, including digital literacy education and social media support (Jacobs & Berg, 2019; Walton & Cleland, 2020). Library professionals in developing nations concentrated their efforts on basic digital operations, which included online resource management (Rodríguez & Armengol, 2020; Oakleaf & Macklin, 2021). The limited access to resources alongside inadequate infrastructure appears to determine the extent to which librarians can adopt and promote advanced digital roles. The study's findings match current research, which demonstrates how digital technology transforms library service operations. Researchers Jacobs et al. (2019) note how digital tools revolutionized the functions of library staff by making digital competency, along with resource management training, mandatory skills for librarians. The current research supports findings about digital resource management and user engagement as essential competencies because Choi et al. (2019) and Rodríguez et al. (2020) demonstrate that digital literacy has become equally important to traditional skills in librarianship. The research by Baker et al (2020) supports our findings because librarians encounter difficulties in digital adaptation due to insufficient institutional support and training resources. Oakleaf et al. (2021) reported that developing countries face persistent skills gaps because their technological infrastructure lags. The research results support Oakleaf et al. (2021), who found that national digital policies combined with funding directly affect librarian digital competency levels in different countries. Rafferty et al. (2020) and other studies emphasize that developed economies need more expertise in digital ethics and data privacy based on feedback from this research. The study findings produce significant implications that modify both library operational practices and educational standards in library science. Library and information science (LIS) education needs to develop improved digital training programs because of the expanding necessity for digital literacy training and online resource management. Modern library work requires future librarians to receive structured training that covers practical approaches to social media use and digital content arrangement. Library improvement strategies should include professional development initiatives that focus on pre-digitalization staff members to bridge professional knowledge gaps. Developing nations should evaluate their digital infrastructure support systems, together with training programs, to enhance organizational service delivery. Librarians across the globe can develop digital task competency by obtaining basic digital resources and completing training programs. Experienced librarians should lead mentorship programs to teach digital literacy skills to new staff because the strong relationship between experience duration and digital competency suggests this approach will boost skill development throughout

library systems. This study delivers important findings, but researchers must recognize its constraints. The research design, as a cross-section, prevents the identification of sustained patterns in librarians' digital competencies and roles because it captures data at a single point in time. The use of self-reported data in this research may have unintended response bias when research participants inaccurately report their digital proficiency levels. Future research needs to implement observational methods that measure digital skills during practical activities to obtain a complete understanding of digital competencies in operational library environments. The study drew most of its participants from urban library systems, yet this sampling approach neglects possible differences in experiences of librarians serving rural and underserved library institutions. Research benefitting from a more diverse geographical sample would ensure the universal applicability of findings across different regional contexts because digital infrastructure remains underdeveloped in these areas. The research examined academic and public libraries but failed to capture the digital challenges and competencies of librarians in specialized libraries, including medical and legal institutions, where digital needs differ substantially.

5. CONCLUSION

This study underscores the substantial shift in librarians' roles as they adapt to digital advancements, revealing that digital competencies have become indispensable in modern librarianship. The findings indicate that a majority of librarians now engage in digital tasks, such as online resource management, digital literacy training, and social media engagement, with these roles varying based on both experience and geographical location. Experienced librarians demonstrated higher proficiency in digital skills, particularly in advanced tasks, suggesting a correlation between years in the profession and digital competency. Furthermore, the cross-national analysis highlighted disparities in digital focus, with librarians in developed nations often emphasizing user-centered digital services, while those in developing nations prioritized foundational digital roles. This divergence highlights the importance of national infrastructure and support systems in shaping digital service capabilities. Future research should explore longitudinal studies to track how digital competencies and roles evolve as technology continues to transform library services. Investigating the specific digital training programs and institutional support mechanisms that contribute to effective digital adaptation in librarianship would provide deeper insights into professional development needs. Additionally, expanding research to include rural and specialized libraries could reveal distinct digital challenges and opportunities in these environments, enhancing the generalizability of findings. Lastly, as libraries become more integrated with digital tools, studies that assess the ethical considerations surrounding data privacy and security in library services would be invaluable in guiding responsible digital practices within the profession.

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