



Extent of Digital Transformation Management in Academic Libraries of the Private Higher Education Institutions (PHEIs) in the Greater Manila Area

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ABSTRACT

This article presents Extent of Digital Transformation Management in Academic Libraries of the Private Higher Education Institutions (PHEIs) in the Greater Manila Area was well managed, as expressed by the participants. User Engagement and Service Innovation ranked first, followed by Staff Training and Capacity Building, Strategic Planning, while Monitoring and Evaluation and Technology Adoption appeared as the areas with the most room for relative development.

Across all five dimensions, leadership commitment, use of cloud-based systems, encouragement of professional development, use of digital platforms for user engagement, and evidence-based continuous improvement were consistently the highest rated indicators. Conversely, the presence of a formal digital library roadmap, availability of funding for digital innovation and staff training, introduction of AI-enhanced services, and systematic review using defined standards registered the lowest scores, indicating gaps in formalization, sustainable financing, and advanced service innovation.

Examined dimension by dimension, the findings revealed a consistent pattern of well-managed practice accompanied by specific, actionable areas for strengthening, providing a granular evidentiary basis for the framework developed in this study.

Along User Engagement and Service Innovation, which ranked first ($M = 4.17$), the use of social media and digital platforms for user engagement was the highest rated indicator ($M = 4.44$, Extensively Managed), while the introduction of personalized or AI-enhanced library services registered the lowest mean ($M = 3.80$), signaling that libraries have engaged users effectively through accessible channels but have yet to fully integrate advanced, technology-driven service innovations.

Along Staff Training and Capacity Building, which ranked second ($M = 4.14$), the encouragement to attend seminars, workshops, and webinars was the highest rated indicator ($M = 4.38$, Extensively Managed), reflecting strong institutional support for continuous professional development, while the availability of dedicated funding for staff training remained comparatively lower, indicating that the commitment to capacity building is not always matched by sustained financial provision.

Along Strategic Planning, which ranked third ($M = 4.11$), leadership commitment to sustaining digital transformation initiatives ranked highest ($M = 4.26$, Extensively Managed), while the presence of a formal digital library roadmap or master plan registered the lowest mean ($M = 3.90$), confirming that strong leadership intent has not yet been fully translated into formalized, documented long-term planning frameworks.

Along Monitoring and Evaluation, which ranked fourth ($M = 4.09$), the continuous improvement of policies, systems, and services based on evaluation findings was the highest rated indicator ($M = 4.22$, Extensively Managed), while the regular review of digital library services using defined standards or indicators registered the lowest mean ($M = 3.90$), indicating that the formalization and standardization of evaluation systems remain underdeveloped.



Along Technology Adoption, which ranked fifth ($M = 4.07$), management was still well-managed but lowest among the dimensions, with the use of cloud-based systems rated highly while the availability of funding for digital innovation and the introduction of AI-enhanced services registered among the lowest indicators, locating the principal constraint on technology adoption in sustainable financing and advanced innovation rather than in basic technological capability.

Taken together, these results indicate that the management of digital transformation across accredited PHEIs in the Greater Manila Area is strongest where it depends on leadership commitment, professional development, and user-facing engagement, and comparatively weaker where it depends on formal documentation, sustained financing, standardized evaluation, and advanced service innovation.

Keywords: Digital Transformation, Academic Libraries, Private Higher Education Institutions, Library 4.0, Strategic Planning, Technology Adoption, Staff Training and Capacity Building, User Engagement and Service Innovation, Monitoring and Evaluation

INTRODUCTION

In an era defined by rapid technological advancement and digital transformation, academic libraries worldwide underwent profound changes in their operations, services, and organizational structures. The management of digital transformation has become a strategic imperative for academic libraries worldwide, shaped by converging demands from global, professional, and national standards. The World Bank's GovTech Maturity Index (GTMI) identifies governance enablers such as strategy, institutions, laws, core systems, workforce capacity, and citizen-centered innovation considered as prerequisites for sustainable digital progress (Dener, Nii-Aponsah, Ghunney, & Johns, 2021).

Similarly, the International Federation of Library Associations and Institutions (IFLA) emphasizes that libraries must align digital initiatives with user needs, equitable access, staff competency development, and ethical information stewardship (IFLA, 2023).

Additionally, the digital revolution fundamentally altered the landscape of academic libraries across the globe. According to the International Federation of Library Associations and Institutions (IFLA) Trend Report 2023, academic libraries worldwide increasingly prioritized digital collections, implemented emerging technologies, and re-envisioned physical spaces to accommodate new modes of learning and research. At the heart of this transformation were library managers whose roles expanded beyond conventional administrative duties to encompass strategic leadership, technological innovation, and organizational change management (Castiglione, 2006).

The COVID-19 pandemic further accelerated this transformation, compelling libraries to rapidly expand their digital offerings and virtual services to meet the needs of remote users (Malpas et al., 2023). In the 21st century, higher education institutions witnessed a sweeping transformation in their library services from traditional custodians of physical knowledge to dynamic, digitally enabled hubs of academic support.

At the national level, the Commission on Higher Education (CHED), through CMO No. 22, s. 2021, mandates Philippine higher education libraries to modernize collections, services, facilities, and personnel capacities in support of flexible and technology-enabled learning (CHED, 2021). Taken together, these frameworks converge on five interdependent management dimensions—strategic planning, technology adoption, staff training, user engagement, and innovation with monitoring and evaluation—that serve as the comparative lens for examining how libraries in private higher education institutions (PHEIs) in the Greater Manila Area are navigating their own digital transformation journeys.

This shift, driven by the imperatives of quality assurance and institutional accreditation, placed library management at the heart of institutional development. The impetus for this study arose from the urgent need to understand how library managers in Philippine private higher education institutions (PHEIs) in the Greater Manila Area (GMA) navigated this profound digital transition, particularly in the context of evolving quality assurance standards and the global push toward internationalization.



Libraries, as essential centers for education, information sharing, and community involvement, were continuously impacted by the rapidly shifting environment brought about by technological advancements resulting from human ideological changes. In view of this, libraries continuously evolved to remain relevant and valuable in the ever-changing world, integrating innovative technology while staying aligned with their mission of providing access to information, education, and community resources. By keeping library staff members up to date on new developments in technology, innovative technologies had the potential to completely transform libraries and their operations in the digital age. Libraries in the digital era were characterized by redesigned practices, including digitally transforming library management systems to improve innovative services. However, due to the notable disparities between the degree of technological advancement adoption and implementation in developed and developing nations, the operations and services provided by libraries in less developed nations remained a critical concern (Ojobor et al., 2025 ; Begnini, 2024).

Library digitization represented a pivotal transformation in knowledge preservation and access, fundamentally democratizing information resources that were once bound by physical limitations. By converting analog collections into digital formats, libraries extended their reach beyond geographical constraints, allowing users to access rare manuscripts, historical documents, and educational materials from anywhere with internet connectivity (Concha, Palacios, & Alfaro, 2024). This accessibility revolution particularly benefited underserved communities, researchers in remote locations, and individuals with mobility challenges who might otherwise have faced barriers to traditional library services (Chaudhari & Bhoye, 2024) and (Aditya 2020). Digitization also served as a critical preservation strategy, creating digital surrogates that protected fragile or deteriorating materials from physical handling while ensuring cultural heritage and scholarly works remained available for future generations despite natural disasters, conflicts, or material degradation (Tammaro, 2024).

Beyond accessibility and preservation, library digitization catalyzed new forms of scholarship and learning through technologies that enabled advanced search capabilities, text mining, and computational analysis impossible with physical materials (Spina, 2023). Digital collections facilitated interdisciplinary connections, allowing users to discover relationships between texts and ideas that might have remained hidden in traditional library settings. As information ecosystems continued evolving, digitized library collections provided the foundation for emerging technologies including artificial intelligence applications in research, personalized learning experiences, and collaborative knowledge creation platforms (Spina, 2023).

Strategic planning processes became increasingly sophisticated, with forward-thinking library managers developing comprehensive digital transformation roadmaps that aligned with institutional strategic priorities. These plans typically included vision statements, specific objectives, resource requirements, implementation timelines, and assessment metrics (Kraus, 2021). Effective strategic planning was associated with higher levels of institutional support and more successful digital transformation outcomes.

Technology adoption strategies reflected both pragmatic and innovative approaches. While some library managers prioritized foundational systems like integrated library systems and discovery platforms, others explored emerging technologies such as artificial intelligence, virtual reality, and data visualization tools (Aldoseri, 2024). The most successful approaches appeared to be those that balanced technological ambition with practical implementation considerations, often adopting phased implementation strategies that built upon successive achievements.

In Europe, the LIBER (Ligue des Bibliothèques Européennes de Recherche) Strategic Plan 2023-2027 emphasized the critical importance of digital leadership in academic libraries, highlighting how successful library managers were those who effectively navigated the complex digital ecosystem while advocating for open science, digital preservation, and information literacy (LIBER, 2023). Similarly, a study on digital competencies for developing and managing digital libraries among university librarians in Pakistan highlighted the essential digital competencies needed for managing digital libraries, including data management and the application of security measures to protect digital content.

An examination of academic libraries in developed countries revealed that library managers took on expanded roles as institutional leaders in digital initiatives. Research by Cox et al. (2019) across 17 countries found that library directors were actively involved in university-wide digital strategy development, with 78% reporting



direct participation in institutional digital transformation committees. This strategic positioning reflected the growing recognition of libraries as central to the digital infrastructure of higher education institutions.

Within the Asian context, academic libraries experienced similar transformative pressures but often with unique regional challenges and opportunities. In Singapore, the National Library Board implemented a comprehensive Digital Transformation Roadmap for libraries that emphasized upskilling library professionals in emerging technologies such as artificial intelligence, data analytics, and digital content creation (Sagar, 2021).

Libraries in private higher education institutions in the Philippines faced particular challenges, including financial constraints, competition for institutional resources, and the need to align library services with institutional priorities (Lagas & Isip, 2023). Library managers in these settings therefore demonstrated not only technical knowledge but also political acumen, resource mobilization skills, and strategic communication abilities to secure support for digital initiatives.

The digital transformation journey of Philippine academic libraries was marked by several significant challenges. Infrastructure limitations remained a primary concern, with inconsistent internet connectivity, power supply issues, and inadequate technological resources hampering digital initiatives in many institutions (Lagas & Isip, 2023).

Funding constraints represented another major challenge. Unlike their counterparts in public institutions who received government allocations for digitization efforts, library managers in private higher education institutions often competed for limited institutional resources while making compelling cases for investment in library technology (The World Bank, 2022). This financial pressure led many library managers to develop innovative funding strategies, including consortium-based resource sharing, grant writing, and alumni engagement initiatives.

Human resource development presented a third critical challenge. A study by Villanueva and Marcial (2023) examining 35 private academic libraries in Metro Manila found significant skills gaps among library staff, particularly in areas related to digital technologies, data management, and innovative service design. Library managers reported difficulties in recruiting technologically skilled professionals due to compensation limitations and competition from the private sector. Consequently, many library managers assumed the role of internal staff developers, creating training programs and professional development opportunities to build capacity within their existing teams.

User expectations and institutional culture also influenced the digital transformation landscape. Students and faculty increasingly expected seamless access to digital resources, personalized services, and technologically enhanced learning environments (Depano-Panganiban, 2023). Library managers balanced these expectations with institutional realities while advocating for the value of library services in supporting academic excellence and research productivity.

Against this backdrop of challenges and opportunities, library managers in Philippine private higher education institutions employed various leadership strategies to navigate digital transformation. Research by Dar Juan and Buenrostro (2023) identified four key areas where leadership interventions proved particularly important: strategic planning, technology adoption, staff development, and user engagement.

Staff training and capacity building represented a critical domain of leadership strategy. Recognizing the centrality of human capital to successful digital transformation, effective library managers implemented multifaceted approaches to professional development, including formal training programs, communities of practice, mentoring initiatives, and external networking opportunities (Dorado, 2024). These efforts aimed not only to develop technical skills but also to foster adaptive mindsets and change readiness among library staff.

User engagement and service innovation strategies focused on ensuring that digital transformation efforts remained centered on user needs and experiences. Progressive library managers implemented systematic approaches to understanding user requirements, including surveys, focus groups, user experience testing, and data analytics (Corpuz, 2020). These insights informed service design processes that aimed to create relevant, accessible, and impactful library offerings in the digital environment.



Despite the growing recognition of library managers' evolving roles in the digital age, systematic research examining their leadership approaches, challenges, and best practices within the Philippine context remained limited. Existing studies often focused on specific technological implementations or service innovations rather than comprehensively examining the management dimensions of digital transformation (Wagas et al., 2024). Additionally, much of the available research concentrated on public institutions or elite private universities, creating knowledge gaps regarding the experiences of library managers across the broader private higher education sector.

This research addressed these gaps by systematically investigating the management of digital transformation of libraries in private higher education institutions in the Greater Manila Area. By examining strategic planning processes, technology adoption approaches, staff development initiatives, user engagement strategies, and monitoring and evaluation mechanisms, this study provided valuable insights into effective management practices that informed professional development, policy formulation, and institutional support mechanisms.

Furthermore, by identifying the barrier perceived by library managers and staff in implementing digital transformation initiatives, the research contributed to a more nuanced understanding of the challenges facing academic libraries in the Philippine context. This understanding informed targeted interventions and support structures designed to overcome specific obstacles to successful digital transformation.

Finally, through the development of a digital transformation framework grounded in empirical evidence and aligned with quality assurance standards, the research provided practical guidance for library managers seeking to enhance their management effectiveness in digital transformation contexts. These best practices served as valuable resources for professional development programs, leadership training initiatives, and institutional policy development.

METHODOLOGY

This study employed a Transformative Mixed Methods Research Design, integrating both quantitative and qualitative methodologies to provide a comprehensive and critically oriented analysis of the management of the digital transformation of libraries in the accredited Private Higher Education Institutions (PHEIs) in the Greater Manila Area (GMA).

Within the transformative paradigm, the study adopted a Sequential Explanatory Mixed Methods Design, in which the quantitative phase preceded and informed the qualitative phase. According to Creswell and Creswell-Baez (2022), mixed methods research was the systematic integration of quantitative and qualitative data within a single study to draw upon the strengths of both paradigms, offering a richer, more nuanced understanding of complex research problems.

This approach was particularly appropriate when exploring not only measurable patterns of behavior but also the subjective experiences and perceptions that shaped those patterns. It offered methodological flexibility and an in-depth understanding of smaller cases (Maxwell, 2016). The use of mixed methods enabled researchers to answer research questions with sufficient depth and breadth, and helped generalize findings to the whole population while simultaneously illuminating the contextual factors that statistics alone could not capture. A mixed-method design, therefore, offered the best chance of answering research questions by combining two sets of strengths while compensating for the weaknesses of each method (Creswell, Plano Clark, & Clark, 2018).

The quantitative component of this study employed three key research methods: descriptive, survey, and comparative. The descriptive method was used to profile the respondents' extent of management of the digital libraries in the PHEIs along the five management dimensions. Through the survey method, a structured questionnaire was employed to collect data on the management of digital libraries. As noted by Fraenkel et al. (2019), descriptive research enabled researchers to systematically quantify and present the current conditions, behaviors, or attitudes of participants.

The qualitative component was conducted after the quantitative phase following the logic of the sequential explanatory design. This phase employed semi-structured interviews with library managers to explore their



programs or good practices, the facilitating factors, and the limiting factors they experienced in the management of digital libraries. The qualitative phase also contributed to the transformative intent of the study by giving voice to library managers lived experiences.

Study Sites and Participants

The study was conducted in the Greater Manila Area (GMA), which served as the leading center of accredited Private Higher Education Institutions (PHEIs) in the country.

The Greater Manila Area covered Metro Manila and its surrounding provinces, including Bulacan, Cavite, Laguna, and Rizal, with a combined population of approximately 26.7 million. The GMA was the educational hub of the country, hosting a large concentration of private universities and colleges that represented diverse academic programs, advanced library systems, and a significant proportion of the national student population.

The participants of this study were the library managers of accredited Private Higher Education Institutions (PHEIs) in the Greater Manila Area. Consistent with the scope and delimitation, the study covered all accredited PHEIs regardless of their level of accreditation, as most library development activities occurred at the program accreditation level. Library managers were defined in this study as Directors of Libraries, University Chief Librarians, University Librarians, Chief Librarians, Head Librarians, and Library/LRC Coordinators of accredited PHEIs in the GMA.

Inclusions: The study included all library managers from accredited PHEIs in the Greater Manila Area who were actively involved in managing their institution's library services and digital transformation initiatives. All levels of accreditation were included, PAASCU, PACUCOA, AACUP, and other recognized accrediting bodies.

Exclusions: The following categories of potential participants were explicitly excluded from this study: (1) library managers from public universities, government-run colleges, and non-higher education institutions; (2) library managers from non-accredited private HEIs; (3) library staff who did not hold managerial or supervisory roles; (4) faculty members, students, and university administrators outside the library unit; and (5) institutions located outside the Greater Manila Area.

Instrument and Data Collection

This study utilized two research instruments carefully designed to generate both quantitative and qualitative data aligned with the research objectives and questions. The instruments were developed based on relevant conceptual and research literature and were subjected to validation and reliability processes to ensure their clarity, relevance, and trustworthiness. The studies of Benson et al. (2022), Daudi and Majanja (2024), and Shakeel and Rubina (2017) provided the conceptual and empirical foundations for the constructs and indicators used in the questionnaire.

Instrument 1: Survey Questionnaire. The first instrument was a structured survey questionnaire answered by the library managers. This instrument consisted of two main parts. Part I collected basic demographic information including age, position/role, years of experience, and the institution's highest level of accredited program. Part II assessed the extent of management of digital libraries along the five dimensions: (a) Strategic Planning, (b) Technology Adoption, (c) Staff Training and Capacity Building, (d) User Engagement and Service Innovation, and (e) Monitoring and Evaluation. For each dimension, five (5) indicators were provided. The survey employed a 5-point Likert scale with the following descriptive equivalents:

Scale	Range	Descriptive Equivalent	Symbol
5	4.21 - 5.00	Extensively Managed	(EM)
4	3.41 - 4.20	Well-Managed	(WM)



3	2.61 - 3.40	Moderately Managed	(MM)
2	1.81 - 2.60	Slightly Managed	(SM)
1	1.00 - 1.80	Not Managed	(NM)

Data Gathering Procedure

The data gathering process followed a sequential, multi-phase procedure consistent with the transformative mixed methods design. The data collected from both the quantitative and qualitative phases of the study were analyzed systematically to address each of the research questions and meet the overall objective of the study. Both descriptive and inferential statistics were used to process the quantitative data, while qualitative data were analyzed thematically following a rigorous qualitative research process.

To answer Research Question on the extent to which digital libraries in the accredited PHEIs in the GMA were managed along the five dimensions, frequency counts, means, and rank were used to analyze the responses of library managers. The 5-point Likert scale described in the instrumentation section was used for the interpretation of the data.

RESULTS AND DISCUSSIONs

Extent of Management of the Digital Transformation of Libraries By the PHEIs in the Greater Manila Area

This section presents and analyzes the extent of management of the Digital Transformation of Libraries of the Private Higher Education Institutions in the Greater Manila Area along the five (5) leadership strategies dimensions: Strategic Planning; Technology Adoption; Staff Training and Capacity Building; User Engagement and Service Innovation; and Monitoring and Evaluation.

Strategic Planning. Strategic planning is widely recognized as a foundational leadership strategy in managing digital transformation in academic libraries, as it provides direction, aligns institutional goals, and ensures the effective allocation of resources. As emphasized in the literature, successful digital transformation initiatives are anchored on clearly articulated visions, data-driven decision-making, and well-defined implementation roadmaps that are aligned with institutional priorities. In the context of private higher education

Table 1: Extent of Management of the Digital Transformation of Libraries by the PHEIs along Strategic Planning n=50

Indicators	Mean	DE	Rank
Clear articulation of the library's digital transformation goals and mission.	4.04	WM	7.5
Integration of digital initiatives in institutional strategic plans.	4.24	EM	2.5
Use of data and evidence in planning and decision-making	4.24	EM	2.5
Anticipation of future trends and readiness to adapt	4.08	WM	6



Allocation of resources aligned with long-term digital objectives		4.16	WM	5
Presence of a formal digital library roadmap or master plan		3.90	WM	10
Alignment of digital strategies with institutional vision and mission		4.20	WM	4
Involvement of key stakeholders in digital planning processes		4.04	WM	7.5
Periodic review and updating of digital strategic plans		3.98	WM	9
Leadership commitment to sustaining digital transformation initiatives		4.26	EM	1
Overall Mean		4.11	WM	
Legend				
Scale Limit	Statistical Range	Descriptive Equivalent		
5	4.21 – 5.00	Extensively Managed (EM)		
4	3.41 – 4.20	Well-Managed (WM)		
3	2.61 – 3.40	Moderately Managed (MM)		
2	1.81 – 2.60	Slightly Managed (SM)		
1	1.00 – 1.80	Poorly Managed (PM)		

institutions, strategic planning also requires adaptability to technological changes and responsiveness to organizational needs. This dimension examines how library managers conceptualize, develop, and implement strategic plans to guide the digital transformation of library services.

The overall mean of 4.11 (WM) indicates that strategic planning in digital transformation among PHEIs in the GMA is well-managed, suggesting that institutions demonstrate structured and goal-oriented planning practices. Leadership commitment to sustaining digital transformation initiatives got the highest-rated indicator ($M = 4.26$, EM), strongly corroborates the findings of Oliveira and Favaretto (2025) and Mbambo-Thata and Tang (2023), who emphasized that leadership is a primary driver of successful digital transformation. This also aligns with Sandhu (2022), who argued that leadership extends beyond planning into shaping organizational culture and sustaining innovation.

The high ratings for integration of digital initiatives into institutional strategic plans and use of data and evidence in planning ($M = 4.24$) further support Afolabi et al. (2024), who found that libraries with formalized and data-driven strategic plans are significantly more successful in implementing digital initiatives. This also confirms Verma and Abrizah (2023), who identified evidence-based planning and resource alignment as strong predictors of transformation success.



However, the relatively lower rating for the presence of a formal digital roadmap ($M = 3.90$) corroborates Wang and Vorster (2022), who reported that many libraries are still in the process of developing comprehensive digital plans. This also reflects Benson et al. (2022), who noted that only a limited number of institutions, have reached the “managed” or “optimized” levels of planning maturity.

Organization shows proof of its strategic work but needs to develop official long-term planning methods with documentation for better results. The results show that organizations apply strategic planning procedures but they devote most of their focus to leadership and integration work.

The findings validate the literature that while leadership-driven and integrated planning is evident, formalization and maturity of strategic planning frameworks remain areas for improvement.

Technology Adoption. Technology adoption serves as a critical component of digital transformation, reflecting how libraries select, implement, and sustain appropriate technological tools and systems to enhance service delivery (Biswas, 2019). The literature highlights that effective technology adoption is not solely dependent on access to digital tools but also on leadership decisions, alignment with user needs, and institutional capacity. Moreover, successful adoption requires a balanced approach between maintaining existing systems and integrating emerging technologies. This dimension explores the extent to which libraries in private higher education institutions adopt, evaluate, and utilize technologies to support digital transformation initiatives.

Table 2: Extent of Management of the Digital Transformation of Libraries by the PHEIs along Technology Adoption n=50

Indicators	Mean	DE	Rank
Leadership encourages experimentation with new technologies.	4.14	WM	3
Decision-making considers user needs and organizational capacity.	4.18	WM	2
Adequacy of ICT infrastructure for digital library services	4.04	WM	6.5
Collaborative technology selection involving staff and stakeholders.	4.08	WM	4.5
Availability of funding to support digital Innovations	3.90	WM	10
Regular upgrading of hardware and software systems	3.98	WM	9
Use of cloud-based or integrated library systems	4.22	EM	1
Assessment of risks and benefits of new technologies	4.08	WM	4.5
Compatibility of technologies with existing systems	4.02	WM	8
Responsiveness of technology adoption to emerging digital needs	4.04	WM	6.5
Overall Mean	4.07	WM	



Legend				
Scale Limit	Statistical Range	Descriptive Equivalent		
5	4.21 – 5.00	Extensively Managed (EM)		
4	3.41 – 4.20	Well-Managed (WM)		
3	2.61 – 3.40	Moderately Managed (MM)		
2	1.81 – 2.60	Slightly Managed (SM)		
1	1.00 – 1.80	Poorly Managed (PM)		

The data in Table 2 shows how Technology Adoption (TA) was measured through its frequency distribution which produced an average score of 4.07 that indicates proficient management but placed fifth among all measured elements. The extent of management of digital transformation in terms of technology adoption is also well-managed ($M = 4.07$), although it ranked lowest among the five dimensions.

The highest-rated indicator, use of cloud-based or integrated library systems ($M = 4.22$, EM), indicates that libraries have successfully implemented core digital infrastructures. This reflects the “portfolio approach” to technology adoption described by Tewell and Mullins (2024), where institutions maintain operational technologies while gradually integrating innovations.

Indicators such as decision-making based on user needs and organizational capacity ($M = 4.18$) and leadership encouragement of experimentation ($M = 4.14$) suggest that technology adoption is both user-centered and leadership-driven. This supports Daudi and Majanja (2024), who emphasized that aligning technology with user needs and institutional capacity increases adoption success.

However, availability of funding for digital innovation ($M = 3.90$) and regular upgrading of systems ($M = 3.98$) received the lowest ratings, indicating financial and sustainability constraints. This finding is consistent with Singh and Gangopadhyay (2017), who identified funding disparities as a major factor influencing uneven technology adoption across institutions.

The results show that organizations have achieved basic technology implementation but they need to enhance their ability to develop new technologies through ongoing research and investment in upcoming technological solutions. Thus, while foundational technologies are in place, the findings suggest a need for greater investment and continuous upgrading to sustain innovation, consistent with the literature on resource-dependent digital transformation.

Staff Training and Capacity Building. Staff training and capacity building are essential in ensuring that library personnel possess the competencies required to effectively implement and sustain digital transformation efforts. Contemporary studies emphasize that digital transformation is not only a technological shift but also a human-centered process that requires continuous professional development, skills enhancement, and mindset transformation among staff. The development of both technical and soft skills enables library personnel to



Table 3: Extent of Management of the Digital Transformation of Libraries by the PHEIs along Staff Training and Capacity Building n=50

Indicators		Mean	DE	Rank
Regular training on emerging digital tools and platforms.		4.04	WM	8
Staff involvement in professional development planning.		4.24	EM	2
Opportunities for collaborative learning and knowledge sharing.		4.22	EM	3
Management support for skill enhancement.		4.16	WM	6
Evaluation of training effectiveness and outcomes.		3.98	WM	9
Availability of funding for staff digital training		3.88	WM	10
Encouragement to attend seminars, workshops, and webinars		4.38	EM	1
Training aligned with digital library goals and services		4.20	WM	4.5
Development of staff competencies in digital curation and services		4.08	WM	7
Continuous upskilling to keep pace with technological change		4.20	WM	4.5
Overall Mean		4.14	WM	
Legend				
Scale Limit	Statistical Range	Descriptive Equivalent		
5	4.21 – 5.00	Extensively Managed (EM)		
4	3.41 – 4.20	Well-Managed (WM)		
3	2.61 – 3.40	Moderately Managed (MM)		
2	1.81 – 2.60	Slightly Managed (SM)		
1	1.00 – 1.80	Poorly Managed (PM)		



adapt to evolving technologies and actively contribute to innovation. This dimension assesses how institutions support staff development through training programs, collaborative learning opportunities, and capacity-building initiatives aligned with digital transformation goals.

The extent of management in staff training and capacity building is well-managed ($M = 4.14$), ranking second among all dimensions. The highest-rated indicator, encouragement to attend seminars, workshops, and webinars ($M = 4.38$, EM), indicates strong institutional support for continuous professional development. This supports Uzwyshyn (2021), who found that structured training significantly improves staff competence and digital initiative success.

Additionally, staff involvement in professional development planning ($M = 4.24$) and collaborative learning opportunities ($M = 4.22$) highlight participatory and collaborative approaches to capacity building. These findings align with Khan and Weber (2023), who emphasized that

blended and participatory training approaches yield better outcomes in digital transformation.

However, availability of funding for staff training ($M = 3.88$) received the lowest rating, indicating financial limitations. This is consistent with Shakeel and Rubina (2017), who identified resource constraints as a major barrier to implementing comprehensive training programs.

Overall, the findings suggest that while training initiatives are actively promoted, sustainable funding and resource allocation remain key challenges, reinforcing the need for institutional investment in human capital development.

User Engagement and Service Innovation. User engagement and service innovation are central to the success of digital transformation, as they reflect the extent to which libraries respond to the evolving needs and expectations of their users. The literature underscores the importance of adopting user-centered approaches, integrating feedback mechanisms, and leveraging digital platforms to enhance user interaction and satisfaction. Furthermore, innovative service delivery, including the use of emerging technologies, plays a significant role in improving accessibility and relevance. This dimension examines how libraries engage users, design responsive services, and foster innovation in delivering digital library services.

Table shows that the extent of management of the 4th dimension on user engagement and service innovation, is well -managed ($M+ 4.17$) and ranked first among all dimensions.

The use of social media and digital platforms for engagement got the highest-rated indicator ($M=4.44$, EM), indicates that libraries effectively utilize digital channels to connect with users. This supports Sudijito et al. (2024), who emphasized the importance of digital platforms in enhancing user engagement.



Table 4: Management of the Digital Transformation of Libraries by the PHEIs along User Engagement and Service Innovation n=50

Indicators		Mean	DE	Rank
User feedback mechanisms integrated into service design.		4.02	WM	9
Promotion of digital literacy and information access among users.		4.28	EM	4
INTRODUCTION of personalized or AI-enhanced library services.		3.80	WM	10
Collaborative programs between users and staff		4.04	WM	8
Provision of online access to library resources		4.12	WM	6
Use of social media or digital platforms for user engagement		4.44	EM	1
User-oriented design of digital library interfaces		4.10	WM	7
Accessibility of digital services to diverse users		4.32	EM	3
Responsiveness to user concerns and service requests		4.36	EM	2
Continuous assessment of user satisfaction with digital services		4.22	EM	5
Overall Mean		4.17	WM	
Legend				
Scale Limit	Statistical Range	Descriptive Equivalent		
5	4.21 – 5.00	Extensively Managed (EM)		
4	3.41 – 4.20	Well-Managed (WM)		
3	2.61 – 3.40	Moderately Managed (MM)		
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1	1.00 – 1.80	Poorly Managed (PM)		



High ratings in responsiveness to user concerns ($M = 4.36$) and accessibility of services ($M = 4.32$) further demonstrate a strong user-centered approach. These findings are consistent with Khalil et al. (2024) and Meylani (2022), who highlighted that user-centered design significantly improves service utilization and satisfaction.

Conversely, introduction of AI-enhanced or personalized services ($M = 3.80$) received the lowest rating, suggesting that libraries have yet to fully adopt advanced and emerging technologies. This aligns with Yadukrishnan et al. (2023), who noted that only a minority of libraries reach advanced levels of user engagement and innovation.

Thus, while user engagement practices are strong, there is a need to advance toward innovative, technology-driven, and AI-enabled services.

Monitoring and Evaluation. Monitoring and evaluation are integral components of effective digital transformation management, providing a mechanism for assessing performance, ensuring accountability, and guiding continuous improvement. Research indicates that systematic evaluation processes, including the use of data, user feedback, and performance indicators, enable institutions to refine their strategies and enhance service delivery. In addition, monitoring and evaluation serve as feedback loops that connect planning and implementation to outcomes.

Table 5: Extent of Management of the Digital Transformation of Libraries by the PHEIs along Monitoring and Evaluation n=50

Indicators	Mean	DE	Rank
The institution has an established system for monitoring and evaluating digital library initiatives.	3.96	WM	9
The performance of digital library services is regularly reviewed using defined standards or indicators.	3.90	WM	10
Relevant data and usage statistics are systematically collected and analyzed to assess digital library effectiveness.	4.08	WM	7.5
Feedback from users is consistently gathered and utilized in evaluating digital library services.	4.08	WM	7.5
RESULTS of monitoring and evaluation are used as the basis for improving digital library policies, systems, and services.	4.10	WM	5.5
Consistent gathering of user feedback	4.10	WM	5.5
Use of evaluation results for service improvement	4.18	WM	2.5
Documentation of monitoring and evaluation outcomes	4.14	WM	4
Reporting of digital library performance to management	4.18	WM	2.5



Continuous improvement of policies, systems, and services based on findings		4.22	EM	1
Overall Mean		4.09	WM	
Legend				
Scale Limit	Statistical Range	Descriptive Equivalent		
5	4.21 – 5.00	Extensively Managed (EM)		
4	3.41 – 4.20	Well-Managed (WM)		
3	2.61 – 3.40	Moderately Managed (MM)		
2	1.81 – 2.60	Slightly Managed (SM)		
1	1.00 – 1.80	Poorly Managed (PM)		

This dimension evaluates how libraries establish and utilize monitoring systems and evaluation practices to measure the effectiveness of their digital transformation initiatives.

The table displays Monitoring and Evaluation (ME) data which achieved an overall mean score of 4.09 that indicates proper management of the system which ranked fourth among all evaluation categories. The continuous improvement indicator received the highest score from participants which showed an evaluation result usage to improve digital programs ($M = 4.22$, EM), indicates that institutions actively use evaluation results to enhance services.

This supports Rosenberg and Kotschy (2020), who emphasized that monitoring and evaluation should function as a strategic tool for improvement. Indicators such as use of evaluation results and reporting to management (both $M = 4.18$) suggest that evaluation processes are integrated into decision-making. This aligns with Pradana and Nuryuliani (2023), who highlighted the importance of feedback-driven system improvements.

However, regular review using defined standards ($M = 3.90$) and existence of formal monitoring systems ($M = 3.96$) received lower ratings, indicating gaps in systematization and standardization. This suggests that while practices exist, they may not be fully institutionalized.

Overall, the findings imply the need to strengthen formal monitoring frameworks and standardized evaluation systems. The institutions should implement evaluation practices which they currently use while developing standardized monitoring systems.

The preceding analyses of the five leadership strategy dimensions—strategic planning, technology adoption, staff training and capacity building, user engagement and service innovation, and monitoring and evaluation, collectively present a comprehensive view of how digital transformation is managed in libraries of private higher education institutions in the Greater Manila Area. Across all dimensions, the results consistently indicate a well-managed level of implementation, reflecting the presence of structured leadership practices and institutional commitment to digital initiatives.

Notably, user engagement and service innovation, along with staff training and capacity building, emerged as relatively stronger areas, suggesting that libraries prioritize user-centered services and human



resource development. In contrast, technology adoption and monitoring and evaluation, while still well-managed, reveal opportunities for improvement in terms of sustained investment, system upgrades, and the formalization of evaluation mechanisms.

These overall patterns reinforce existing literature which emphasizes that successful digital transformation is driven by a combination of strategic leadership, continuous capacity building, user-focused innovation, and evidence-based management, while also being constrained by resource limitations and the need for more systematic implementation frameworks.

Summary of the Extent of Management of the Digital Transformation of Libraries by the PHEIs in the GMA

Table 6 presents the summary of the extent of management of the digital transformation of libraries among private higher education institutions in the Greater Manila Area across the five key leadership strategy dimensions.

Table 6: Summary of the Extent of Management of the Digital Transformation of Libraries by the PHEIs in the GMA

Indicators	Mean	DE	Rank
Strategic Planning	4.11	WM	3
Technology Adoption	4.07	WM	5
Staff Training and Capacity Building	4.14	WM	2
User Engagement and Service Innovation	4.17	WM	1
Monitoring and Evaluation	4.09	WM	4
Grand Mean	4.12	WM	
Legend			
Statistical Range	Descriptive Equivalent		
4.21 – 5.00	Extensively Managed (EM)		
3.41 – 4.20	Well-Managed (WM)		
2.61 – 3.40	Moderately Managed (MM)		
1.81 – 2.60	Slightly Managed (SM)		
1.00 – 1.80	Poorly Managed (PM)		

This table consolidates the overall mean scores, descriptive equivalents, and rankings of strategic planning, technology adoption, staff training and capacity building, user engagement and service innovation, and monitoring and evaluation. The summary provides a comparative overview of how each dimension contributes to the overall management of digital transformation, highlighting areas of strength and identifying aspects that require further enhancement.

Through this synthesis, the table offers a clearer understanding of the relative performance of each dimension and serves as a basis for drawing general conclusions about the effectiveness of leadership strategies in managing digital transformation in academic libraries.



The grand mean of 4.12 (WM) indicates that the overall management of digital transformation is well-managed, demonstrating that PHEIs in the GMA are actively implementing leadership strategies across all dimensions. The ranking reveals that User Engagement and Service Innovation ranked first, followed by Staff Training and Capacity Building in second place, and Strategic Planning in third. Meanwhile, Monitoring and Evaluation placed fourth, while Technology Adoption ranked lowest among the dimensions, occupying the fifth position. This pattern strongly corroborates Mbambo-Thata and Tang (2023), who identified leadership, planning, staff development, and user engagement as core drivers of digital transformation.

However, the relatively lower ranking of technology adoption and monitoring aligns with Rahman and Cunningham (2023) and Yefimov et al. (2025), who emphasized that resource constraints, technological challenges, and lack of formal systems are persistent barriers.

LIMITATIONS AND IMPLICATIONS

This study critically analyzed the management of digital libraries in accredited private higher education institutions (PHEIs) within the Greater Manila Area (GMA), along the five dimensions of Strategic Planning, Technology Adoption, Staff Training and Capacity Building, User Engagement and Service Innovation, and Monitoring and Evaluation, aligning with internationalization and 21st-century education, and contributing to the development of digitalization in the evolving educational landscape and beyond.

The participants included university library managers from selected private higher education institutions in Metro Manila that are actively implementing or transitioning to digital library systems and services. Public universities, government libraries, basic education school libraries, and other non-higher education library institutions are excluded to maintain focus and contextual consistency within the private higher education sector.

The study did not gather perceptions from students, faculty members, or other university administrators outside the library unit. Its focus was specifically on the management and operational dimensions of library transformation from the perspective of internal library personnel. Moreover, the research was delimited to accredited private institutions located within the Greater Manila Area and did not cover other geographic regions or public academic institutions, ensuring uniformity in organizational structure, governance, and institutional context.

Thus, the study did not aim to evaluate or critique compliance with national or international digital library standards. Rather, it endeavored to offer empirically grounded insights into current management practices, challenges, and potential best practices to strengthen digital library management in accredited private higher education institutions in the Greater Manila Area.

Alongside these delimitations, the study acknowledged certain limitations. As the quantitative phase relied on the self-reported assessments of library managers regarding the extent of management of digital transformation, the findings were subject to the inherent subjectivity of self-perception and could not be independently verified against external performance audits. The number of participating institutions was likewise bounded by accessibility and willingness to participate within the data gathering period, so the results were interpreted within the context of the participating accredited PHEIs rather than generalized to all institutions nationwide. Finally, because the study captured digital transformation management at a particular point in time, it did not trace longitudinal changes in management practices. These limitations were addressed through the use of validated and reliability-tested instruments, purposive selection of information-rich key informants, member checking, and the maintenance of an audit trail to strengthen the trustworthiness of the findings.

Moreover, the constructed questionnaire was piloted and/or pretested by nineteen (19) library managers who were not part of the actual study participants, with a Reliability Rating of 0.60 or Acceptable Score across the 5 factor components - a. Strategic Planning, b. Technology Adoption, c. Staff Training and Capacity Building, d. User Engagement and Service Innovation, and e. Monitoring and Evaluation. Cronbach's Alpha reliability coefficient (Cronbach, 1951; Tavakol & Dennick, 2011) was used to compute the reliability of the constructed



questionnaire. Validation was conducted by the researcher using SPSS software under the guidance of a certified statistician. The Rating Intervals for Cronbach's Alpha reliability coefficient is as follows:

Cronbach's Alpha	Reliability Rating
$\alpha \geq 0.90$	Excellent
$0.70 \leq \alpha < 0.90$	Good
$0.60 \leq \alpha < 0.70$	Acceptable
$0.50 \leq \alpha < 0.70$	Poor
$\alpha < 0.50$	Unacceptable

CONCLUSION

The overall management of the digital transformation of libraries among accredited PHEIs in the Greater Manila Area was found to be Well Managed, with a grand mean of 4.12 across the five management dimensions. This indicates that institutions are actively implementing structured leadership practices and are institutionally committed to digital transformation initiatives.

Across all five dimensions, leadership commitment, the use of cloud-based systems, encouragement of professional development, the use of digital platforms for user engagement, and evidence-based continuous improvement were consistently the highest rated indicators. Conversely, the presence of a formal digital library roadmap, the availability of funding for digital innovation and staff training, the introduction of AI-enhanced services, and systematic review using defined standards registered the lowest scores, indicating gaps in formalization, sustainable financing, and advanced service innovation.

Examined dimension by dimension, the findings revealed a consistent pattern of well-managed practice accompanied by specific, actionable areas for strengthening, providing a granular evidentiary basis for the framework developed in this study.

Along Strategic Planning, the extent of management was Well Managed ($M = 4.11$). Leadership commitment to sustaining digital transformation initiatives ranked highest ($M = 4.26$, Extensively Managed), while the presence of a formal digital library roadmap or master plan registered the lowest mean ($M = 3.90$), indicating that formalization and documentation of long-term planning frameworks remain areas requiring improvement.

Along Technology Adoption, the extent of management was Well Managed ($M = 4.07$), ranking lowest among the five dimensions. The use of cloud based or integrated library systems was the highest rated indicator ($M = 4.22$, Extensively Managed), while the availability of funding to support digital innovations ($M = 3.90$) and regular upgrading of hardware and software systems ($M = 3.98$) received the lowest scores, reflecting financial and sustainability constraints.

Along Staff Training and Capacity Building, the extent of management was Well Managed ($M = 4.14$), ranking second among all dimensions. The highest rated indicator was the encouragement to attend seminars, workshops, and webinars ($M = 4.38$, Extensively Managed), reflecting strong institutional support for professional development. However, the availability of funding for staff digital training was the lowest rated indicator ($M = 3.88$), underscoring the persistent challenge of resource allocation for human capital development.

Along User Engagement and Service Innovation, the extent of management was Well Managed ($M = 4.17$), ranking first among all dimensions. The use of social media and digital platforms for user engagement ranked highest ($M = 4.44$, Extensively Managed), while the introduction of personalized or AI enhanced library services



ranked the lowest ($M = 3.80$), signaling that libraries have yet to fully integrate advanced, technology driven service innovations.

Along Monitoring and Evaluation, the extent of management was Well Managed ($M = 4.09$), ranking fourth among the five dimensions. The highest rated indicator was continuous improvement of policies, systems, and services based on findings ($M = 4.22$, Extensively Managed). The regular review of digital library services using defined standards or indicators registered the lowest mean ($M = 3.90$), indicating that formalization and standardization of evaluation systems remain underdeveloped.

Taken together, these results indicate that the management of digital transformation across accredited PHEIs in the Greater Manila Area is strongest where it depends on leadership commitment, professional development, and user-facing engagement, and comparatively weaker where it depends on formal documentation, sustained financing, standardized evaluation, and advanced service innovation.

RECOMMENDATIONS

1. For Institutional Administrators: University presidents and vice presidents for academic affairs may treat the digital library as a strategic academic asset by establishing protected multiyear budget lines for digital library investments, formally integrating library digital transformation targets into institutional strategic plans, and receiving library performance data at the senior administration and governing board level as a standard governance practice. Succession planning for library leadership could be recognized as an institutional governance responsibility, ensuring that digital transformation commitments are embedded in durable formal structures that survive personnel transitions. Administrators may grant library managers the institutional trust and professional autonomy that enables agile, expert driven decision making, recognizing that management support backed by genuine confidence in library leadership is the true catalyst for sustainable digital growth.

2. For Accrediting Bodies: PAASCU, PACUCOA, ACSCU, and other accrediting bodies maybe encouraged to initiate a comprehensive review of library quality standards to align accreditation criteria with the realities of digital library development, recognizing comprehensive electronic database access with documented utilization statistics as fully equivalent to or superior to print journal subscriptions. To support currency and progressiveness, it would be highly beneficial to encourage the active involvement of new generation of qualified library professionals in the revision of accreditation standards. Interpretive consistency in the application of CMO 22 series of 2021 could be pursued as an immediate policy priority to reduce institutional uncertainty and encourage bold digital investment decisions.

3. For CHED and Policy Makers: CHED may provide clear and progressive implementation guidance for CMO 22 series of 2021, resolving interpretive inconsistencies across accrediting bodies. A national digital library support program encompassing consortium pricing negotiations at the national level, a government facilitated database access program, professional development support for library leaders, and a national library analytics and benchmarking platform could be developed as a strategic policy investment in the quality of Philippine higher education. Library science professional education programs may be reviewed and updated to include data analytics, evidence-based management, digital resource management, and technology leadership as core competencies of the next generation of library professionals.

4. For Future Researchers: Future research could extend this study's scope to PHEIs in the Visayas and Mindanao regions for national comparative analysis. Longitudinal studies tracking the implementation and impact of the Digital Transformation Management in Academic Libraries. Mixed methods studies examining the relationship between digital library management quality and measurable student academic outcomes including licensure examination performance, thesis quality, and research publication rates could strengthen the evidence base for sustained institutional and government investment. Studies specifically examining the analytics capacity gap in Philippine academic libraries and the effectiveness of targeted professional development interventions in addressing it are also recommended as high priority areas for future inquiry.



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