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Navigating the Digital Shift: A Case Study on the Challenges and Adaptive Strategies of Academic Librarians in the Transition to Digital Resource Management

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***Abstract*—** This study explored the experiences of academic librarians in selected private colleges in Iligan City, Lanao del Norte, as they adapted to digital resource management. It examined the challenges they encountered, the impact of digital technologies on their roles and services, and the strategies and solutions they implemented in response to these changes. Using a qualitative case study design, seven academic librarians were purposively selected as participants. Data were gathered through semi-structured interviews and analyzed using Colaizzi's method, which involved extracting significant statements, formulating meanings, and organizing them into thematic categories. Three themes were identified from the analysis: challenges in managing digital transition, transformation through digital technologies, and strategies and solutions for digitization. Participants reported difficulties related to limited budgets, outdated infrastructure, insufficient training, and lack of manpower. Despite these constraints, they acknowledged the positive effects of digital tools in enhancing accessibility, service efficiency, and user engagement. Tools such as OPAC, e-resources, and online platforms enabled them to continue delivering services even in resource-limited environments. This study concludes that digital transformation in academic libraries requires more than technological tools—it also depends on institutional support, staff adaptability, and strategic leadership. It recommends that academic institutions may develop structured digital roadmaps, improve infrastructure, provide continuous professional development, and promote a culture of innovation.

***Keywords*—** Academic libraries, Case study, Digital transformation, Resource management.

INTRODUCTION

Academic libraries are undergoing a significant transformation driven by evolving digital technologies. In the past few decades, integrated library systems (ILS) and online public access catalogs (OPACs) have replaced traditional card catalogs and manual workflows. These systems enable users to search, reserve, and renew materials electronically, radically improving efficiency in circulation, cataloging, and acquisitions (Tenopir et al., 2013). Meanwhile, the rise of open access (OA) has continued to reshape librarians' roles, positioning them as crucial advocates and facilitators in the OA movement (Hadad & Aharony, 2024). This digital shift raises questions about how librarians adapt their practices, manage hybrid collections, and meet rising expectations for seamless, anytime-anywhere access.

Despite these opportunities, many libraries—especially those with limited resources—face persistent barriers. Studies show that managing electronic resources presents ongoing frustrations due to nonstandardized workflows, high subscription costs, and skills gaps among staff (Jahangiri et al., 2021). Infrastructure constraints are common, such as insufficient computer terminals or outdated systems, which hinder both librarians' efficiency and users' ability to access digital materials. Another challenge is that students now tend to prefer online materials, which leads to a noticeable decline in the use of printed books and in-person library visits. This shift in user behavior poses a concern for librarians who strive to maintain the relevance of physical collections. As students become more reliant on digital resources, traditional reading habits are gradually being replaced by quick searches and online browsing. This trend reflects a broader transformation in information-seeking behavior that libraries must continue to address (Budnyk, 2021).

As librarians engage with digital technologies, their roles and responsibilities continue to evolve. Scholars have noted that academic librarians are shifting towards roles as digital gatekeepers—selecting, integrating, and educating users about electronic content while guarding against threats like predatory publishing (Pierre–

Robertson, 2023). Simultaneously, libraries are integrating new service models, such as embedding digital resources within learning management systems (LMS), to deliver content more directly to students and faculty (Ranavagol, 2023). These developments illustrate how librarians are adapting workflows to support a more digitally centered academic environment.

This study examines the experience of academic librarians as they navigate the digital shift. Focusing on three research questions— (1) What are the main challenges they face? (2) How have digital technologies changed resource management and access? (3) What strategies have been used to overcome digitization obstacles? —this study aims to uncover grounded insights into how librarians balance evolving responsibilities, resource limitations, and user needs. In doing so, it contributes to the academic discourse on digital transformation in libraries and offers practical guidance for institutions undergoing similar transitions.

OBJECTIVES OF THE STUDY

This study aims to explore the experiences of academic librarians in selected private colleges in Iligan City as they transition toward digital resource management. Specifically, it seeks to:

1. Identify the main challenges librarians face in adapting to digital resource systems.
2. Understand how digital technologies have transformed library operations and access to information.
3. Explore the strategies librarians implement to manage and overcome issues related to digitization.

METHODOLOGY

This study employed a qualitative case study approach, which was considered the most suitable method for examining the research problem. According to Yin (2009), case studies are empirical inquiries that investigate a phenomenon within its real-life context, allowing researchers to gain a deeper understanding of complex social processes. Case studies can be exploratory, explanatory, or descriptive in nature (Yin, 2014), and are particularly effective in addressing "how" and "why" questions in situations where the researcher has little control over actual events. As Stake (1995) emphasized, case study research highlights the uniqueness and complexity of a single case or small group of cases, focusing on rich, contextualized insights rather than generalizations. In this study, the case study design allowed the researcher to explore the experiences of academic librarians as they navigated the transition toward digital resource management. It provided a framework to capture the challenges, evolving roles, and strategic responses within the unique context of an academic library. Through this approach, the study aimed to understand the lived realities of librarians and the institutional dynamics influencing their adaptation to digital change.

RESEARCH SETTING

This study was conducted in Iligan City, Lanao del Norte, specifically focusing on academic librarians working in selected private colleges. These institutions serve a wide range of students and maintain libraries that are in various stages of integrating digital resources alongside traditional print collections. Iligan City was chosen as the research setting because of its active academic environment and the ongoing efforts of private colleges to modernize their library services. The selected libraries reflect the real-world challenges and limitations often faced by private institutions, including constraints in funding, infrastructure, and access to digital technologies. By examining the experiences of librarians in this context, the study aimed to explore how they manage the shift to digital resource systems while continuing to meet the academic needs of their users. The setting provided a meaningful backdrop for understanding the adaptation strategies of librarians within resource-constrained environments. Through this, the study gained deeper insights into the role of librarians as they respond to the demands of digital transformation in private higher education institutions.

PARTICIPANTS OF THE STUDY

This study involved seven academic librarians from selected private colleges in Iligan City, Lanao del Norte. These participants were chosen based on their active roles in managing library services amidst the ongoing transition to digital resource management. As frontliners in library operations, they provided firsthand perspectives on the challenges, adjustments, and innovations related to digitization. Their experiences offered valuable insights into how academic libraries in private institutions adapt to limited resources while striving to meet the evolving needs of students and faculty. Each participant had varying years of professional experience, contributing a broad range of views on institutional practices and technological adoption. By focusing on this group, the study aimed to capture the lived realities of librarians navigating digital transformation within their local contexts. Their

narratives helped uncover practical strategies and institutional gaps relevant to the enhancement of library services in similar educational settings.

RESEARCH INSTRUMENT

This study utilized 6 semi-structured interview questions as the primary research instrument. Semi-structured interviews provided the flexibility to explore the participants' experiences in depth while maintaining a consistent focus on the research objectives. The questions were designed to examine the librarians' challenges in transitioning to digital resource management, the impact of digital technologies on their roles, and the strategies they implemented to address these changes. This approach allowed participants to freely share their insights while ensuring that all key areas of inquiry were covered. Follow-up questions were also used as needed to clarify responses and probe deeper into specific experiences. Through this method, the researcher was able to gather rich qualitative data reflecting the unique perspectives of each librarian.

DATA COLLECTION

The data for this study were gathered through semi-structured interviews with seven academic librarians from selected private colleges in Iligan City. The interviews aimed to explore their experiences with the shift toward digital resource management, the challenges they encountered, and the strategies they employed to adapt to technological changes. Participants were encouraged to share their personal insights, allowing for a deeper understanding of their professional roles in the evolving library environment. Notes were taken during the discussions to document key points and recurring themes. This approach ensured a comprehensive and accurate representation of the participants' views. The interviews provided rich qualitative data that highlighted the realities of librarians working within resource-limited educational settings.

ETHICAL CONSIDERATIONS

This study adhered to ethical research principles to ensure the protection and well-being of all participants. Before data collection, informed consent was obtained from each participant, ensuring they fully understood the purpose of the study, their voluntary participation, and their right to withdraw at any time without consequence. Confidentiality and anonymity were strictly maintained, with all responses handled with discretion and used solely for research purposes. Participants were assured that their identities would not be revealed in any part of the study. Additionally, the study followed ethical guidelines set by the institution, ensuring that all procedures were conducted with integrity and respect for the participants' rights. The researcher also ensured a respectful and non-coercive interview environment to promote honest and open sharing of experiences.

DATA ANALYSIS

In qualitative research, the process of data analysis takes place alongside other phases such as data collection and interpretation of results (Creswell & Creswell, 2018). This method involves using interpretive techniques to make sense of the data gathered (Stake, 1995). After conducting and transcribing the interviews, the researcher performed participant validation to confirm the accuracy of the responses. The analysis was then carried out using the five-step procedure recommended by Creswell and Creswell (2018), which involved coding the data and organizing it into meaningful themes.

RESULTS AND DISCUSSION

The research findings are organized into three major themes based on the research questions: (a) challenges in managing digital transition, (b) transformation through digital technologies, and (c) strategies and solutions for digitization. These themes reflect the lived experiences of seven academic librarians from private colleges in Iligan City, Lanao del Norte. The analysis provides an in-depth understanding of their challenges, how they adapt to technological changes, and the methods they use to meet the needs of library users in a digital environment.

Theme 1: Challenges in Managing Digital Transition

Several participants highlighted budget limitations as a persistent concern. Participant 1 shared that limited student library fees hinder the subscription to needed e-databases, while Participant 2 described difficulties in upgrading infrastructure. Participant 6 reported a lack of digitization equipment and inadequate computer units. Participant 4 expressed concern about users without internet access, noting that balancing innovation with inclusivity is difficult. Meanwhile, Participant 7 emphasized that librarians often work alone, making workload and manpower significant issues.

Significant Statements:

"The limited library fees collected from students make it difficult to secure the necessary budget for these subscriptions." (Participant 1)

"Managing limited budgets to afford expensive e-resource subscriptions and digital infrastructure upgrades is a big challenge." (Participant 2)

"We lack the equipment needed for digitization, and our computers have limited storage capacity." (Participant 6)

"Some users have no internet at home. Balancing innovation with accessibility and support for all users is a constant part of the job." (Participant 4)

"Librarians often work alone, not because we want to, but because we have no choice… the manpower challenge is a big hurdle." (Participant 7)

Academic libraries frequently face major financial and infrastructural constraints in adopting digital services. Adjei & King (2024) found that libraries in Ghana and South Africa suffer from limited budgets, inadequate ICT infrastructure, and a lack of institutional support, including policy gaps that hinder digital readiness. Similarly, Moonasar & Ngoepe (2023) highlighted the urgent need for increased funding to sustain the expansion of digital collections in Africa, pointing out how infrastructure deficiencies and financial shortfalls continue to undermine long-term digital deployment.

In addition to financial and infrastructure barriers, human resource limitations pose a significant challenge to digital transformation. According to Adjei & King (2024), many librarians lack sufficient skills in library technologies, largely due to irregular and limited training opportunities. Subaveerapandiyan et al. (2022) further emphasized that in India, the lack of e-resource management competencies among academic staff has led to underutilized or neglected digital systems. Without strengthened training programs and investment in digital literacy, these human resource challenges will continue to stall the progress of academic libraries in the digital era.

Theme 2: Transformation through Digital Technologies

All participants agreed that digital tools had improved efficiency and accessibility. Participant 1 explained how OPAC and e-resources allowed students to search and borrow materials more easily. Participant 6 described the expansion of services through online platforms, enabling 24/7 access. Participant 5 mentioned the use of Gmail and chat tools for managing e-resources and communicating with users. Participant 2 highlighted the automation of cataloging and remote access to materials. These technologies have transformed how libraries deliver services and interact with patrons.

Significant Statements:

"Creating statistics for borrowed books is now simple using OPAC. Students can check which books are available anytime." (Participant 1)

"Technology has enhanced both the efficiency of library operations and the accessibility of information for our community." (Participant 6)

"Gmail and similar tools are used to create online catalogs, manage e-resources, and assist users through email or chat." (Participant 5)

"Digital technologies have transformed library management by enabling automated cataloging and remote access." (Participant 2)

"Now I also organize the digital collections too—offering digital literacy is all part of our services." (Participant 4)

"To perform daily tasks in the library, I connect to social media and make use of digital resources." (Participant 3)

"Librarians today are becoming more tech-savvy. It's easier now to integrate new tools like AI after attending conferences." (Participant 7)

The integration of artificial intelligence (AI) in academic library services is reshaping the future of higher education's digital landscape. Okunlaya, et al. (2022) proposed an innovative conceptual framework for AI-driven library services aimed at advancing the digital transformation of university education. Their framework emphasizes how AI tools—such as chatbots, intelligent search systems, and predictive analytics—can enhance the efficiency and accessibility of library functions. The study underscores that AI does not merely automate services but also creates intelligent systems that adapt to users' evolving academic needs. This transformation supports a more personalized, data-driven approach to academic resource delivery, aligning library services with the broader goals of digital education.

In a broader sustainability context, Rusch, et al. (2023) reviewed how digital technologies, including AI and data analytics, contribute to sustainable product management within a circular economy. Although

focused on business strategy, their findings are highly relevant to academic libraries aiming to develop sustainable digital infrastructures. The study suggests that technologies such as digital twins, blockchain, and lifecycle data management systems enable better resource optimization and long-term planning. Libraries, as resource-intensive institutions, can adapt similar technologies to manage digital collections more efficiently and support sustainable practices in acquisition, preservation, and access to digital content.

Looking into the future of academic libraries, Jain & Behera (2023) visualized how libraries must evolve in terms of collections, spaces, technologies, and services. They argue that the library of the future must be dynamic, integrating flexible learning spaces, hybrid collections, and advanced digital technologies to meet changing user expectations. Their study highlights the importance of reimagining library environments not just as repositories of knowledge but as collaborative hubs that foster innovation and digital engagement. The findings reinforce the idea that technological advancement and user-centered service design must go hand-in-hand for libraries to remain relevant in the digital era.

Theme 3: Strategies and Solutions for Digitization

Despite constraints, librarians implemented creative strategies to support digital access. Participant 1 used a mobile app (CamScanner) to scan book pages and send them to students. Participant 6 built a Google Drive folder for Open Access Resources (OARs) linked to the library website. Participant 4 and 5 emphasized offering digital literacy orientations and free computer access. Participant 3 mentioned adopting a leadership role and supporting coworkers in adapting to new systems. Participant 7 shared that proposal writing and technology advocacy were used to secure administrative support.

Significant Statements:

"I installed CamScanner on my cellphone and scanned book pages for students, then sent them via Messenger." (Participant 1)

"We compiled OARs by subject and organized them in Google Drive, linking them to our library website." (Participant 6)

"We conduct digital literacy workshops and provide access to public computers to improve accessibility." (Participant 4)

"We offer simple training sessions on digital tools so users can access e-resources independently." (Participant 5)

"I take a leadership role in helping coworkers and participating in seminars to improve tech skills." (Participant 3)

"We market proposals to the administration to justify costs and gain approval for digital initiatives." (Participant 7)

Digital transformation requires not only advanced technologies but also well-structured strategies to ensure effective implementation. Trzaska et al. (2021) examined how energy companies develop digitalization business strategies under Industry 4.0 conditions to manage uncertainty. Their findings emphasized the importance of integrating digital tools—such as predictive analytics and smart sensors—into strategic planning to enhance operational responsiveness and resilience. These strategies help organizations reduce risks, streamline processes, and foster innovation in rapidly changing environments, making digital transformation a proactive rather than reactive endeavor.

Aghahadi et al. (2024) further contributed to this discussion by reviewing digitalization strategies in power distribution grids. They highlighted solutions that address the technical and organizational challenges of digitization, such as adopting standardized communication protocols, investing in workforce digital literacy, and establishing cybersecurity safeguards. Their study stressed that successful digitalization involves a combination of infrastructure upgrades, policy coordination, and long-term investment in human capital. This holistic approach ensures that technological advancements are matched by institutional readiness and strategic clarity.

On a broader scale, Schallmo & Tidd (2021) argued that digitization strategies must be embedded in the overall value creation processes of organizations. They introduced models for digital business transformation that emphasize leadership, cultural change, and customer-centric design as key components. Veit & Thatcher (2023) also pointed out the dual nature of digitalization—both as a solution to sustainability challenges and as a potential contributor to new ethical or environmental problems. Thus, strategies for

digitization must not only aim for efficiency but also align with sustainable and socially responsible goals.

CONCLUSION

This study concludes that digitization is a multifaceted journey marked by both progress and persistent challenges, as revealed through the lived experiences of academic and organizational personnel. Participants shared that the transition to digital systems brought significant improvements in accessibility, efficiency, and communication. Tools such as OPAC, e-resources, cloud platforms, and learning management systems enabled them to manage resources and serve clients or students more effectively. However, the process was not without emotional and cognitive adjustments, as some described feelings of being overwhelmed during early phases of implementation.

The findings also revealed various challenges and opportunities that emerged during the digital shift. Common issues included inadequate infrastructure, lack of technical training, resistance to change, and concerns about cybersecurity. Nonetheless, participants also recognized positive outcomes such as quicker access to information, broader reach of services, and improved collaboration across teams and departments. These gains were more evident in institutions that proactively adopted digital tools and supported users in adapting to them.

To navigate this transformation, participants shared multiple strategies and solutions that supported a smoother digitization process. These included the adoption of flexible technologies, the establishment of regular training programs, and the presence of responsive and visionary leadership. Their approaches emphasized the importance of a clear digital strategy, strong data protection, and a culture that fosters adaptability and innovation. Ultimately, the success of digitization lies not only in technological advancement but also in the ability of people and institutions to embrace change, develop competence, and work collaboratively toward digital integration.

RECOMMENDATIONS

This study recommends that institutions undertaking digital transformation may begin by formulating a clear and structured digital plan. This plan may outline specific goals, define implementation steps, allocate appropriate resources, and establish regular evaluation procedures to guide the direction of digitization effectively. There may be a need to invest in dependable and scalable digital infrastructure. Enhancing internet connectivity, upgrading hardware and software systems, and adopting interoperable technologies may provide a strong foundation for sustained digital operations. To ensure that personnel are equipped for the transition, institutions may implement ongoing training and development programs. These may include workshops, skills enhancement sessions, and peer learning initiatives to build digital competence and reduce uncertainty or resistance. This study also recommends that leadership may play an active role in driving digital change. Leaders may communicate the vision, involve all stakeholders in the process, and serve as role models in embracing innovation. Supportive leadership may strengthen staff engagement and trust in the digital shift.

Cybersecurity may be prioritized as part of any digitization plan. Institutions may adopt protective policies, invest in secure systems, and educate users on responsible online practices to prevent risks and protect sensitive data. Creating a culture that values innovation and adaptability may further enhance digital transformation. Institutions may encourage experimentation, celebrate small wins, and provide platforms for open feedback to foster continuous improvement and resilience.

Finally, this study recommends that institutions may consider ethical and sustainable approaches in their digital strategies. Responsible data use, environmentally conscious practices, and equitable access to digital resources may ensure that the benefits of digitization are inclusive and long-lasting.

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