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Revolutionizing Librarianship: Navigating the Digital Transformation in Academic Libraries

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Abstract

In response to the growing demand for digital resources and services, this study investigates the current state of digital transformation within academic libraries. The research explores how these institutions are adapting to technological advancements and the evolving needs of their user communities. A mixed-method approach was employed, combining qualitative insights from academic librarians with quantitative data analysis to provide a comprehensive view of the transformation process. Key findings reveal that while academic libraries have made significant strides in digital transformation, ongoing challenges remain. The study emphasizes the critical role of technological infrastructure, organizational strategies, and human resources in facilitating this transformation. The research highlights the importance of continuous assessment and strategic planning to ensure that libraries not only keep pace with technological changes but also effectively meet user expectations. To sustain progress, the study suggests that academic libraries invest in professional development, enhance communication channels, and foster collaboration among staff. By addressing these areas, libraries can navigate the complexities of digital transformation, ensuring their relevance and effectiveness in the digital age. The implications of this study underscore that there is a need for a holistic approach to digital transformation that integrates not only technology and organizational development but also human resource management.

Keywords: Revolutionizing Librarianship, Digital Transformation, Academic Libraries

INTRODUCTION

In recent years, the information landscape has undergone a profound shift due to rapid technological advancements, leading to the digital transformation of various sectors (Abrashi, 2022). This transformation has significantly impacted the traditional role of libraries, which have evolved from being repositories of physical books to becoming dynamic hubs of digital information. In this context, the study focuses on the changing role of academic libraries and the imperative for them to navigate the challenges and opportunities presented by the digital era (Hall, 2016).

Academic libraries hold a unique position in supporting education, research, and scholarly activities (Maideen, 2020). The study recognizes the importance of these institutions in facilitating access to knowledge and information for students, faculty, and researchers (Newman, 2017). With the increasing prevalence of digital resources and the changing expectations of library users, academic libraries must adapt to meet the evolving needs of their diverse user base (Ramesh, 2019).

Digital transformation in academic libraries is not merely a technological shift but has broader implications for the efficiency and effectiveness of library services (Adebara, 2016). The integration of automated cataloging systems, digital archiving, and online databases presents opportunities for libraries to enhance their services and streamline operations (Ahmad, 2019). By embracing these digital tools, libraries can better fulfill their mission of providing accessible and relevant information to the academic community (Raymond, 2018).

To understand the global context of digital librarianship, the study explores international trends and best practices adopted by leading academic libraries (Fassoulis, 2016). Examining successful case studies from around the world provides valuable insights into effective strategies for navigating the digital transformation process (Young, 2020). This comparative perspective contributes to a comprehensive understanding of the

challenges and successes faced by libraries globally (Hoover, 2018).

Central to the study is an exploration of how digital transformation impacts the learning and research experiences of students and faculty (Latham, 2018). The integration of digital resources and services has the potential to significantly influence academic success and innovation (Ramesh, 2019). By investigating the intersection of technology and education within the library setting, the study aims to shed light on the ways in which digital transformation can positively contribute to the academic mission (Reid, 2016).

However, the study also acknowledges the existence of challenges and barriers in the digital transformation journey (Sialai, 2016). Issues such as the need for staff training and concerns about digital divide and accessibility represent potential obstacles for academic libraries. By identifying and addressing these challenges, the study aims to provide practical insights and recommendations for libraries seeking to navigate the complexities of digital transformation successfully (Reid, 2016).

Overall, this study lies in the recognition of the transformative impact of digital technologies on academic libraries and the need for a comprehensive understanding of the challenges and opportunities associated with this evolution (Abrashi, 2022). By exploring the intersection of technology, education, and information access, the study aims to contribute valuable insights to the ongoing discourse on revolutionizing librarianship in the digital age (Raymond, 2018).

Background of the Study. Over the past few decades, the field of librarianship has witnessed a profound metamorphosis, primarily catalyzed by the relentless advance of digital technologies (Koloniari, 2017). The advent of the internet, electronic databases, and digital publishing has revolutionized the way information is created, disseminated, and accessed. This paradigm shift has implications for academic libraries, institutions traditionally regarded as bastions of knowledge housing extensive print collections (Lantzy, 2019).

Historically, academic libraries have played a central role in supporting the educational and research missions of universities (Latham, 2018). However, the ubiquity of digital resources has challenged the conventional notions of library services and necessitated a reevaluation of their role in the contemporary information landscape (Kaur, 2016). This study delves into the background of this transformation, recognizing the need to understand how academic libraries have historically evolved and how they are presently adapting to the digital age (Manjula, 2021).

The emergence of digital technologies has not only altered the format of information but has also reshaped user expectations and behavior. Students, faculty, and researchers now demand seamless access to a wide array of digital resources, necessitating academic libraries to rethink their strategies for collection development, organization, and dissemination of information (Luambano, 2020). This background exploration aims to contextualize the changing dynamics of user needs and technological advancements that have prompted academic libraries to embark on a digital transformation journey (Fassoulis, 2016).

The acceleration of this transformation is further fueled by the global trend towards open access, collaborative research, and the increasing interdisciplinary nature of academic inquiry. As academic libraries grapple with these shifts, they are confronted with challenges such as the need for staff upskilling and ensuring equitable access to digital resources. Understanding the historical trajectory and the multifaceted challenges faced by academic libraries provides a foundation for exploring effective strategies in navigating the complexities of digital transformation (Filsin, 2018).

Additionally, the study acknowledges the diversity among academic libraries worldwide, considering factors such as institutional size, geographic location, and resource availability

(Hall, 2016). Recognizing this diversity is crucial for developing insights that are applicable across various contexts and for identifying context-specific best practices that may inform the formulation of adaptable and effective strategies for digital transformation (Gurunath, 2020).

In essence, this study seeks to unravel the historical roots and contextual intricacies that have propelled academic libraries into the digital era (Owate, 2021). By delving into the evolution of librarianship and understanding the multifaceted challenges faced by these institutions, the study aims to provide a nuanced exploration of the ongoing digital transformation and contribute to the discourse on revolutionizing librarianship in the contemporary academic landscape (Lantzy, 2019).

Statement of the Problem. This study aims to explore and understand the multifaceted challenges and opportunities associated with the digital transformation of academic libraries. Specifically, it seeks to answer the following questions:

1. What is the level of digital transformation in academic libraries?

2. What are the factors affecting the digital transformation in academic libraries?

3. What are the experiences of academic librarians in navigating digital transformation?

Objectives of the Study. This study is conducted with the overarching aim of comprehensively investigating the digital transformation of academic libraries and analyzing its impact on various facets, including services, resources, and the roles of library staff. To achieve this overarching goal, the study delineates specific objectives.

Firstly, the study aims to assess the extent to which the adoption of digital technologies has influenced the efficiency and effectiveness of information access and retrieval processes within academic libraries. Understanding the implications for these core library functions is critical in evaluating the overall impact of digital transformation on user experiences and outcomes.

Additionally, the study sets out to explore the perceptions and experiences of library staff regarding the impact of digital transformation on their roles and responsibilities. This qualitative objective aims to provide insights into the human dimensions of the transformation, understanding how staff members perceive and adapt to changes, and how these perceptions align with or diverge from institutional goals and user expectations.
In light of the findings, the study seeks to provide practical recommendations for academic libraries. These recommendations are intended to guide institutions in overcoming challenges and optimizing the benefits of digital transformation, offering actionable insights for decision-makers and practitioners in the field.

Theoretical/Conceptual Framework. This study will be anchored on the following theories: Innovation Diffusion Theory (IDT) and Resource Dependence Theory (RDT).

The Innovation Diffusion Theory, proposed by Everett Rogers, serves as a foundational framework for understanding how new technologies are adopted and assimilated within organizations. In the context of academic libraries, IDT offers insights into the stages of adoption, the factors influencing the adoption process, and the diffusion of innovation among library staff and users. This theory posits that the adoption of innovations is influenced by factors such as the perceived attributes of the innovation, the communication channels through which information is disseminated, the social system in which the innovation is embedded, the extent of change agents promoting the innovation, and the rate of adoption over time. Applying IDT allows the study to analyze the factors influencing the adoption and integration of digital technologies within academic libraries, shedding light on the dynamics of technological change.

Meanwhile, Resource Dependence Theory, developed by Pfeffer and Salancik, provides a lens through which to examine the relationships between academic libraries and their external environment. RDT posits that organizations are dependent on external resources to survive and thrive, and their behavior is shaped by the need to acquire and control these resources. In the context of digital transformation in academic libraries, RDT helps analyze the dependencies that libraries have on external factors such as funding, technological infrastructure, and support from university administration. This theory allows for an exploration of how external dependencies may influence the strategies and decisions made by academic libraries in their pursuit of digital transformation. Understanding resource dependencies is crucial for developing effective strategies that enable libraries to navigate the challenges associated with digital transformation.

By integrating Innovation Diffusion Theory and Resource Dependence Theory, the study aims to provide a nuanced understanding of the processes, challenges, and strategies involved in the digital transformation of academic libraries. These theories offer complementary perspectives, with IDT focusing on the internal dynamics of technology adoption, and RDT emphasizing the external factors that shape the organizational environment in which libraries operate. Together, they create a comprehensive theoretical framework for analyzing the multifaceted aspects of digital transformation within academic libraries.

Significance of the Study. This study is significant for various stakeholders, including academic institutions, students, librarians, and researchers. For academic institutions, the findings provide valuable insights that can guide the formulation of policies and strategic plans, ensuring that library services align with broader educational goals. Students benefit by gaining a deeper understanding of how digital transformation enhances their access to information resources, ultimately improving their academic experience. Librarians can leverage the study's insights to adapt to technological changes, refine their roles, and better integrate digital tools into library services. Researchers in library and information science will find the study's contributions useful for expanding the existing body of knowledge and inspiring further research. Overall, this study establishes a foundation for future investigations into the digital transformation of academic libraries.

LITERATURES

The digital transformation of academic libraries represents a paradigm shift in the way information is accessed, managed, and disseminated within educational institutions. As technological advancements continue to reshape the landscape of information services, librarians are faced with unprecedented challenges and opportunities (Owate, 2021). This literature review aims to synthesize existing research and scholarship on the digital transformation of academic libraries, providing a comprehensive understanding of the trends, challenges, and best practices in this evolving domain (Abrashi, 2022).

Digital transformation in academic libraries is characterized by the integration of advanced technologies to enhance the delivery of library services, facilitate access to information resources, and optimize operational efficiency (Filson, 2018). The transformative potential of digital technologies in reshaping traditional library functions emphasizes the importance of librarians adopting a proactive stance to harness the benefits of digitization, thereby ensuring the continued relevance of academic libraries in the digital age (Ramesh, 2019).

Innovation Diffusion Theory (IDT) serves as a foundational framework for understanding the process of technology adoption within academic libraries. IDT posits that the adoption of innovations is influenced by factors such as the perceived attributes of the innovation, communication channels, the social system, and the rate of adoption over time (Lantzy, 2019). Numerous studies have applied IDT to investigate the adoption patterns of digital technologies within academic libraries,

shedding light on the factors influencing the diffusion of innovations and providing insights into strategies for effective implementation (Manjula, 2021).

The digital transformation of academic libraries has profound implications for the nature and delivery of library services. Research explores how the adoption of digital technologies has expanded the scope of library services beyond traditional boundaries (Ojennus, 2019). The study emphasizes the role of digital platforms in facilitating remote access, collaborative learning, and personalized services. Similarly, the work delves into the impact of digital transformation on reference services, highlighting the shift towards online reference support and the integration of artificial intelligence to enhance user experiences (Kaur, 2016).

While the digital transformation presents numerous opportunities, it also brings forth a host of challenges (Musa, 2022). The importance of addressing these challenges to ensure a smooth and effective transition to digital-centric library environments is emphasized (Gurunath, 2020).

Scholars have identified key areas for future exploration and highlighted best practices for navigating the digital transformation in academic libraries (Manjula, 2021). The concept of the "smart library" is gaining prominence, wherein libraries leverage technologies like the Internet of Things (IoT) and data analytics to enhance user experiences. Additionally, the collaborative efforts of academic libraries in creating digital repositories and open educational resources are examined as potential models for the future (Tausif, 2019).

METHODOLOGY

Research Design. This study employed a convergent parallel mixed-methods research design, which integrates both quantitative and qualitative approaches to provide a comprehensive analysis of the digital transformation of academic libraries. Recognizing the multifaceted nature of the research questions and the need to capture both quantitative trends and qualitative insights, a mixed-methods approach provides a robust framework for addressing the complexities inherent in the study.

The quantitative component of the research involves the use of surveys and statistical analyses to assess the extent of the adoption of digital technologies in academic libraries. This aspect of the study allows for the collection of numerical data, providing measurable insights into the efficiency and effectiveness of information access and retrieval processes. The quantitative phase is essential for identifying patterns and trends within a large dataset, offering a broad overview of the digital transformation landscape.

Complementing the quantitative strand, the qualitative component of the research employs interviews and focus group discussions with library staff. This qualitative phase delves into the subjective experiences, perceptions, and challenges faced by librarians in the context of digital transformation. By exploring the human dimensions of technological change, the qualitative data adds depth and context to the study, offering a rich understanding of how library staff navigate the evolving roles and responsibilities associated with digital technologies.

The approach is particularly fitting for this study due to its ability to triangulate findings from different data sources. By combining quantitative and qualitative data, the study can provide a more holistic and corroborated understanding of the digital transformation landscape in academic libraries. The integration of both approaches allows for a convergence of insights, strengthening the overall validity and reliability of the study's findings.

Moreover, the mixed-methods design aligns with the diverse nature of the study's objectives, accommodating the need to explore global trends, identify best practices, and understand the experiences of library staff. This approach enables the study to leverage the strengths of

both quantitative and qualitative methods, ensuring a comprehensive analysis that goes beyond numerical trends to capture the rich narratives and contexts that characterize the digital transformation journey.

Research Instrument. For the quantitative aspect of the study, a structured survey questionnaire serves as the primary research instrument. The questionnaire is designed to capture data on the level of digital transformation within academic libraries, using various indicators such as the implementation of digital systems, accessibility of digital resources, and the effectiveness of digital infrastructure.

The validity of the questionnaire was ensured through expert review and a pilot test. Subject matter experts in the field of digital library services reviewed the questionnaire to ensure that it accurately measures the intended constructs. The pilot test involved a small sample of librarians, whose feedback helped refine the questionnaire to improve clarity and relevance.

The reliability of the questionnaire was assessed using Cronbach's alpha, a statistical measure that indicates the internal consistency of the instrument. A Cronbach's alpha value above 0.7 was considered acceptable, demonstrating that the items within each construct were reliably measuring the same underlying concept. The overall reliability score was found to be high, suggesting that the questionnaire consistently measures the level of digital transformation across different libraries.

In the qualitative phase, the study utilized semi-structured interview guides and focus group discussion guides as the primary research instruments. These instruments were meticulously crafted to facilitate an in-depth exploration of the subjective experiences, perceptions, and challenges encountered by library staff in the context of digital transformation. The interview guides comprised open-ended questions designed to elicit detailed narratives from individual participants, focusing on their personal experiences with technological changes, shifts in job responsibilities, and their views on the broader implications of digital transformation. The focus group discussion guides, structured to foster collective dialogue, aimed to capture the diverse perspectives and shared experiences of library teams, thus providing a richer understanding of the collaborative and organizational dynamics at play.

The integration of both quantitative and qualitative research instruments aligns with the convergent parallel mixed-methods design, ensuring a comprehensive analysis that combines broad numerical trends with rich, narrative insights. The triangulation of data from these instruments enhances the overall validity and reliability of the study's findings, offering a well-rounded understanding of the digital transformation process within academic libraries.

Respondents. The study engaged with a diverse range of respondents to gather comprehensive insights into the digital transformation of academic libraries. Key participants include professional librarians and library staff actively involved in the daily operations and management of academic libraries. These respondents, selected based on their substantial experience and direct involvement in digital transformation initiatives, encompass roles such as librarians, information specialists, catalogers, and those overseeing user services. Their participation is critical for capturing the operational and practical aspects of digital transformation within various library contexts.

Additionally, the study targeted administrators within academic libraries, including library directors and department heads. These individuals play a pivotal role in shaping the strategic direction of libraries and overseeing digital transformation initiatives. The selection of administrators will be based on their involvement in decision-making processes, policy formulation, and their capacity to guide the overall direction of the library's technological evolution.

Furthermore, Information Technology (IT) professionals working within academic libraries, including system administrators and IT specialists responsible for managing the technical infrastructure supporting digital technologies, were also key respondents. These IT professionals, selected for their hands-on experience in implementing and maintaining digital technologies within academic library settings, will provide valuable insights into the technical challenges and opportunities associated with digital transformation.

While students and library users are recognized as important stakeholders in the digital transformation process, their inclusion in this study focused on gathering their perspectives to understand the broader context of library services rather than specifically measuring the impact on their user experience. This approach ensures that the study remains aligned with its primary research objectives and avoids making claims about specific impacts on users that are not directly addressed in the results and discussions.

The study engaged a total of 42 participants, divided into both quantitative and qualitative phases. For the quantitative phase, there were respondents, including 5 librarians, 2 administrators, 2 IT professionals, and 30 students. In the qualitative phase, 3 participants were included, consisting of librarians, administrators, and IT professionals. The research locale was the Quezon City in the Philippines, which provided a rich context for understanding the digital transformation efforts within academic libraries in this urban setting.

By engaging with these diverse stakeholders, the study aims to provide a well-rounded understanding of the digital transformation landscape in academic libraries, focusing on the roles and experiences of those directly involved in or supporting these initiatives.

Data Gathering Procedures. The data gathering procedure for this study employs a mixed-methods approach, combining quantitative and qualitative data collection methods to comprehensively explore the digital transformation of academic libraries. In the quantitative phase, a structured survey questionnaire is developed based on the research objectives, covering aspects such as technology adoption and efficiency measures. Before the main data collection, a pilot test is conducted with a small group of participants to refine the questionnaire. Purposive sampling is then used to select participants from various categories, including librarians, administrators, IT professionals, and students. Recruitment is initiated through official channels, and participants are provided with an informed consent process before completing the survey electronically. The collected quantitative data are analyzed using descriptive statistics and comparative analyses to draw insights into digital technology adoption and its impact.

Simultaneously, the qualitative phase involves semi-structured interviews with individual librarians and focus group discussions with library staff. Interview and focus group guides are developed to explore qualitative aspects, such as experiences, perceptions, and challenges related to digital transformation. Pilot testing ensures the effectiveness of these guides before initiating the main qualitative data collection. Purposive sampling is used to select participants, and recruitment is facilitated through official communications. The qualitative sessions are recorded, transcribed, and then analyzed using thematic analysis to identify emergent patterns and themes.

The integration of quantitative and qualitative data is a key aspect of the procedure. Triangulation is employed to validate and enhance the overall findings by comparing results from both data sources. The synthesized findings provide a nuanced interpretation of the interplay between quantitative trends and qualitative insights, offering a comprehensive understanding of the digital transformation of academic libraries. This systematic and thorough approach ensures the study's objectives are met, and the insights gathered contribute to the ongoing discourse on digital evolution within academic library settings.

Data Analysis. The data analysis for this study involves a comprehensive approach that integrates both quantitative and qualitative data, aligning with the mixed-methods design. In the quantitative phase, the data collected through the survey questionnaire are subjected to statistical analysis. The primary focus of the quantitative analysis is on calculating the mean and weighted means of the responses to understand the adoption of digital technology in academic libraries. These measures provide a clear and concise overview of how respondents perceive the level of digital transformation in their institutions. This approach allows for a more straightforward interpretation of the data.

Simultaneously, the qualitative data collected from interviews and focus group discussions undergo thematic analysis. This process involves systematically identifying, analyzing, and interpreting themes and patterns within the qualitative data. Open coding is employed to categorize responses, allowing for the emergence of key themes related to the experiences, perceptions, and challenges faced by librarians and other stakeholders in the context of digital transformation. The qualitative analysis adds depth and context to the quantitative findings, providing a rich understanding of the human aspects of technology adoption in academic libraries.

Following the separate analyses of quantitative and qualitative data, an integrative approach is applied. Triangulation is employed to compare and contrast findings from both data sources, enhancing the validity and reliability of the overall results. The integration of findings allows for a comprehensive interpretation of the study's objectives, facilitating a nuanced understanding of the digital transformation landscape within academic libraries. The synthesized results are presented in a cohesive manner, with key themes and patterns highlighted across both quantitative and qualitative dimensions.

Throughout the data analysis process, the research team maintains a rigorous and systematic approach to ensure the validity and reliability of the study's findings. The triangulation of data sources and the integration of quantitative and qualitative results contribute to a holistic and nuanced exploration of the multifaceted aspects of digital transformation in academic libraries.

Ethical Considerations. In conducting this study on the digital transformation of academic libraries, ethical principles form the foundation of the research process. Central to the ethical framework is the principle of informed consent. Prior to their participation, all potential respondents, spanning librarians, administrators, IT professionals, students, and researchers, will be provided with comprehensive information detailing the study's purpose, procedures, and potential risks. Their voluntary and informed consent will be sought, ensuring that participation is based on a clear understanding of the research aims.

Confidentiality and anonymity are paramount in safeguarding participants' privacy. Rigorous measures will be employed to remove or anonymize personal identifiers, both in the storage of data and in the reporting of results. All collected data, whether quantitative or qualitative, will be treated with the utmost confidentiality, and only the research team will have access to the information.

Data security is a critical consideration, and appropriate measures will be implemented to safeguard electronic data, including survey responses and interview recordings. Password-protected and secure servers will be used to store data, with access restricted to the research team to prevent unauthorized disclosure.

The study emphasizes a commitment to respecting diversity and promoting inclusivity. Participants from various academic institutions, roles within libraries, and levels of technological integration will be sought to ensure a representation of diverse perspectives. Throughout the research process, the study will maintain sensitivity to the diverse backgrounds and experiences of participants.

Transparent reporting is an essential ethical principle, ensuring honesty and accuracy in the dissemination of research findings. The study pledges to provide a truthful representation of data, disclosing any conflicts of interest or potential biases. The interpretations and representations of data will be conveyed transparently and faithfully to participants' contributions.

With a focus on beneficence and non-maleficence, the study aims to maximize benefits for participants and the academic community while minimizing any potential harm or discomfort associated with participation. The research team is dedicated to conducting the study in a manner that respects the well-being of participants.

Reciprocity and feedback are integral components of the ethical considerations. Participants will be given the opportunity to receive feedback on the study's results if they express interest, recognizing their valuable contributions. This commitment to reciprocity acknowledges the importance of a mutual and respectful relationship between researchers and participants.

Finally, to ensure adherence to ethical guidelines, the research protocol will undergo review and approval from the appropriate ethical review board or institutional review board (IRB). Any necessary revisions to the protocol will be submitted for review, reinforcing the commitment to ethical conduct throughout the study.

RESULTS AND DISCUSSION

This section presents the findings of the study based on the data gathering procedures done by the researcher including their corresponding interpretation, discussion, and analysis as supported by existing literature.

Level of Digital Transformation in Academic Libraries. The numerical assessment (as shown in Table 1) suggests a substantial integration of digital technologies and practices within the academic library setting.

Table 1
Mean Distribution of Digital Transformation in Academic Libraries

Statement Indicators	Weighted Mean	Verbal Description
1. The library has implemented an integrated library management system.	3.44	Highly Transformed
2.Users can access e-books and electronic journals easily.	3.56	Highly Transformed
3. The library website is user-friendly and provides seamless navigation.	3.89	Highly Transformed
4. Digital resources in the library are regularly updated to meet current needs.	3.22	Highly Transformed
5. The library provides remote access to digital resources for off-campus users.	3.77	Highly Transformed
6.The library has a systematic process for digitizing and preserving rare manuscripts.	3.81	Highly Transformed
7.Users can request and receive digital copies of physical materials in a timely manner.	3.19	Highly Transformed
8. The library actively promotes the use of electronic databases for research.	3.33	Highly Transformed
9.There are collaborative efforts with other institutions to share digital resources.	3.90	Highly Transformed
10. The library employs advanced search algorithms for efficient information retrieval.	3.92	Highly Transformed
11. Staff members receive regular training on the use of new digital technologies.	3.76	Highly Transformed
12. The library's catalog includes a wide range of multimedia resources.	3.54	Highly Transformed
13. Users can provide feedback and suggestions for improving digital services.	3.12	Highly Transformed
14. The library uses social media platforms to engage with users and disseminate information.	3.44	Highly Transformed
15. The library employs data analytics to understand user preferences and behaviors.	3.10	Highly Transformed
16. Digital security measures are in place to protect user data and digital resources.	3.02	Highly Transformed
17. The library actively participates in digital preservation initiatives.	3.56	Highly Transformed
18. The library website provides access to tutorials and guides for using digital resources.	3.54	Highly Transformed
19. The library's budget prioritizes investment in digital infrastructure and services.	3.87	Highly Transformed
20. The library has a clear strategy for continuous improvement in digital offerings.	3.72	Highly Transformed
Weighted Mean	3.53	Highly Transformed

The designation of "Highly Transformed" implies that academic libraries have undergone significant changes in their operations, services, and overall structure to adapt to the digital age. This level of transformation indicates a comprehensive embrace of technology to enhance various facets of library functions. In academic institutions, a Level of Digital Transformation at 3.53 signals that libraries have likely leveraged advanced information systems, digital resources, and innovative technologies to improve accessibility, streamline workflows, and enhance the overall learning and research experience for students and faculty (Musa, 2022). The "Highly Transformed" designation implies that libraries are not merely incorporating digital tools on a surface level but have deeply embedded them into their core

operations, demonstrating a commitment to staying at the forefront of technological advancements (Abrashi, 2022).

Moreover, a Level of Digital Transformation at this magnitude suggests that academic libraries are proactive in adopting emerging technologies, engaging in continuous improvement, and responding effectively to the evolving needs of their user communities. This high level of transformation indicates a forward-thinking approach, where academic libraries serve as dynamic hubs that actively contribute to the digital evolution of the educational landscape. In essence, a Level of Digital Transformation at 3.53 underscores the pivotal role that technology plays in reshaping academic library services and positions these institutions as leaders in the integration of digital innovations within the educational ecosystem (Ojennus, 2019).

Factors Affecting the Digital Transformation in Academic Libraries. The high numerical score in Table 2 suggests that technological factors exert a substantial impact on the transformative journey of these libraries.

Table 2
Mean Distribution of Factors Affecting the Digital Transformation in Academic Libraries

Technological Factors	Weighted Mean	Verbal Description
1. Availability of advanced technologies.	3.44	Highly Influenced
2. Compatibility of existing infrastructure with digital systems.	3.88	Highly Influenced
3. Access to high-speed internet and network capabilities.	3.89	Highly Influenced
4. Integration of emerging technologies such as AI and machine learning.	3.72	Highly Influenced
Weighted Mean	3.73	Highly Influenced
Organizational Factors	**Weighted Mean**	**Verbal Description**
1. Institutional support for digital initiatives.	3.10	Highly Influenced
2. Leadership commitment to digital transformation.	3.17	Highly Influenced
3. Adequacy of financial resources for digital projects.	3.29	Highly Influenced
4. Alignment of library goals with overall institutional objectives.	3.28	Highly Influenced
Weighted Mean	3.21	Highly Influenced
Human Resources Factors	**Weighted Mean**	**Verbal Description**
1. Skills and training of library staff in digital technologies.	3.15	Highly Influenced
2. Recruitment and retention of digital-savvy personnel.	3.66	Highly Influenced
3. Staff attitudes and readiness for change.	3.72	Highly Influenced
4. Capacity for ongoing professional development.	3.80	Highly Influenced
Weighted Mean	3.58	Highly Influenced

The "Highly Influenced" designation underscores that technological considerations are not merely peripheral but wield a profound influence on the strategies, initiatives, and outcomes related to digital transformation in academic library settings (Musa, 2022).

In practical terms, a Technological Factors rating of 3.73 implies that academic libraries are deeply intertwined with cutting-edge technologies. This may encompass the implementation of advanced library management systems, digitization efforts, artificial intelligence applications, and other innovative solutions designed to enhance access to information, streamline operations, and offer enriched services to library patrons (Manjula, 2021). This finding is supported by the studies of Musa (2022) and Manjula (2021) stating that the "Highly Influenced" verbal description indicates that these technological factors are not only prevalent but also have a transformative effect, shaping the very nature and function of academic libraries in the digital era. This suggests that libraries are proactively engaging with technology to not only keep pace with changes but also to lead in the evolution of information services within academic institutions (Luambano, 2020).

On the other hand, a rating of 3.21 indicates a substantial acknowledgment of the importance of organizational factors in the digital transformation journey. This could encompass effective leadership that champions innovation, a supportive organizational culture that embraces change, and agile structural frameworks that facilitate the integration of digital technologies. The "Highly Influenced" verbal description suggests that these organizational factors actively shape the planning, execution, and sustainability of digital initiatives within academic libraries, positioning them as key drivers of the transformative processes that redefine the role of libraries in the digital age (Owate, 2021).

In essence, a 3.21 rating for Organizational Factors with a verbal rating of "Highly Influenced" underscores that successful digital transformation in academic libraries goes

beyond technological considerations alone. It requires a holistic approach that addresses and aligns organizational structures, leadership philosophies, and cultural aspects to create an environment conducive to meaningful and impactful digital evolution within these educational institutions.

The reported Human Resources Factors affecting Digital Transformation in Academic Libraries, marked at a substantial 3.58 with a verbal rating of "Highly Influenced," signifies the critical role played by human capital in steering the digital transformation journey within these institutions. This finding is supported by studies of Owate (2021) and Luambano (2020), stating that this numerical score suggests that factors related to the workforce, including skills, training, and adaptability, have a significant impact on the success and effectiveness of digital transformation initiatives (Newman, 2017). The "Highly Influenced" designation underscores that the human element is not only integral but actively shapes the course and outcomes of digital transformation efforts in academic libraries (Lantzy, 2019).

A rating of 3.58 implies a recognition that human resources factors play a pivotal role in driving and sustaining digital transformation. This could encompass the skills and competencies of library staff, their capacity to adapt to technological changes, and the effectiveness of training programs in equipping them for the digital age. The "Highly Influenced" verbal description suggests that the human dimension is a primary driver, actively influencing the planning, implementation, and overall success of digital initiatives within academic libraries. It emphasizes the need for a skilled and adaptable workforce to navigate the challenges and leverage the opportunities presented by the ongoing digital transformation (Maideen, 2020).

Experiences of Academic Librarians in Navigating Digital Transformation. Presented below are the themes elicited from the qualitative data results.

Theme 1: Technological Challenges. Participant A expressed, "It's so hard to use these technologies. The constant updates and new tools make it overwhelming." This sentiment was echoed by Participant B, who shared, "Keeping up with the fast-paced tech changes is a real struggle. It feels like we're always learning something new." Participant C added, "Adapting to new systems is challenging, especially when they don't seamlessly integrate with existing ones."

The theme of "Technological Challenges" emerges prominently through the shared experiences of the participants. Participant A's frustration reflects the difficulties individuals face in utilizing modern technologies. The sentiment of technological use being "hard" underscores the intricate nature of contemporary tools, potentially requiring a steep learning curve. The mention of "constant updates and new tools" contributing to overwhelming feelings implies a sense of information overload, where the relentless pace of technological evolution poses a significant challenge for users (Lantzy, 2019).

Participant B resonates with this sentiment, emphasizing the struggle of keeping pace with the rapid changes in technology. The statement, "It feels like we're always learning something new," suggests an ongoing demand for continuous learning and adaptation. The perpetual need to acquire new knowledge and skills to stay relevant in the tech landscape becomes a genuine obstacle, creating a dynamic environment where individuals feel pressured to remain up to date. Participant C introduces another layer to the theme by highlighting the challenges associated with adapting to new systems. The mention of seamless integration with existing systems underscores the importance of compatibility and the potential disruptions that can arise when new technologies are introduced. This aspect introduces a practical dimension to the challenges, as individuals not only grapple with learning new tools but also with the practical implementation of these tools within the context of their existing technological infrastructure. Overall, these perspectives

collectively paint a picture of the multifaceted difficulties people encounter in the ever-evolving landscape of technology (Owate, 2021).

Theme 2: Information Overload. Participant A highlighted, "The sheer volume of digital information can be paralyzing. It's difficult to sift through and find what's truly valuable." Participant B agreed, stating, "There's an overload of data, and it's tough to discern what's relevant. It adds a layer of complexity to our work." Participant C contributed, "Sorting through massive databases is time-consuming, and it's hard to stay focused on quality information retrieval."

The theme of "Information Overload" is vividly articulated through the experiences shared by the participants. Participant A underscores the overwhelming nature of the sheer volume of digital information, describing it as potentially paralyzing. The sentiment expressed here points to the challenge of managing and navigating an abundance of data, emphasizing the difficulty in discerning what holds true value amidst the deluge of information available. Participant B echoes this perspective, emphasizing the struggle in distinguishing relevant data within the context of their work. The acknowledgment that the overload of data adds a layer of complexity to their tasks suggests that the surplus of information doesn't merely represent a challenge in itself but also complicates the participants' professional responsibilities. This sentiment aligns with broader concerns about the impact of information overload on decision-making and productivity in various fields (Newman, 2017).
Participant C provides a practical dimension to the theme by addressing the time-consuming nature of sorting through massive databases. The difficulty in staying focused on quality information retrieval suggests that the abundance of data not only poses challenges in terms of quantity but also in terms of the effort required to extract meaningful and reliable insights. This aspect emphasizes not only the volume of information but also the potential strain it imposes on individuals trying to extract valuable and relevant knowledge from vast datasets. In summary, these participants collectively portray the multifaceted challenges posed by the pervasive issue of information overload in the digital age (Owate, 2021).

Theme 3: User Expectations and Demands. Participant A shared, "Users expect everything at their fingertips, and meeting those expectations can be stressful." Participant B added, "There's constant pressure to provide a seamless user experience, but it's challenging to balance that with other responsibilities." Participant C emphasized, "Meeting diverse user needs in the digital era is a constant juggling act. The expectations keep evolving."

The theme of "User Expectations and Demands" is encapsulated in the participants' expressions, shedding light on the challenges associated with meeting the evolving needs and demands of users in the digital realm. Participant A reflects on the heightened expectations of users, noting that the pressure to provide everything at their fingertips can be a source of stress. This sentiment suggests that users now anticipate instant access to a comprehensive range of services and information, creating a demanding environment for those responsible for meeting these expectations (Ramesh, 2019).

Participant B expands on this perspective, highlighting the continuous pressure to deliver a seamless user experience. The acknowledgment that this challenge must be balanced with other responsibilities underscores the complexities involved in managing user expectations within the broader context of professional duties. The statement implies that the quest for an optimal user experience often competes with other priorities, adding an additional layer of complexity for those tasked with delivering on user demands. Participant C introduces the idea of a constant juggling act in meeting diverse user needs in the digital era. The use of the term "juggling act" conveys the dynamic and challenging nature of catering to a wide array of user expectations. Furthermore, the observation that these expectations keep evolving emphasizes the fluid and ever-changing landscape that those in charge of user experience must navigate. In summary, this

theme highlights the dynamic and demanding nature of addressing user expectations in the digital age, capturing the stress, challenges, and constant evolution associated with meeting diverse user needs (Ramesh, 2019).

Theme 4: Professional Development and Training. Participant A reflected, "Staying updated with the necessary skills is a never-ending process. The speed of technological change requires continuous learning." Participant B mentioned, "Finding time for training amid daily tasks is a challenge. It's crucial, but the demands of the job often take precedence." Participant C echoed, "Professional development opportunities are essential, but they're not always readily available, making it harder to stay ahead."

The theme of "Professional Development and Training" emerges as participants share their experiences related to the ongoing need for skill development in the face of rapid technological changes. Participant A emphasizes the perpetual nature of staying updated with necessary skills, pointing to the relentless pace of technological change that demands continuous learning. This sentiment underscores the dynamic nature of professional landscapes, where individuals must engage in a continuous process of acquiring and updating skills to remain relevant in their respective fields. Participant B adds a practical dimension to the theme by highlighting the challenge of finding time for training amidst daily tasks. The acknowledgment that the demands of the job often take precedence suggests a common struggle faced by professionals. Balancing the immediate responsibilities of one's role with the imperative to invest in ongoing training poses a real challenge, emphasizing the need for effective time management and prioritization in professional development efforts (Ramesh, 2019).

Participant C introduces a constraint related to the availability of professional development opportunities. While recognizing the essential nature of these opportunities, the participant notes that they are not always readily available. This observation highlights an external challenge that individuals face in their pursuit of continuous learning – the accessibility of resources and opportunities for skill enhancement. The difficulty in accessing such opportunities can pose a barrier to staying ahead in a rapidly evolving professional landscape (Reid, 2016).

Theme 5: Collaboration and Communication. Participant A noted, "Collaboration is key, but it's challenging when everyone has a different level of digital literacy." Participant B shared, "Communication breakdowns happen because not everyone is on the same page regarding digital tools and processes." Participant C added, "Working together effectively in a digital environment requires clear communication, and that's an ongoing challenge."

The theme of "Collaboration and Communication" is illuminated through the participants' insights, highlighting the intricacies and challenges associated with working together in a digital context. Participant A emphasizes the importance of collaboration but notes a hurdle—varying levels of digital literacy among team members. This observation suggests that the effectiveness of collaboration is hindered when individuals possess different competencies in utilizing digital tools, potentially causing disparities in contributions and understanding. Participant B expands on this by pointing out that communication breakdowns occur when there is not a shared understanding of digital tools and processes (Musa, 2022). This statement underlines the critical role of digital literacy not just in individual tasks but in the broader context of facilitating effective communication within a team. Misalignments in digital knowledge can lead to misunderstandings, delays, or errors in collaborative efforts (Raymond, 2018).

Participant C brings attention to the ongoing challenge of achieving clear communication in a digital environment. The emphasis on clarity underscores the importance of not just having digital proficiency but also using it to convey information in a manner that is easily comprehensible to all team members. The

statement reflects the continuous effort required to overcome communication barriers in the ever-evolving digital landscape (Ojennus, 2019).

The quantitative findings indicate that academic libraries are highly transformed, with a weighted mean of 3.53, reflecting significant integration of digital technologies across various library functions, including the implementation of advanced management systems, digital resource accessibility, and collaborative initiatives (Musa, 2022; Abrashi, 2022). These findings are supported by qualitative insights, where librarians expressed challenges related to technological advancements, information overload, and meeting evolving user expectations. For instance, the technological factors influencing digital transformation, rated at 3.73, highlight the substantial role of technology in shaping library services, while organizational and human resource factors underscore the importance of leadership, staff training, and adaptability in driving successful digital initiatives (Owate, 2021; Lantzy, 2019).

Furthermore, the thematic analysis reveals that librarians face ongoing challenges in adapting to new technologies, managing the overwhelming volume of digital information, and balancing the demands of users with other responsibilities. These experiences resonate with the quantitative data, which points to the critical role of technology, organizational support, and human resources in the digital transformation process (Ramesh, 2019; Newman, 2017).

Summary of Findings. The following are the findings of this study:

1. The Level of Digital Transformation in Academic Libraries is under the weighted mean of 3.53 with a verbal description of "Highly Transformed".

2. The reported Technological Factors affecting Digital Transformation in Academic Libraries, quantified at a significant 3.73 with a verbal rating of "Highly Influenced". In addition, a rating of 3.21 indicates a substantial acknowledgment of the importance of organizational factors in the digital transformation journey. The reported Human Resources Factors affecting Digital Transformation in Academic Libraries, marked at a substantial 3.58 with a verbal rating of "Highly Influenced".

3. The Experiences of Academic Librarians in Navigating Digital Transformation can be viewed into these themes: Technological Challenges, Information Overload, User Expectations and Demands, Professional Development and Training, Collaboration and Communication.

Conclusions. The finding that the level of digital transformation in academic libraries, with a weighted mean of 3.53, is categorized as "Highly Transformed" suggests a positive trajectory toward digital evolution. However, while substantial progress has been made, there is still potential for further advancements. Academic libraries should continue to evaluate and refine their digital strategies, ensuring they remain adaptable to new technologies and responsive to the evolving needs of their communities. The significant influence of technological factors, rated at 3.73, along with the importance of organizational factors (3.21) and human resources (3.58), shows that digital transformation in academic libraries relies not only on technological advancements but also on effective strategies and the development of library staff. The experiences of academic librarians navigating digital transformation, including challenges like information overload, user expectations, professional development, collaboration, and communication, reveal the complex issues they face. Libraries should prioritize ongoing training, improve communication, and encourage collaboration to ensure librarians play a central role in this transformation. The findings suggest that while academic libraries are progressing well, they must continue to adapt and evolve to meet the demands of the digital age and maintain their importance as key centers of knowledge and information.

Recommendations. Considering the conclusion on the status of Digital Transformation falling under the weighted mean of 3.53, it is recommended that academic libraries adopt a culture of continuous assessment and adaptation. Regularly evaluate the effectiveness of existing digital strategies, embrace emerging technologies, and stay attuned to the evolving needs of users. This proactive approach will ensure that academic libraries remain on the cutting edge of digital transformation and continue to provide innovative and relevant services.

In response to the influential factors identified in Digital Transformation, specifically the significant impact of Technological Factors and the recognition of the importance of Organizational and Human Resources Factors, it is recommended that academic libraries adopt an integrated approach. Develop strategies that harmonize technological advancements with organizational structures and invest in the development and well-being of human resources. This holistic approach will maximize the impact of digital transformation initiatives and create a sustainable framework for future developments.

Given the experiences of Academic Librarians in Navigating Digital Transformation, which encompass various challenges and themes, it is recommended that academic libraries prioritize the establishment of supportive infrastructure. This includes investing in professional development and training programs to address technological challenges, fostering a collaborative and communicative environment, and implementing systems to manage information overload. By providing robust support structures, libraries can empower their librarians to navigate the complexities of digital transformation effectively and contribute to the overall success of the institution.

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