

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME**

**A STUDY ON THE CHALLENGES AND OPPORTUNITIES
FACED IN DIGITAL LIBRARIES SERVICES
(Case Study: Sarpay Beikman Library and National Library of
Myanmar (Yangon))**

**CHO ZAR HTUN
MPA - 11 (22nd BATCH)**

JUNE, 2025

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME**

**A STUDY ON THE CHALLENGES AND OPPORTUNITIES
FACED IN DIGITAL LIBRARIES SERVICES
(Case Study: Sarpay Beikman Library and National Library of
Myanmar (Yangon))**

A thesis submitted as a partial fulfillment towards the requirement of the Degree of
Mater of Public Administration (MPA)

Supervised by:

Daw N Khum Ja Ra
Associate Professor
Department of Applied Economics
Yangon University of Economics

Submitted by:

Ma Cho Zar Htun
Roll No - 11
MPA (22nd Batch)
(2023 - 2025)

June, 2025

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME**

This is to certify that this thesis entitled “**A Study on the Challenges and Opportunities Faced in Digital Libraries Services (Case Study: Sarpay Beikman Library and National Library of Myanmar (Yangon))**”, submitted in partial fulfilment towards the requirements for the degree of Master of Public Administration (MPA) has been accepted by the Board of Examiners.

BOARD OF EXAMINERS

.....

Dr. Tin Tin Htwe
(Chairperson)
Rector

Yangon University of Economics

.....

Dr. Cho Cho Thein
(Examiner)
Pro-Rector

Yangon University of Economics

.....

Dr. Su Su Myat
(Examiner)

Professor and Head of Department
Department of Applied Economics
Yangon University of Economics

.....

U Khun Maung Gyi
(Examiner)
Associate Professor

Department of Applied Economics
Yangon University of Economics

.....

Daw N Khum Ja Ra
(Supervisor)
Associate Professor

Department of Applied Economics
Yangon University of Economics

JUNE, 2025

ABSTRACT

This study investigates the challenges and opportunities associated with digital library services in the Yangon Region, focusing on the experiences of users, faculty members, and library staff at Sarpay Beikman Library and the National Library of Myanmar (Yangon). The main objectives are to examine the challenges faced in accessing and utilizing digital library services and to explore the opportunities these platforms offer in enhancing information access, learning, and academic. The study employs a descriptive method, with primary data collected from 300 respondents through structured questionnaires distributed at Sarpay Beikman Library and the National Library of Myanmar (Yangon). The findings highlight that users face various challenges, including limited accessibility due to unreliable internet, inadequate training, content availability issues, cybersecurity risks, and technological constraints. However, the study also indicates significant opportunities, such as improved accessibility, user-friendly interfaces, rich and diverse digital content, cost-efficiency, and enhanced academic productivity. These results suggest that while digital libraries offer substantial opportunities, addressing existing challenges through strategic investment, user education, and infrastructure development is essential for maximizing their potential and ensuring equitable access to information and learning resources.

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to Professor Dr. Tin Tin Htwe, Rector of Yangon University of Economics, for granting me permission and providing the opportunity to undertake this study.

I am incredibly thankful to Professor Dr. Tin Tin Wai and Professor Dr. Cho Cho Thein, Pro-Rectors of Yangon University of Economics, for their invaluable guidance and insightful lectures, which have greatly enriched both my classroom experience and the development of this thesis.

My heartfelt appreciation extends to Professor Dr. Su Su Myat, Programme Director and Head of the Department of Applied Economics, along with all faculty members of the MPA Programme, for her thoughtful mentorship and for generously sharing her knowledge and knowledge throughout my studies.

I would also like to extend my heartfelt thanks to U Khun Maung Gyi, Associate Professor in the Department of Applied Economics, for his insights and knowledge, which have been instrumental in shaping my understanding of the subject matter.

I am especially grateful to my supervisor, Daw N Khum Ja Ra, Associate Professor in the Department of Applied Economics, for her invaluable supervision and guidance, which played a crucial role in the completion of this thesis.

Lastly, I want to acknowledge the unwavering support and camaraderie of all the professors, lecturers, and educators who have shared their knowledge and experiences with me. I also wish to recognize the continuous encouragement and friendship of all faculty members, visiting lecturers, and my classmates in the Master of Public Administration Programme at Yangon University of Economics during my academic journey.

TABLE OF CONTENTS

	Page
ABSTRACT	i
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF ABBREVIATIONS	vii
CHAPTER I INTRODUCTION	1
1.1 Rationale of the Study	1
1.2 Objective of the Study	2
1.3 Method of Study	2
1.4 Scope and Limitations of the Study	3
1.5 Organization of the Study	3
CHAPTER II LITERATURE REVIEW	4
2.1 Definition of Digital Libraries	4
2.2 Influential Factors in the Development of Digital Libraries	5
2.3 Important Characteristics of the Digital Library	7
2.4 Opportunities of Using Digital Library	8
2.5 Challenges Facing Digital Library Services	10
2.6 Data Security in Digital Libraries	11
2.7 Review on Previous Studies	13
CHAPTER III OVERVIEW OF DIGITAL LIBRARIES IN MYANMAR.	15
3.1 Evolution and Historical Development of Digital Libraries in Myanmar	15
3.2 Digital Libraries in Myanmar	17
3.3 Types of Digital Resources Available in Myanmar	19
3.4 Digital Academic Resources through eLibrary Myanmar	21
3.5 Digital Library Usage in Myanmar	25

3.6	Student Engagement and Digital Literacy in Myanmar's Digital Libraries	27
CHAPTER IV SURVEY ANALYSIS		32
4.1	Survey Profile	32
4.2	Survey Design	33
4.3	Survey Results	33
CHAPTER V CONCLUSION		
5.1	Findings	46
5.2	Suggestions	48
REFERENCES		
APPENDIX		

LIST OF TABLES

Table No.	Title	Page
3.1	Journal and E-book Collections Available from eLibrary of Myanmar	22
3.2	Available Licensed Databases from eLibrary Myanmar	23
3.3	Number of Digital Library Users Across Selected Institutions in Myanmar (2020–2024)	26
3.4	Student Engagement and Digital Literacy Training Participation (2020–2024)	28
4.1	Number of Digital Library Users	32
4.2	Demographic Profile of Respondents	34
4.3	Perception on Challenges in Accessibility	36
4.4	Perception on Challenges in Usability	37
4.5	Perception on Challenges in Availability	38
4.6	Perception on Challenges in Privacy and Security	39
4.7	Perception on Challenges in Technology	40
4.8	Perception on Opportunities in Accessibility	41
4.9	Perception on Opportunities in Usability	42
4.10	Perception on Opportunities in Availability	43
4.11	Perception on Opportunities in Cost-Efficiency	44
4.12	Perception on Opportunities in Academic Productivity	45

LIST OF FIGURES

Figure No.	Title	Page
3.1	Evaluation of Digital Literacy, Group Average Pre- Versus Post-Training	29
3.2	Applications Most Frequently Used Pre- and Post-Training	30

ABBREVIATIONS

AI	Artificial Intelligence
ANU	Australian National University
CD-ROM	Compact Disc Read-Only Memory
DRM	Digital Rights Management
DLF	Digital Library Federation
EIFL	Electronic Information for Libraries
HTTPS	HyperText Transfer Protocol Secure
ICT	Information and Communication Technology
IDS	Intrusion Detection System
ISS	Internet Skills Scale
LMS	Learning Management System
MIL	Media and Information Literacy
MIDO	Myanmar ICT for Development Organization
MOOC	Massive Open Online Course
OBL	Online Burma/Myanmar Library
OCR	Optical Character Recognition
OPAC	Online Public Access Catalogue
PDF	Portable Document Format
RBAC	Role-Based Access Control
SIM	Subscriber Identity Module
SQL	Structured Query Language
SPSS	Statistical Package for the Social Sciences
UCL	Universities' Central Library
UNESCO	United Nations Educational, Scientific and Cultural Organization
XSS	Cross-Site Scripting

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

Digital libraries play a transformative role in the modern information landscape by enabling users to access vast collections of information in electronic formats from any location, at any time, through networked devices. Unlike traditional libraries that rely on physical books and printed materials, digital libraries emphasize the use of electronic resources, offering users instant and universal access to knowledge repositories (Borgman, 2000). They are especially critical in today's knowledge-driven society, where timely access to information is vital for education, research, and innovation.

The importance of digital libraries has grown rapidly with advancements in information and communication technologies. They serve as key platforms for storing, organizing, and disseminating digitized content across disciplines such as education, science, health, governance, and cultural heritage (Fox et al., 1995). The adoption of digital library systems, including Open-Source software like DSpace and Greenstone, has empowered libraries to build scalable, cost-effective, and user-friendly digital repositories (Arms, 2000). These systems enhance access through features like Online Public Access Catalogues (OPAC) and full-text search engines.

Digital libraries are not only efficient but also economical. Four arguments from Chapman and Kenney (2008): (1) Institutions can exchange digital collections, (2) Local print resources can be replaced by digital collections, (3) their use will boost electronic accessibility, and (4) their long-term value will lower preservation, delivery, and dissemination costs. This also emphasizes that digital collections allow resource sharing among institutions, reduce the reliance on physical space and materials, enhance electronic accessibility, and offer long-term cost savings in preservation and distribution. Moreover, the integration of multimedia elements such as images, audio, and video expands the learning experience beyond the limitations of printed text (Witten & Bainbridge, 2003).

Digital libraries are increasingly being embraced by librarians and information professionals worldwide as a transformative approach to modernizing information services. This shift toward digital platforms reflects the growing recognition of the value these libraries offer in expanding access to information, streamlining retrieval processes, and enhancing user experiences through technology-driven solutions.

Despite the enthusiasm for this technological advancement, there remains a critical need to uphold the core mission of libraries facilitating effective information retrieval. Achieving this requires more than just digitizing content; it necessitates a strong focus on developing users' digital literacy skills. Individuals must be equipped with the ability to search, critically evaluate, and effectively apply digital content. Building such competencies ensures that users can navigate digital environments confidently and derive meaningful benefits from the resources available in digital libraries (Marsini & Nugroho, 2023).

Studying the challenges and opportunities faced by digital library services, particularly in the Yangon Region, is crucial for understanding how digital infrastructure, user behavior, institutional support, and policy environments shape their development. This study contributes to identifying barriers and proposing strategies for the sustainable implementation and improvement of digital library services in Myanmar.

1.2 Objectives of the Study

The main objectives of this study are:

1. To examine the challenges encountered by users, faculty members, and library staff in utilizing digital library services.
2. To investigate the opportunities that digital library services offer for improving access to information, teaching, learning, and research activities.

1.3 Method of Study

This study employed a descriptive method based on a quantitative approach to explore the challenges and opportunities in digital library services. Primary data were collected through a structured questionnaire distributed to users of Sarpay Beikman Library and the National Library of Myanmar (Yangon). The survey questionnaire was designed to gather reliable information regarding users' experiences and perceptions of

digital library services in their academic activities. The survey questionnaire consisted of a combination of multiple-choice questions, and 5-point Likert-scale items. The questionnaire was designed to collect both quantitative and qualitative data, enabling a comprehensive assessment of user experiences. The survey was divided into three main sections. The responses were analyzed using the Statistical Package for the Social Sciences (SPSS), with results presented in terms of frequency and percentage.

1.4 Scope and Limitations of the Study

This study focused specifically on the Sarpay Beikman Library and the National Library of Myanmar (Yangon), aiming to examine the impact and usage of digital library services by collecting data from users during the 2024–2025 academic year. A total population of approximately 600 users, 300 users (50%) were selected as the sample for this study. The scope of the study was limited to these two major libraries in Yangon Region, which may not fully reflect the experiences or challenges faced by users in other libraries across the country. Additionally, the research was confined to a single academic year, and as such, it does not capture long-term usage trends or the evolving nature of digital library services over time.

1.5 Organization of the Study

Five chapters comprise the study. Chapter I introduces the study's premises, objectives, method, scope, constraints, and organization. The literature overview on Digital Libraries' problems and potential was in Chapter II. Chapter III presented the overview of Digital Library in Myanmar. The survey analysis of this study is provided in Chapter IV. Finally, chapter V contained conclusions that summarize the findings and suggestions for this study.

CHAPTER II

LITERATURE REVIEW

2.1 Definitions of Digital Library

Digital libraries have been defined in various ways by scholars and institutions, emphasizing their nature as electronically organized repositories of information. Sharma (2023) states that a digital library stores its collection in computer-processable form to supplement or replace printed books. This definition shows how library collections have gone digitally.

Digital libraries have electronic collections of documents accessible online or on CD-ROMs. Users can access magazines, books, papers, photos, sound files, and videos (Chandra & Sharma, 2023). The Berkeley Digital Library Project at the University of California defines digital libraries as distributed information sources where producers provide content and consumers locate it using automated agents.

These definitions show that a digital library is a computerized system that efficiently accesses and retrieves information from electronically stored sources. It encompasses not only textual information but also multimedia resources such as audio and video. Unlike traditional libraries that store physical books, digital libraries use technologies and networks to manage, store, and distribute information (UNESCO, 2005).

Several authoritative definitions further elaborate on the concept of digital libraries:

1. **General Definition:** A digital library is an organized collection of digital content made available electronically, which may include texts, images, audio, video, and other multimedia formats (Borgman, 1999).
2. **UNESCO Definition:** Digital libraries are organizations that provide resources and specialized staff to select, structure, offer intellectual access

to, interpret, distribute, preserve, and ensure the persistence over time of digital collections (UNESCO, 2005).

3. **University of California, Berkeley:** A digital library is a focused collection of digital objects, including texts and multimedia, stored electronically along with the tools to organize, store, and retrieve these digital files (University of California, Berkeley, 2007).
4. **Digital Library Federation (DLF):** Digital libraries are organizations responsible for selecting, organizing, providing access to digital content, and ensuring its long-term preservation with the help of professional staff (DLF, 2008).

These definitions collectively emphasize the role of digital libraries as dynamic, technology-driven repositories that support long-term access, preservation, and intellectual engagement with digital information.

2.2 Influential Factors in the Development of Digital Libraries

The emergence of digital libraries is driven by a complex interplay of technological, social, economic, and institutional factors. One of the primary motivations has been the increasing demand for convenient access to information directly at users' desktops, as traditional libraries struggle with limited physical space, insufficient funds, and the growing volume of information (Borgman, 1999). Digital libraries offer prompt access to needed documents, enabling researchers and specialists to locate and retrieve information quickly, which is difficult to achieve with conventional print collections (Arms, 2000).

Technological advancements in Information and Communication Technology (ICT), including high-speed internet, cloud computing, and storage solutions, have played a crucial role in enabling the digitization, management, and retrieval of large volumes of digital content (Chen et al., 2017). The development of sophisticated software and hardware such as Optical Character Recognition (OCR) tools and digital library management systems further supports these capabilities (Arms, 2000).

Digitization initiatives have been propelled by the need to preserve fragile and aging physical collections and rare manuscripts, while simultaneously accommodating the rapid growth of born-digital content like e-books and online journals (Conway, 2010). The demand for remote access to information, intensified by the rise of distance

education and online learning platforms, has further underscored the importance of digital libraries, offering 24/7 availability regardless of geographic location (Delgado & Nistal, 2020).

Digital libraries also address the spatial and financial constraints of traditional libraries, reducing the need for physical storage and related maintenance costs (Day, 2002). Furthermore, digital preservation techniques facilitate long-term conservation of resources without the degradation risks inherent in physical media, complemented by robust backup and disaster recovery systems (Lertworasirikul & Miller, 2008).

Advancements in metadata standards, indexing, and full-text search functionalities have enhanced the efficiency and precision of information retrieval (Kumar & Kumar, 2016). Additionally, the integration of artificial intelligence (AI) and machine learning technologies has significantly improved discovery tools, enabling personalized and intelligent search experiences (Li et al., 2021).

Globalization and increased collaboration among institutions have fostered resource sharing through digital consortia and networks such as the World Digital Library, facilitating cross-border scholarly communication and access (Smith, 2013). The open access movement has also contributed to the proliferation of digital libraries by advocating free access to scholarly literature, which has driven the development of institutional repositories and digital archives (Suber, 2012).

Changing user behaviors, particularly among digital-native generations, demand multimedia-rich, interactive, and mobile-accessible content, shaping the design and delivery of digital library services (Liu, 2018). Government and institutional initiatives globally, such as Digital India, Europeana, and the Library of Congress Digital Collections, provide policy support and funding to promote digital literacy and digital library development (Patel & Sharma, 2020).

Environmental considerations have encouraged digital libraries as eco-friendly alternatives that reduce paper consumption and carbon footprints associated with physical transportation of materials (Kranich, 2011). Moreover, advancements in intellectual property management, through Digital Rights Management (DRM) technologies, have addressed copyright concerns and encouraged publishers to digitize content (Zhou & Sun, 2017).

The integration of digital libraries with educational technologies like Learning Management Systems (LMS) and Massive Open Online Courses (MOOCs) has

expanded access to educational resources (Santos & Boticario, 2015). User analytics and feedback mechanisms on digital platforms enable continuous service improvement by tracking user behavior and preferences (Jiang et al., 2019). Finally, digital libraries enhance accessibility and inclusivity by supporting adaptive technologies for users with disabilities and providing multilingual content (Al-Aufi & Al-Busaidi, 2020).

Recent crises, such as the COVID-19 pandemic, have accelerated reliance on digital libraries due to restrictions on physical access, providing their critical role in ensuring uninterrupted access to information during emergencies (Singh et al., 2020).

2.3 Important Characteristics of the Digital Library

Digital libraries possess several distinctive characteristics that differentiate them from traditional physical libraries. A fundamental feature is the storage of information in digital form, which allows for efficient management, preservation, and dissemination of large volumes of content. Additionally, digital libraries leverage communication networks such as the Internet to enable users to access and retrieve information directly from remote locations, facilitating global accessibility at any time (Borgman, 1999).

Accessibility is a key characteristic, as digital libraries provide 24/7 availability to users worldwide, removing temporal and spatial barriers common in conventional libraries (Lynch, 2003). The presence of advanced search functionalities allows users to quickly locate specific documents, keywords, or metadata, significantly enhancing searchability compared to manual catalog systems (Marchionini, 2000).

The collections in digital libraries typically comprise diverse digital content, including eBooks, PDFs, audio files, videos, images, and structured databases, supporting multimedia integration that enriches the user experience (Witten & Bainbridge, 2003). Furthermore, digital libraries implement robust storage and preservation mechanisms that ensure the long-term safety and integrity of digital materials, addressing issues like data degradation and loss (Conway, 2010).

User interfaces in digital libraries are designed to be user-friendly and often include personalized features such as recommendations, customized access, and intuitive navigation to improve usability (Chen et al., 2020). Metadata standards and cataloging practices are employed extensively to organize digital objects efficiently,

facilitate interoperability among systems, and support effective retrieval of information (Greenberg, 2005).

Interactivity is another important attribute, enabling functionalities like annotations, bookmarking, content sharing, and collaborative tools that promote user engagement (Borgman, 2007). Digital libraries are also scalable, allowing seamless expansion of both digital content and user access without the physical constraints inherent to traditional libraries (Smith, 2007).

Cost efficiency is a notable advantage, as digital libraries reduce expenses related to physical space, materials, and manual labor (Taylor, 2011). Finally, security measures including access control, digital rights management (DRM), and user authentication are crucial to protect intellectual property and ensure authorized use of digital resources (Kesan & Shah, 2004).

2.4 Opportunities of Using Digital Library

Digital libraries offer numerous opportunities that have transformed the way information is accessed, stored, and utilized in modern academic and research environments. A study by Borgman (2000), one of the primary opportunities of digital libraries is their universal accessibility, allowing users to access digital content from anywhere and at any time, as long as they have an internet connection. This 24/7 availability eliminates geographical and time-related barriers commonly associated with traditional libraries.

According to Witten and Bainbridge (2003), digital libraries significantly reduce storage constraints and physical infrastructure requirements, making them cost-effective solutions for institutions facing space or budget limitations. Digitization also enables remote access to rare, fragile, or expensive materials, preserving them for future use while preventing physical deterioration due to handling or poor storage conditions (Conway, 2010).

In addition, digital libraries support both formal and informal learning, offering learners easy access to a wide array of educational materials, from academic journals to multimedia resources. Their ability to host large volumes of data and organize it systematically makes digital libraries suitable for managing extensive and diverse collections (Tenopir et al., 2009).

Another important feature is the enhanced search efficiency offered through advanced metadata, keyword filters, and full-text search functions. These features help users perform searches that would be nearly impossible manually in physical collections (Marchionini, 2000). Furthermore, digital platforms allow for simultaneous access to the same resources by multiple users, which addresses one of the core limitations of physical libraries (Liu, 2012).

The integration of multimedia content; such as video, audio, and interactive features into digital libraries enhances user engagement and promotes interactive learning experiences (Siemens, 2013). Lastly, digital libraries contribute to environmental sustainability by reducing the consumption of paper and physical materials, making them an environmentally friendly alternative to conventional library systems (Taylor, 2011).

Based on the reviewed literature, the eight opportunities of digital libraries are:

1. **24/7 Accessibility** – Digital libraries can be accessed anytime and from anywhere with an internet connection, removing geographic and time restrictions (Borgman, 2000).
2. **Cost-Effective** – Reduces expenses related to physical storage, printed materials, and labor (Witten & Bainbridge, 2003).
3. **Search Efficiency** – Reduces the need for physical space, printed materials, and staff. Also lowers long-term maintenance costs compared to traditional libraries (Marchionini, 2000).
4. **Resource Preservation** – Rare and fragile documents can be digitized and preserved indefinitely, reducing the risk of physical damage or loss (Conway, 2010).
5. **Multimedia Integration** – Digital libraries support various formats: text, audio, video, and interactive media-enhancing learning and engagement (Siemens, 2013).
6. **Simultaneous Access** – Multiple users can access the same resource at the same time, which is impossible with a single physical copy (Liu, 2012).
7. **Environmentally Friendly** – Reduces the use of paper and physical materials, supporting sustainability (Taylor, 2011).

8. **Enhanced Learning Tools** – Many digital libraries include annotations, hyperlinks, read-aloud features, and integration with educational platforms (Tenopir et al., 2009).

2.5 Challenges Facing Digital Library Services

Despite the growing importance and expansion of digital libraries worldwide, their development and implementation are not without challenges. One of the most common issues is infrastructure and technological limitations, particularly in developing and under-resourced regions. Many institutions struggle with inadequate bandwidth, outdated hardware, and limited access to high-speed internet, which hampers the delivery of digital content and services (Lwehabura & Stilwell, 2008; Kumar & Singh, 2018). Even in technologically advanced countries, the need for continuous upgrades and system maintenance poses a financial burden for many libraries (Alemneh & Hastings, 2006).

Another major barrier is funding constraints, as establishing and maintaining digital library systems requires significant investment in software, hardware, digitization processes, licensing, and skilled personnel. Many academic and public libraries face limited budgets that prioritize core library operations, often sidelining digital initiatives (Rieh & Hilligoss, 2008). Moreover, funding agencies may be hesitant to support digital library projects due to unclear return on investment or short-term policy changes (Tenopir et al., 2012).

Human resource limitations also present significant challenges. The successful operation of digital libraries requires librarians with technical knowledge of metadata standards, digital preservation techniques, and content management systems. However, a shortage of trained professionals in digital librarianship continues to hinder progress, especially in regions where formal training and professional development opportunities are lacking (Mutula, 2004; Baro et al., 2013). This gap in technical skills often results in underutilization or inefficient management of digital resources.

Digital preservation is another complex issue. Ensuring long-term access to digital content involves addressing hardware obsolescence, software compatibility, data degradation, and changing file formats. Unlike print materials, digital files are more susceptible to corruption and loss if not properly managed. Libraries must adopt robust preservation policies, such as regular backups, format migration, and redundant storage,

which require substantial technical and financial resources (Conway, 2010; Rosenthal, 2010).

Copyright and intellectual property concerns represent legal and ethical challenges for digital libraries. Libraries must balance the need to provide access to knowledge with the rights of authors and publishers. The ambiguity and variability of copyright laws across jurisdictions complicate the sharing of digital resources, especially in collaborative or cross-border library networks (Tonta, 2008; Smith, 2013). Additionally, the integration of Digital Rights Management (DRM) technologies, while protecting intellectual property, often restricts user access and usability (Zhou & Sun, 2017).

User-related issues also affect the effectiveness of digital library services. Low levels of digital literacy, resistance to technology, and lack of awareness about available resources can limit usage among potential beneficiaries (Liu, 2008; Singh & Kaur, 2009). Studies have shown that even when digital libraries are well-established, many users face difficulties in navigating digital interfaces, understanding metadata, or utilizing advanced search functionalities (Xie, 2009). Therefore, user education and training remain critical components of digital library implementation.

Finally, language barriers and cultural diversity can impact the accessibility and relevance of digital libraries. Many digital collections are dominated by English-language content, which may not meet the needs of local or indigenous communities. To address this, libraries must invest in multilingual interfaces and localized content, which adds another layer of complexity to digital library design and maintenance (Al-Aufi & Al-Busaidi, 2020).

2.6 Data Security in Digital Libraries

Data security is a critical aspect of managing digital libraries, involving the protection of digital assets such as electronic books, user data, databases, and multimedia content from unauthorized access, alteration, theft, or destruction (Borgman, 1999; Arms, 2000). Digital libraries face numerous threats including system crashes, hardware failures, accidental data deletion, cyberattacks, malware infections, and natural disasters, all of which can compromise the integrity and availability of information (Conway, 2010).

Effective data security strategies in digital libraries encompass several key components. User authentication and access control mechanisms verify the identity of users through passwords, biometrics, or multi-factor authentication, and restrict resource access based on defined permissions and roles (Liu, 2012). Role-based access control (RBAC) ensures that users such as students, librarians, and guests have appropriate levels of authorization, minimizing the risk of unauthorized data exposure (Greenberg, 2005).

Data encryption plays a vital role in securing information both in transit and at rest. Encryption protocols such as HTTPS protect data as it moves between servers and users, while encryption of stored data prevents unauthorized reading in case of theft or system breaches (Kesan & Shah, 2004). Maintaining secure software and platform environments by regularly applying security patches and following secure coding practices helps prevent vulnerabilities like SQL injection and cross-site scripting (XSS) attacks (Chen et al., 2020).

Regular data backups and comprehensive disaster recovery plans are essential to mitigate data loss due to system failures or cyber incidents (Conway, 2010). Continuous monitoring and logging of user activities enable the detection of suspicious behavior through intrusion detection systems (IDS) and support audit processes to investigate security incidents (Jansen & Spink, 2006).

Digital Rights Management (DRM) systems safeguard copyrighted digital content by controlling copying, distribution, and printing, ensuring compliance with intellectual property laws (Kesan & Shah, 2004). Privacy protection is another important facet, encompassing the safeguarding of user information and ensuring adherence to data privacy regulations, such as informed consent and data minimization principles (Burgstahler, 2003).

Securing digital libraries requires a multi-layered approach that combines technological safeguards, policy frameworks, and continuous vigilance to protect digital collections and user information. Ensuring robust data security not only preserves the integrity and availability of digital resources but also fosters user trust and supports the sustainable growth of digital library services.

2.7 Review of Previous Studies

Habibi et al. (2020) explored the application of the Media Literacy Model to improve reading abilities among early-grade children. The study aimed to develop and evaluate literacy media tools designed to enhance reading proficiency. Using a Research and Development (R&D) methodology, he created media resources and tested their effectiveness in elementary school settings. The scope focused on primary school students in early grades. Findings indicated that media literacy interventions can contribute positively to reading skill development, though the researchers recommended further studies to assess long-term impact and usability across different subjects.

López-Escribano et al. (2021) investigated the impact of digital literacy on early literacy skills, focusing on children's reading abilities in elementary schools. Their objective was to explore how digital literacy affects foundational reading skills in young learners. Using a mixed-methods approach, the study included surveys and observational assessments conducted across several primary schools. The scope covered early-grade students in elementary education. Results indicated a positive correlation between digital literacy proficiency and improvements in children's reading skills, emphasizing the need to integrate digital literacy programs in early education curricula.

Fakunle et al. (2022) conducted a study to analyze the influence of digital literacy as a key factor in library utilization among students at two private institutions in Oyo State, Nigeria. The objective was to determine how digital literacy impacts students' use of library resources. Employing a quantitative research method, the study surveyed students to collect data on their digital literacy levels and library usage patterns. The scope was limited to higher education students in two private institutions. The findings revealed that digital literacy significantly influences the frequency and effectiveness of library utilization, suggesting that enhancing digital literacy skills could improve resource use among students.

Ohm Mar Oo (2020) conducted a literature review focusing on library marketing strategies employed in academic libraries. The objective was to analyze existing research to identify best practices in marketing and promotion for academic libraries. This study used a qualitative review method, synthesizing findings from various scholarly articles. The scope included academic libraries regionally and

nationally. The review concluded that consistent, targeted marketing plans tailored to academic communities improve library visibility and user engagement, recommending strategic planning for wider adoption.

Than Htike (2020) investigated the challenges faced by digital libraries in public universities across Myanmar. The research objective was to assess technological, infrastructural, and user-related barriers impacting digital library services. Employing a mixed-method approach involving questionnaires and interviews with library staff and users, the study covered several major universities. Results pointed to issues such as limited internet connectivity, lack of digital literacy, and insufficient funding, suggesting that addressing these challenges is crucial for digital library development in Myanmar.

Aye Mya Mya Oo (2021) examined the perceptions and attitudes of academic librarians toward marketing of library services in the Mandalay Region. The study aimed to identify challenges faced by librarians in promoting library resources and to suggest strategies for effective marketing. Using a descriptive research design, data were collected from 17 academic libraries under various ministries in Mandalay. The scope was confined to academic libraries within the region. Results highlighted significant obstacles such as limited marketing skills and resource constraints, and the study proposed enhanced training and collaborative promotional efforts as solutions.

CHAPTER III

OVERVIEW OF DIGITAL LIBRARY IN MYANMAR

3.1 Evolution and Historical Development of Digital Libraries in Myanmar

The evolution of digital libraries in Myanmar has been gradual but significant, especially since the country's political and economic liberalization in the early 2010s. Prior to this period, digital library services were virtually nonexistent due to limited internet access, underdeveloped digital infrastructure, and a predominant reliance on traditional, physical collections in libraries. During the pre-2010 era, most libraries in Myanmar focused on maintaining printed materials, with little integration of digital resources or automated systems. Internet penetration was low, and digital literacy was limited among both library staff and users (EIFL, 2019).

The 2010s marked a turning point in Myanmar's digital library development, driven primarily by improvements in internet connectivity and mobile technology. As broadband and mobile networks expanded rapidly, access to digital content became more feasible for academic institutions and the general public (Myanmar Ministry of Education, 2020). One of the landmark initiatives during this transformative period was the launch of the EIFL eLibrary Myanmar project in 2013. This project significantly enhanced academic library services by providing universities nationwide with access to a wide range of electronic journals, e-books, and scholarly databases. The increased bandwidth and ICT infrastructure introduced by EIFL enabled a shift from traditional library environments toward modern, digital learning spaces (EIFL, 2019).

Parallel to infrastructure development, there was growing emphasis on capacity building and community engagement within the library sector. Digital literacy programs targeted students, faculty, and librarians, equipping them with the skills needed to effectively use and manage digital resources. For example, the University of Yangon established a dedicated digital lab to facilitate hands-on training in digital competencies, fostering a culture of lifelong learning and information empowerment (Australian National University, 2017). These efforts helped reposition libraries as inclusive knowledge centers serving not only academic needs but also broader societal development.

Government agencies, international organizations, and professional associations have been crucial stakeholders in Myanmar's digital library evolution. The Ministry of Education has collaborated on policy frameworks and resource development to support the integration of digital services in education. International partners such as EIFL and the Australian National University have provided technical assistance, funding, and training programs. Meanwhile, the Myanmar Library Association has strengthened its coordinating role to unify library development efforts across the country (Myanmar Library Association, 2020).

Another key milestone in Myanmar's digital library history was the establishment of the Myanmar Education Research and Learning Portal (MERAL). Launched in the mid-2010s as a collaborative effort between the Ministry of Education and international partners, MERAL serves as a centralized platform for academic content including electronic theses, research papers, journals, and teaching materials. By promoting open access and facilitating digital knowledge sharing, MERAL has enhanced the visibility and accessibility of Myanmar's scholarly output, representing a significant step toward a national digital library infrastructure (Tun Soe Moe & Lwin Moe Moe, 2021).

Alongside these initiatives, automated library management systems such as KOHA have been introduced to replace manual cataloging in many university and public libraries. This shift to digital cataloging has improved library operations and resource discoverability, supporting the foundation for more comprehensive digital library services (EIFL, 2022). Universities have also developed institutional repositories using platforms like DSpace and Greenstone, enabling students and researchers to deposit and access academic works online. However, the digital divide remains a challenge, as these advancements are mostly concentrated in urban centers like Yangon, while rural and regional libraries often lack the necessary infrastructure and skills.

The COVID-19 pandemic in 2020 underscored the critical role of digital libraries in maintaining education continuity during times of physical closure. Many institutions accelerated their adoption of digital platforms, increasing reliance on e-learning systems, online databases, and mobile-accessible library services. This shift was particularly evident in Yangon Region, where internet access is more stable,

allowing digital libraries to transition from static repositories into active educational tools supporting remote learning (UNESCO, 2021).

Despite notable progress, challenges persist, including the need for further investment in digital infrastructure, professional training for librarians, and addressing copyright and digital rights management issues. Furthermore, enhancing digital literacy among users remains essential to fully leverage the benefits of digital library services (Khin Aung & Tun Win, 2015; Myo Min Oo, 2018).

Myanmar's digital library movement has evolved from limited access to traditional print collections toward more integrated and technology-driven services. The synergy of national initiatives, international partnerships, and focused capacity-building efforts continues to shape the digital library landscape as a vital component of Myanmar's broader educational and digital transformation agenda.

3.2 Digital Libraries in Myanmar

Myanmar has a number of digital libraries that cater to various educational, cultural, and research needs. Some of the prominent digital libraries in the country, such as the National and Educational Digital Libraries, are:

- 1. National Library of Myanmar (Yangon):** As the country's primary national library, it houses over 220,000 books, including more than 16,000 palm-leaf manuscripts and nearly 2,000 parabaik (folded Manuscripts). It maintains a digital section and continues to develop its online catalog to improve accessibility (National Library of Myanmar, 2025).
- 2. Universities' Central Library (UCL):** Located at the University of Yangon, UCL is Myanmar's largest academic library, boasting 600,000 books and a significant collection of traditional manuscripts. It plays a pivotal role in preserving historical Burmese texts (University of Yangon, 2022).
- 3. eLibrary Myanmar Project:** Initiated in 2013 by EIFL, this project provides universities under the Ministry of Education with access to international journals, databases, and e-books. It has expanded to include over 20 universities, enhancing research and learning across various faculties (EIFL, 2023).

4. **eTekkatho Digital Library:** Developed by the Tekkatho Foundation, eTekkatho offers free digital access to educational resources and is implemented in over 30 universities and community centers across Myanmar (Tekkatho Foundation, 2023).

Cultural and Historical Digital Archives are:

1. **Online Burma/Myanmar Library (OBL):** A comprehensive research portal hosting over 50,000 full-text documents related to Myanmar's history, politics, and society. It serves as a valuable resource for scholars, activists, and policymakers (OBL, 2023).
2. **Digital Library of Myanmar Manuscripts:** A collaborative project by the University of Toronto and the Roberts Library, this platform provides digitized versions of rare manuscripts and print editions from Myanmar, including over 775 palm-leaf manuscripts (University of Toronto, 2023).
3. **U Pho Thi Library:** Established in 1923, this library houses rare Pali and Burmese manuscripts dating from the 16th century. Many of its texts have been digitized and are accessible through the Myanmar Manuscript Digital Library (U Pho Thi Library, 2022).

Public and Educational eBook Platforms are:

1. **Myanmar Ebook Library (mm-lib.com):** An online platform offering a wide selection of Burmese literature, including novels, poetry, and political writings. It serves as a convenient resource for readers seeking digital Burmese books (Myanmar Ebook Library, 2024).
2. **Book World Myanmar:** This digital library provides thousands of educational e-books, particularly beneficial for English learners in Myanmar (Book World Myanmar, 2024).
3. **British Council Digital Library (Myanmar):** Offers members access to a vast collection of e-books, audiobooks, academic journals, and multimedia content. Membership includes additional benefits like book clubs and webinars (British Council Myanmar, 2024).

These digital libraries collectively enhance access to knowledge and cultural preservation in Myanmar, supporting education, research, and the dissemination of information across the nation.

3.3 Types of Digital Resources Available in Myanmar

Digital libraries in Myanmar offer a diverse range of digital resources that serve the academic, cultural, and public information needs of users. One of the most significant categories includes e-books and e-journals, which are increasingly provided by academic institutions to support teaching and research. Through platforms such as the Myanmar Education Research and Learning Portal (MERAL), university students and faculty members can access open-access journals, electronic theses and dissertations (ETDs), and course materials (Soe Moe Tun & Maung Naing Lwin, 2021). Additionally, international databases such as Hinari, AGORA, and JSTOR are made accessible through partnerships with global organizations under the Myanmar Academic Library Consortium (MALC), enhancing academic access in higher education.

Another critical category of resources includes digitized manuscripts and rare historical documents, especially those preserved by national institutions such as the National Library of Myanmar (Yangon). These collections include Buddhist palm-leaf manuscripts, rare newspapers, colonial-era government gazettes, and historical maps, many of which are available in digital formats for educational and preservation purposes (Than Than Myint, 2019). Such resources play an important role in safeguarding Myanmar's cultural heritage and making it accessible to researchers and the general public, both locally and internationally.

In addition, digital libraries also provide access to government publications and legal resources, which include Myanmar Laws, parliamentary records, statistical yearbooks, and development plans. These are typically offered through official government websites or through collaboration with institutions like the Myanmar Information Management Unit (MIMU), which curates a centralized digital repository of reports and maps used by researchers, NGOs, and policymakers (MIMU, 2023). These resources enhance transparency and provide data for evidence-based decision-making and public accountability.

Furthermore, the rise of open educational resources (OER) has led to increased availability of educational materials for self-learning. Organizations such as the Myanmar Book Aid and Preservation Foundation (MBAPF) and the Electronic Information for Libraries (EIFL) initiative have supported libraries in curating and distributing OER content, including digital textbooks, audio-visual lessons, and

language learning tools (EIFL, 2022). These resources are particularly valuable in remote and underserved areas where access to physical libraries and educational institutions is limited.

In recent years, Myanmar's digital libraries have also made strides in providing multimedia and audiovisual resources, particularly to enhance learning and cultural engagement. Educational institutions and public libraries have begun integrating video lectures, tutorial recordings, and interactive content into their digital collections. The Myanmar Digital Education Platform, for example, provides online video lectures in subjects such as mathematics, science, and language studies for students at various educational levels (UNESCO, 2021). Similarly, the Department of Higher Education has encouraged universities to include recorded lectures and learning modules in their learning management systems (LMS), enabling blended and remote learning strategies, particularly during the COVID-19 pandemic.

In addition to academic content, digital libraries in Myanmar increasingly support access to community information resources, such as local histories, oral traditions, and regional literature collections. Projects led by institutions such as the Myanmar Book Aid and Preservation Foundation (MBAPF) and the e-Library Myanmar Project have helped digitize locally relevant materials and make them accessible to wider audiences through online library platforms (EIFL, 2022). These efforts aim not only to improve literacy and education but also to bridge the information gap between urban and rural communities. The inclusion of local language resources and community-based content is especially important in a multilingual and multicultural society like Myanmar.

Another growing area is the integration of open-access repositories and institutional archives into digital library services. Universities across Myanmar, including the University of Yangon and Yangon University of Economics, are increasingly creating institutional repositories to house faculty publications, conference proceedings, and student theses. These digital repositories help preserve academic output and make research accessible both nationally and internationally (Tun & Lwin, 2021). The Myanmar Research Portal, part of the MERAL initiative, acts as a national gateway to institutional research collections, aligning Myanmar's higher education sector with global trends in open science and scholarly communication.

Moreover, some libraries have started offering mobile-accessible digital content to accommodate the country's growing number of smartphone users. In Myanmar, where mobile internet usage is far more common than desktop access, this shift enables users to download or stream content via mobile-friendly platforms and library apps. Public libraries like the Sarpay Beikman Library in Yangon have experimented with QR code-enabled access and mobile search functions, making it easier for the general public to engage with digital collections (Khin Than Win, 2020). This mobile approach is seen as a key strategy to expand digital library reach, especially among younger users and those in remote areas.

The types of digital resources available in Myanmar's digital libraries are becoming increasingly diverse and inclusive, covering academic, cultural, government, and community domains. Although challenges remain in standardization, language accessibility, and technological integration, continued investments and collaborative projects have enabled the gradual transformation of traditional library services into dynamic, digital resource hubs.

3.4 Digital Academic Resources through eLibrary Myanmar

The eLibrary Myanmar Project, implemented by the Electronic Information for Libraries (EIFL), has significantly expanded access to high-quality digital academic resources across universities in Myanmar. Launched in 2013, the project aimed to support teaching, learning, and research by licensing a wide array of scholarly content, training academic librarians and faculty, and facilitating digital literacy. Today, the eLibrary Myanmar offers access to over 25,000 full-text scholarly journals, 265,000 academic e-books, and numerous specialized databases across various academic disciplines. One of the core features of the project is the EBSCO Discovery Service, which allows users to cross-search multiple e-resources from a single platform, enhancing ease of access and discoverability.

The eLibrary Myanmar provides partner institutions with a selection of e-resources tailored to their subject coverage needs. These are organized into journal and e-book collections, as well as specialized databases, covering multidisciplinary, science and technology, medicine, social sciences, law, education, and business. The resources are sourced from globally respected academic publishers and database providers,

ensuring that Myanmar’s universities have access to up-to-date and peer-reviewed scholarly material.

The following tables summarize the major journal/e-book collections and licensed databases available under the project:

Table (3.1) Journal and E-book Collections Available from eLibrary of Myanmar

Discipline	Resource Name
Multidisciplinary	Annual Reviews
	Cambridge Journals Online
	EBSCO eBook Academic Subscription Collection
	Edward Elgar eBooks (Development Studies & Law)
	Edward Elgar Journals
	Intellect Journals Collection
	JSTOR
	Oxford Journals Collection
	Oxford Handbooks Online
	Oxford Scholarship Online
	SAGE Premier Journals Collection
	Taylor & Francis Online Journal Library
Science, Technology, Medicine	ACM Digital Library (abstracts)
	BioOne
	Euclid Prime Collection
	IOPscience
	Oxford Medicine Online
	Royal Society of Chemistry eBooks
	Royal Society of Chemistry Gold
	Royal Society of Chemistry Journals Archive
	Royal Society Journals Collection
Social Sciences & Humanities	e-Duke Journals Scholarly Collection
	Journal of Burma Studies

Source: EIFL, 2025.

Table (3.1) presents a comprehensive overview of the journal and e-book collections available through the eLibrary Myanmar, categorized by academic

discipline. The resources cover a broad spectrum of subjects, ensuring that students, researchers, and faculty members across Myanmar’s higher education institutions have access to high-quality academic content. For multidisciplinary research, the collection includes renowned platforms such as JSTOR, Oxford Journals, Cambridge Journals Online, and SAGE Premier, offering thousands of peer-reviewed journals and scholarly books. In the fields of science, technology, and medicine, resources like the ACM Digital Library, IOPscience, BioOne, and the Royal Society of Chemistry collections provide access to cutting-edge research and scientific literature. For the social sciences and humanities, the collection features specialized resources such as the e-Duke Journals Scholarly Collection and the Journal of Burma Studies, supporting in-depth research in regional and global contexts. These curated collections ensure that Myanmar’s academic community can engage with current, credible, and diverse scholarly materials across multiple disciplines.

The below Table (3.2) presents available of licensed databases from eLibrary Myanmar.

Table (3.2) Available Licensed Databases from eLibrary Myanmar

Category	Database Name
Multidisciplinary General Reference	EBSCO Academic Search Premier
	Credo Online Reference
	Oxford Bibliographies Online
	Oxford English Dictionary Online
	Oxford Quick Reference
	Oxford Research Encyclopedias
	Oxford Dictionaries
Business & Economics	EBSCO Business Source Premier
	EBSCO Econlit
	IMF eLibrary
Education	ERIC (Education Resource Information Center)
Law	JustCite
	Justis
	HeinOnline
	Investment Claims
	LexisNexis

Law	Max Planck Encyclopedia of Public International Law
	Oxford Constitutions of the World
	Oxford Legal Research Library
	Oxford Reports on International Law
	Oxford Scholarly Authorities on International Law
Science, Technology, Medicine	EBSCO Biological & Agriculture Index Plus
	EBSCO Computers & Applied Sciences Complete
	EBSCO DynaMed
	EBSCO eBook Clinical Collection
	EBSCO eBook Engineering Core Collection
	EBSCO eBook IT Core Collection
	EBSCO Engineering Source
	EBSCO Environment Complete
	EBSCO Medline with Full Text
Research Methods	SAGE Research Methods
	SAGE Research Methods Cases

Source: EIFL, 2025.

Table (3.2) presents a comprehensive overview of the licensed academic databases available through the eLibrary Myanmar platform, organized by subject category. These databases provide access to a wide range of high-quality, peer-reviewed scholarly content across multiple disciplines. For general and multidisciplinary research, resources such as EBSCO Academic Search Premier and Credo Online Reference offer broad coverage, including encyclopedias, dictionaries, and reference works. The Oxford suite of online tools, including Oxford English Dictionary Online and Oxford Research Encyclopedias, supports foundational academic research and language learning.

In the field of Business and Economics, databases like EBSCO Business Source Premier, EconLit, and the IMF eLibrary provide access to critical economic data, scholarly journals, and financial publications. For Education, the inclusion of ERIC (Education Resource Information Center) supports academic research in teaching and learning practices. The Law category is particularly well-represented, featuring renowned resources such as Justis, HeinOnline, LexisNexis, and the extensive Oxford

legal databases, which cover international law, constitutions, legal authorities, and investment claims.

In Science, Technology, and Medicine, EBSCO-hosted databases cover specialized areas like engineering, IT, agriculture, and clinical sciences. These include Medline with Full Text, Environment Complete, and multiple eBook core collections tailored to specific technical fields. Finally, for researchers focused on methodology, SAGE Research Methods and SAGE Research Methods Cases offer valuable guidance on qualitative and quantitative research design and execution. Overall, this diverse collection ensures that Myanmar's academic institutions have access to the tools needed to support advanced research and evidence-based learning across disciplines.

3.5 Digital Library Usage in Myanmar

The usage of digital libraries in Myanmar has grown steadily over the past decade, largely driven by initiatives such as the EIFL eLibrary Myanmar Project, which has provided universities and institutions with access to a wide range of academic resources. Funded by the Open Society Foundations and implemented by EIFL (Electronic Information for Libraries), the project plays a critical role in improving educational quality by offering access to scholarly journals, databases, and e-books (EIFL, 2019).

University libraries, particularly the Universities' Central Library (UCL) in Yangon, have leveraged this initiative to expand their digital collections significantly. UCL and affiliated institutions now provide users with access to more than 15,000 full-text journals, over 140,000 e-books, and various other digital content through online discovery services (EIFL, 2019). These services enable seamless access to both local and global resources, enhancing academic research across disciplines.

Furthermore, the National Library of Myanmar has developed an Online Public Access Catalogue (OPAC) to facilitate user engagement with digital materials. It serves as an important digital gateway for researchers and the general public, offering structured access to bibliographic records and selected digital documents (National Library of Myanmar, 2021).

Digital library usage in Myanmar also benefits from international partnerships. The British Council Digital Library, for example, offers members in Myanmar access to e-books, academic journals, newspapers, magazines, and multimedia resources. This

service extends educational opportunities beyond local content, offering a global perspective for learners (British Council Myanmar, 2022).

In addition, platforms like Research4Life provide Myanmar’s academic and research communities with free or low-cost access to essential scientific and technical content, especially in health, agriculture, and environmental sciences. This initiative enhances the visibility and accessibility of academic resources for institutions in developing countries, including Myanmar (Research4Life, 2020).

Table (3.3) below illustrates the number of active digital library users across selected academic institutions in Myanmar, demonstrating the growing engagement with digital academic resources.

Table (3.3) Number of Digital Library Users Across Selected Institutions in Myanmar (2020–2024)

Institution	2020	2021	2022	2023	2024
Universities’ Central Library (UCL)	2,800	3,200	3,650	4,100	4,500
University of Yangon	1,950	2,100	2,400	2,850	3,100
University of Mandalay	1,200	1,400	1,750	2,100	2,400
Yangon University of Economics	1,000	1,150	1,300	1,600	1,850
University of Computer Studies, Yangon	900	1,050	1,300	1,500	1,700
National Library of Myanmar	1,100	1,250	1,400	1,600	1,750
British Council Digital Library (Users)	800	950	1,200	1,450	1,600
Other Partner Institutions (Combined)	2,500	2,900	3,300	3,800	4,200
Total Users	12,250	14,000	16,300	19,000	21,100

Source: EIFL, and the British Council, 2025.

Training and capacity building are essential elements of digital library integration. The eLibrary Myanmar Project includes programs to improve information literacy among faculty, librarians, and students. These workshops have helped strengthen user engagement and digital research skills (EIFL, 2019).

Despite the progress, there are still substantial challenges to overcome. Issues such as low internet bandwidth, limited ICT infrastructure, and unequal access to digital devices hinder full utilization of digital resources. Continued investment in infrastructure and training remains vital to ensure equitable access to digital libraries across all regions of Myanmar (Than & Myint, 2020).

Therefore, digital libraries in Myanmar are increasingly becoming critical to education and research. While notable progress has been made through initiatives like eLibrary Myanmar, further developments are needed to address ongoing infrastructural and access challenges.

3.6 Student Engagement and Digital Literacy in Myanmar's Digital Libraries

One of the defining features of Myanmar's digital revolution is the rapid proliferation of Internet-enabled mobile phones among the population. This transformation has been largely fueled by the dramatic drop in SIM card prices and the influx of affordable smartphones, particularly from China. As a result, many citizens in Myanmar have bypassed traditional computing devices such as desktop computers and have accessed the Internet for the first time through smartphones. This leap in mobile connectivity has played a crucial role in shaping how students and the broader public interact with digital platforms, including digital libraries.

Telecommunication companies have further supported this shift by offering data packages that allow for unlimited use of popular applications such as Facebook and Viber. Interestingly, although many users may lack basic digital skills such as creating an email account, they are often active users of various social media platforms. This paradox highlights a unique digital behavior pattern in Myanmar: intuitive and informal learning through social apps rather than formal digital education.

According to the Myanmar ICT for Development Organization (MIDO), a significant number of smartphone users begin their digital journey through assistance from shopkeepers. When purchasing a device, customers often pay a small fee for the seller to pre-install and set up social media apps. These shopkeepers typically create generic email addresses and logins, enabling users to access applications instantly by simply clicking on icons without needing to understand the setup process (Einzenberger, 2016). Many users gain proficiency through informal learning, supported by peers, family members, or the sellers themselves, who often acquired their own digital skills in the same way.

This informal digital engagement pattern extends to academic use as well. While access to e-resources through initiatives like eLibrary Myanmar is growing, many students still face barriers in effectively utilizing these tools due to limited digital

literacy. Structured digital literacy programs are therefore essential to ensure students not only access but also benefit from academic databases and digital content.

To illustrate the growing engagement of students with digital library platforms, Table (3.4) presents the number of registered student users and digital literacy training participants across selected universities from 2020 to 2024.

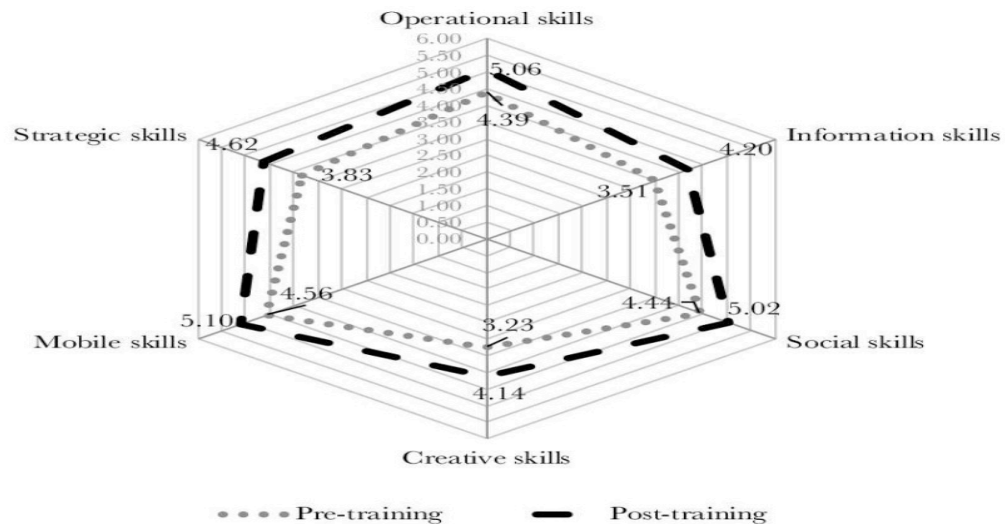
Table (3.4) Student Engagement and Digital Literacy Training Participation (2020–2024)

Institution	Registered Digital Library Users	Digital Literacy Training Participants
Universities’ Central Library (UCL)	4,500	2,300
University of Yangon	3,100	1,800
University of Mandalay	2,400	1,200
Yangon University of Economics	1,850	950
University of Computer Studies, Yangon	1,700	1,100
Other Universities (Combined)	7,550	3,800
Total Students	21,100	11,150

Source: EIFL, 2025.

Digital literacy includes mobile device navigation, app use, and security and privacy. Myanmar’s are learning how to utilize mobiles to catch up to their colleagues, who have minimal abilities. They reduce Internet advantages by doing so. The MIL training improved participants' digital literacy, which improved their professional abilities (Figure 3.1).

Figure (3.1) Evaluation of Digital Literacy, Group Average D Pre- Versus Post-Training

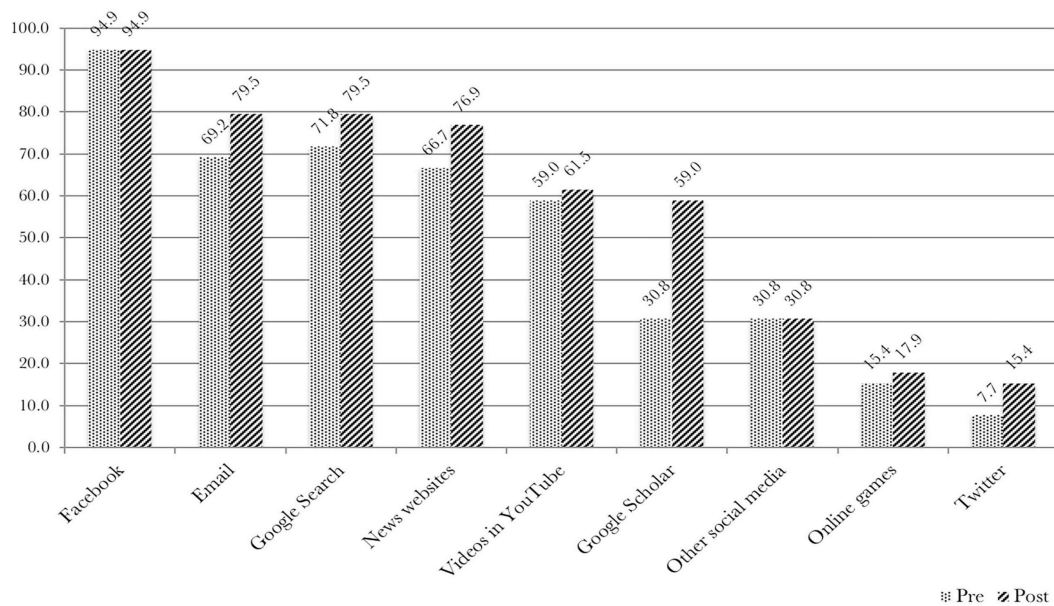


Source: Einzenberger, (2016).

Figure (3.1) shows pre- and post-training survey responses with each of the six skill types as an axis in the spider diagram: operational (e.g., how to navigate the Internet), informational (e.g., finding and evaluating information), social (e.g., online behavior), creative (e.g., online content creation), mobile (e.g., use mobile phones), and strategic. Based on the Internet Skills Scale (van Deursen and van Dijk, 2010), students self-evaluate their skills. The average student thought their talents improved by 0.5 points, with creative skills improving the highest (0.91 points). Results improved significantly with a nonparametric paired Wilcoxon test (data did not have a normal distribution). As mentioned in earlier sections, participants have limited critical thinking abilities, which may have caused them to exaggerate their talents, but this did not invalidate how they viewed their skills improving.

Please note that all six skills improved for all participants. The Internet Skills Scale is designed to assess more than just operational skills, as users need to know how to use, create, and evaluate information and turn it into decision-making knowledge, according to van Deursen and van Dijk (2009, 2010; 2014). Skill development affected which software participants utilized more (Figure 3.2).

Figure (3.2) Applications Most Frequently Used Pre- and Post-Training



Source: Einzenberger, (2016).

Figure (3.2) illustrates the frequency of application use by individuals in Myanmar before and after digital literacy training, as reported by Einzenberger (2016). The figure compares usage patterns across various platforms, highlighting both social and educational tools.

Facebook remains the most widely used application, with usage steady at a very high 94.9% both pre- and post-training. This reflects the platform’s dominance as the primary digital communication tool in Myanmar. Following Facebook, there is a notable increase in the use of email (from 69.2% to 79.5%), Google Search (71.8% to 79.5%), and news websites (66.7% to 76.9%), indicating improved engagement with information-seeking and formal communication tools after training.

Educational applications also show significant growth: usage of Google Scholar nearly doubled from 30.8% to 59.0%, suggesting enhanced awareness and use of academic resources. Likewise, YouTube usage rose from 59.0% to 61.5%, possibly reflecting its role in informal and visual learning.

Meanwhile, the use of "other social media" remained unchanged at 30.8%, and online gaming slightly increased from 15.4% to 17.9%, showing limited behavioral change in entertainment-related activities. Twitter usage remained relatively low, increasing marginally from 7.7% to 15.4%.

The figure indicates that digital literacy training had a positive impact on the use of more educational and information-oriented applications, while recreational and

social media usage remained stable or showed modest increases. This underscores the importance of structured training programs in shifting user behavior toward more productive digital engagement.

CHAPTER IV

SURVEY ANALYSIS

4.1 Survey Profile

To investigate the challenges and opportunities faced in digital library services in Yangon Township, a total of 300 users were selected for a survey focusing on their experiences using digital libraries. This study adopted a quantitative method to assess user perceptions, particularly within the context of their academic needs. The study aimed to identify both the strengths and weaknesses of digital library services as well as user preferences. Data were collected through a structured questionnaire administered in May 2025 at two major libraries: Sarpay Beikman Library and the National Library of Myanmar (Yangon). Total of 300 participants, 100 were from Sarpay Beikman Library and 200 from the National Library, all residing in the urban area of Kyaut Ta Tar Township in Yangon City. The survey gathered primary data on demographic characteristics, the challenges users faced, and the opportunities offered by digital library services. The following table presents the number of digital library users in Yangon.

Table (4.1) Number of Digital Library users

No	Weeks	Males	Females	Total
1	First Week	55	105	160
2	Second Week	35	87	122
3	Third Week	54	111	165
4	Fourth Week	59	94	153
	Total	203	397	600

Source: Survey Data, (2025).

According to Table 4.2, a total of 600 digital library users were recorded over four weeks in May 2025. The third week saw the highest library usage, with 165 users, suggesting a peak in interest or access during that period. Conversely, the second week recorded the lowest number, with only 122 users. Throughout the month, female users consistently outnumbered male users, totaling 397 females compared to 203 males,

indicating that women were more likely to engage with digital library services during the study period. These findings provide that digital libraries play an important role in enhancing learning experiences, enrichment, and user engagement, particularly among female users in urban Yangon.

4.2 Survey Design

This study employed a structured survey design to explore the challenges and opportunities associated with digital library services in Myanmar. The survey was conducted in May 2025 at two major public institutions in Yangon; Sarpay Beikman Library and the National Library of Myanmar. These locations were selected due to their large user base and accessibility to a diverse group of library patrons. At the time of data collection, Sarpay Beikman Library had approximately 200 users, while the National Library had about 400 registered users, making a total population of 600. A random sample of 300 users, representing 50% of the population, was selected to ensure inclusiveness and diversity in the responses.

The survey instrument consisted of a combination of multiple-choice questions, and Likert-scale items. The questionnaire was designed to collect both quantitative and qualitative data, enabling a comprehensive assessment of user experiences. The survey was divided into three main sections. Section A focused on demographic characteristics, including age, gender, education level, employment status, household income, marital status, internet access, and frequency of digital library usage. Section B addressed the challenges users face when interacting with digital library services. Section C focused on the opportunities presented by digital library services. Respondents were asked to indicate their level of agreement using a 5-point Likert scale, ranging from strongly disagree to strongly agree. The data collected through the questionnaire were analyzed using descriptive statistical methods, specifically frequency and percentage distributions.

4.3 Survey Results

This section presents the findings obtained from the survey responses, highlighting key trends, patterns, and user perceptions regarding the challenges and opportunities in digital library services based on the data collected from Sarpay Beikman Library and the National Library of Myanmar.

4.3.1 Demographic Profile of Respondents

This section presents an overview of the demographic characteristics of the survey respondents who participated in the study on digital library services. In this study provides the survey findings and assessing how factors such as age, gender, education, employment status, and internet access may influence users' experiences and perceptions of digital libraries. The collected data offers insights into the profile of digital library users in Yangon and helps identify the diversity within the sample population. The following table presents the demographic profile of respondents who participated in the study on digital library services

Table (4.2) Demographic Profile of Respondents

No.	Characteristics	Items	Frequency	Percentage
1	Age	Under 18	5	1.7
		18-24	30	10.0
		25-34	140	46.7
		35-44	35	11.7
		45-54	40	13.3
		55-64	50	16.7
		Total	300	100.0
2	Gender	Male	171	57.0
		Female	129	43.0
		Total	300	100.0
3	Education	No formal education	5	1.7
		Highschool diploma	35	11.7
		College	25	8.3
		Bachelor's degree	125	41.7
		Other professional degree	110	36.7
		Total	300	100.0
4	Employment	Employed full-time	210	70.0
		Employed part-time	40	13.3
		Student	20	6.7
		Retired	20	6.7
		Other	10	3.3
		Total	300	100.0

5	Internet access at home	High-speed/broadband	199	66.3
		Mobile data only	101	33.7
		Total	300	100.0
6	Frequency of digital library use	Daily	30	10.0
		Weekly	90	30.0
		Occasionally	105	35.0
		Rarely	75	25.0
		Total	300	100.0

Source: Survey data, 2025.

Table 4.2 presents the demographic characteristics of the 300 respondents who participated in the survey on digital library services. Regarding age distribution, the majority of respondents were between 25 and 34 years old, accounting for 47% of the sample. This was followed by the 55-64 age group at 17%, and the 45-54 age group at 13%. Younger respondents under 18 made up only 2%, indicating that most users accessing digital libraries belong to young and middle-aged adult groups. In terms of gender, male respondents represented a majority with 57%, while female respondents made up 43%. This distribution indicates a relatively balanced gender representation among digital library users.

Educational attainment among respondents was notably high. Most participants held either a bachelor's degree (42%) or a graduate/professional degree (37%), while only a small portion had no formal education (1%) or had completed some college without a degree (8%). This pattern reflects that digital library users tend to be well-educated, likely due to the academic nature of many library resources. Employment status data shows that 70% of respondents were employed full-time, with part-time workers constituting 13%. Students and retired individuals accounted for 7% each, while other employment categories made up 3%. This indicates that the majority of users are actively engaged in the workforce, which may influence their digital library usage patterns and needs.

Internet access at home showed that 66% of respondents had high-speed or broadband connections, while 34% relied on mobile data only. This indicates that a significant majority have relatively stable and fast internet access, which is critical for effective use of digital library services. Finally, the frequency of digital library use varied among respondents. Only 10% reported daily use, while the largest portion (35%) used the digital library occasionally. Weekly users accounted for 23%, and those

who rarely used the digital library made up 25%. This distribution highlights a range of engagement levels with digital libraries, with a notable number of users accessing the services irregularly.

4.3.2 Challenges of Digital Library Services

This section discusses digital library users' problems at the Sarpay Beikman Library and the National Library of Myanmar (Yangon). Respondents' impressions were rated on a five-point Likert scale: 1 strong disagreement, 2 disagreement, 3 neutrality, 4 agreement, and 5 strong agreements. A mean score above three suggests favorable agreement with a challenge, whereas below three implies dissent or a smaller influence. The investigation seeks to uncover important issues affecting digital library customers' access and happiness.

Table (4.3) Perception on Challenges in Accessibility

No.	Statement	Mean	Std. Deviation
1	I find it difficult to access digital library resources remotely.	2.71	0.95
2	Unreliable internet access limits my use of the digital library.	3.56	0.82
3	Limited access to necessary devices (e.g., laptops, tablets) affects my digital library experience.	2.73	0.86
4	The digital library platform loads slowly or crashes frequently.	3.67	0.85
	Overall Mean	3.04	0.83

Source: Survey data, 2025.

Table 4.3 presents respondent's perceptions of accessibility-related challenges in using digital library services. The overall mean score of 3.04 indicates that, on average, users slightly agree that accessibility remains a moderate challenge. Among the individual items, the highest mean score (3.67) was recorded for the statement that the digital library platform loads slowly or crashes frequently, indicating that system performance issues are a significant concern for users. Similarly, unreliable internet

access scored a relatively high mean of 3.56, highlighting that connectivity problems are a major barrier to effective use of digital library resources. However, statements related to limited device access (mean = 2.73), difficulty accessing resources remotely (mean = 2.71), indicating that these issues are perceived as less critical by most users. This means that while some technical and infrastructure-related challenges are evident, they vary in severity and impact across different user experiences.

Table (4.4) Perception on Challenges in Usability

No.	Statement	Mean	Std. Deviation
1	The digital library interface is not user-friendly.	2.67	0.96
2	Navigating the digital library platform is confusing or unintuitive.	2.60	0.69
3	It is difficult to find specific materials in the digital library.	2.90	0.79
4	There is a lack of personalization options in the digital library interface.	2.88	0.92
5	There is insufficient training on how to use the digital library.	4.08	0.59
	Overall Mean	3.03	0.79

Source: Survey data, 2025.

Table 4.4 illustrates respondent’s perceptions regarding usability challenges in digital library services. The overall mean score of 3.03 indicates a moderate level of agreement, indicating that usability is a relevant but not completely critical concern among users. Especially, the highest mean score of 4.08 was recorded for the statement indicating insufficient training on how to use the digital library, highlighting that a lack of user guidance and support is a significant challenge to effective use. Other statements, such as difficulties in finding specific materials (mean = 2.90) and the lack of personalization options (mean = 2.88), were also moderately perception, pointing to areas where user experience could be improved. And then, statements about the interface not being user-friendly (mean = 2.67) and navigation being confusing (mean = 2.60) received lower scores, indicating that these concerns are not widespread. This

provides while users do not find the interface overly difficult to use, the need for more training and tailored features is clearly emphasized.

Table (4.5) Perception on Challenges in Availability

No.	Statement	Mean	Std. Deviation
1	The digital library lacks access to some essential academic journals or books.	4.01	0.85
2	Somen restrictions limit the number of users who can access certain resources.	3.57	0.83
3	Some digital content is outdated or not regularly updated.	3.21	0.82
4	The library's digital content does not cover a wide enough range of disciplines.	3.38	0.45
5	Budget constraints prevent acquiring more digital resources.	3.72	0.56
Overall Mean		3.58	0.70

Source: Survey data, 2025.

Table 4.5 presents respondent’s perceptions of challenges related to the availability of digital library resources. The overall mean score of 3.58 indicates a general agreement that availability is a significant concern among respondents. The highest mean score of 4.01 was recorded for the statement that the digital library lacks access to essential academic journals or books, providing a strong need to expand core academic content. Budget constraints were also perceived as a major issue (mean = 3.72), implying that financial limitations hinder the acquisition of more digital resources. Additionally, restrictions on the number of users accessing certain resources (mean = 3.57) and inadequate coverage across different disciplines (mean = 3.38) were noted as moderate concerns. The statement about outdated or infrequently updated content received a mean score of 3.21, indicating a less critical, yet still relevant issue. The survey data provides that users are moderately to strongly concerned about the limited scope, access, and updating of digital content, emphasizing the need for improved funding and resource expansion.

Table (4.6) Perception on Challenges in Privacy and Security

No.	Statement	Mean	Std. Deviation
1	Users are concerned about privacy when using digital library platforms.	2.98	0.85
2	There is a lack of clear policies regarding digital content use and sharing.	2.78	0.62
3	Cyber security threats pose risks to digital library systems.	3.77	0.68
4	Inconsistent login or authentication systems create access problems.	3.40	0.95
5	The digital library does not comply fully with accessibility and copyright regulations.	3.33	0.70
	Overall Mean	3.25	0.76

Source: Survey data, 2025.

Table 4.6 outlines respondent's perceptions regarding privacy and security issues in the use of digital library services. The overall mean score of 3.25 shows a moderate level of concern among users in this domain. Among the specific statements, the highest mean score (3.77) was reported for concerns about cybersecurity challenges, indicating that users perceive significant risks to the safety and integrity of digital library systems. Issues related to inconsistent login or authentication systems also drew attention (mean = 3.40), pointing to access-related frustrations. Additionally, the perception that digital libraries do not fully comply with accessibility and copyright regulations (mean = 3.33) reflects concern about institutional adherence to legal and ethical standards. On the other hand, lower scores were observed for the lack of clear policies on content use (mean = 2.78) and general privacy concerns (mean = 2.98), indicating these are perceived as less pressing. The results indicates while not all users are deeply concerned with privacy, cybersecurity and access system weaknesses remain prominent issues that could hinder trust and smooth usage of digital library platforms.

Table (4.7) Perception on Challenges in Technology

No.	Statement	Mean	Std. Deviation
1	Some digital resources are not compatible with certain devices or operating systems.	3.35	0.77
2	The platform does not support mobile browsing well.	2.38	0.85
3	Technical infrastructure in the library is inadequate for supporting all digital services.	3.07	0.62
4	Software updates or browser requirements make access difficult for some users.	2.77	0.86
5	There is poor integration between different digital library systems or platforms.	2.98	0.88
	Overall Mean	2.91	0.80

Source: Survey data, 2025.

Table 4.7 highlights respondent's perceptions of technological challenges affecting digital library services. The overall mean score of 2.91 indicates that, on average, respondents neither strongly agree nor disagree about the presence of major technological challenges indicating a moderate level of concern. The highest mean score (3.35) was associated with compatibility issues between digital resources and certain devices or operating systems, reflecting a common obstacle in accessing content across diverse platforms. Inadequate technical infrastructure within the library (mean = 3.07) was also recognized as a limiting factor in the effective delivery of digital services. Conversely, the platform's poor support for mobile browsing received the lowest mean score (2.38), indicating that users do not perceive mobile access as a major problem. Additionally, software update requirements with a mean score of (2.77) and weak integration between different systems with a mean value of (2.98) were identified as minor to moderate concerns. This provides that while some users face technical challenges, these challenges appear to be less severe than issues related to content availability or cybersecurity.

4.3.3 Opportunities in Digital Library Services

This section examines the perceived opportunities associated with digital library services among respondents at the Sarpay Beikman Library and the National Library of

Myanmar (Yangon). A five-point Likert scale was used to quantify respondents' attitudes: 1 = strong disagreement, 2 = disagreement, 3 = neutrality, 4 = agreement, and 5 = strong agreement. A mean score above three reflects a positive perception of the benefits and potential of digital library services, while a score below three provides uncertainty or a lack of perceived impact. The analysis aims to identify areas where digital libraries are successfully meeting user needs and supporting enhanced access to information, learning, and research.

Table (4.8) Perception on Opportunities in Accessibility

No.	Statement	Mean	Std. Deviation
1	Digital library services offer easier access to a wider range of resources.	3.93	0.66
2	The digital library is accessible 24/7 without major interruptions.	3.45	0.83
3	I can access the digital library resources from multiple devices (e.g., phone, laptop).	3.82	0.72
4	Remote access to digital library materials is a significant improvement over physical library.	4.03	0.48
5	The digital library reduces barriers to information access for underserved users.	3.78	0.66
	Overall Mean	3.80	0.67

Source: Survey data, 2025.

Table 4.8 presents respondent's perceptions of accessibility-related opportunities in digital library services. The overall mean score of 3.80 indicates a strong positive perception, indicating that users generally recognize the benefits of improved access through digital platforms. The highest mean score (4.03) was recorded for the statement that remote access to digital materials is a significant improvement over physical libraries, highlighting the convenience and flexibility offered by digital formats. Additionally, users appreciated the ability to access resources from multiple devices (mean = 3.82) and recognized that digital libraries reduce barriers for underserved users (mean = 3.78). The perception that digital libraries offer easier access to a wider range of resources also scored high (mean = 3.93), emphasizing the view that

digital platforms enhance information availability. Even the lowest-rated item 24/7 uninterrupted access received a relatively moderate mean score of 3.45, indicating moderate satisfaction with system reliability. The findings show that users see digital libraries as effective tools for expanding access to information in a more inclusive and convenient manner.

Table (4.9) Perception on Opportunities in Usability

No.	Statement	Mean	Std. Deviation
1	The digital library platform is user-friendly and easy to navigate.	3.68	0.87
2	Search functions in the digital library are efficient and accurate.	3.70	0.56
3	The interface design supports an effective research or study experience.	3.63	0.66
4	Digital services are more convenient than traditional library services.	3.67	0.89
5	Tutorials or help tools are available and useful for using digital resources.	3.82	0.89
	Overall Mean	3.70	0.77

Source: Survey data, 2025.

Table 4.9 highlights respondent’s perceptions of usability-related opportunities within digital library services. The overall mean score of 3.70 indicates a generally positive user experience with the platform’s ease of use and navigability. Respondents particularly appreciated the availability and usefulness of tutorials or help tools, which received the highest mean score of 3.82, indicating effective user support resources. The search functions were also rated favorably with a mean of 3.70, reflecting efficient and accurate retrieval of information. Additionally, the interface design was seen as conducive to effective research and study (mean = 3.63), and digital services were considered more convenient compared to traditional library services (mean = 3.67). These results indicate that users find digital libraries accessible and supportive environments that enhance their academic and research activities.

Table (4.10) Perception on Opportunities in Availability

No.	Statement	Mean	Std. Deviation
1	The digital library includes a wide range of academic and professional resources.	3.88	0.73
2	E-books and digital journals in the library meet my academic/research needs.	3.80	0.60
3	Digital collections are regularly updated with new and relevant materials.	3.80	0.60
4	There is a good balance between multimedia, text-based, and interactive resources.	3.55	0.74
5	The library provides access to databases that are otherwise expensive or inaccessible.	3.45	0.86
	Overall Mean	3.70	0.71

Source: Survey data, 2025.

Table 4.10 presents respondent's perceptions regarding the availability of resources within digital library services. The overall mean score of 3.70 reflects a positive user evaluation of the breadth and quality of available materials. The highest-rated items include the presence of a wide range of academic and professional resources (mean = 3.88) and the adequacy of e-books and digital journals to meet academic and research needs (mean = 3.80). Users also acknowledged that digital collections are regularly updated with relevant materials (mean = 3.80), indicating satisfaction with the currency of content. While there is generally agreement that the library offers a balanced mix of multimedia, text-based, and interactive resources (mean = 3.55), access to specialized databases perceived as expensive or otherwise difficult to obtain scored slightly lower (mean = 3.45). The survey data provides that users view digital libraries as valuable and well-stocked sources of diverse and up-to-date academic materials.

Table (4.11) Perception on Opportunities in Cost-Efficiency

No.	Statement	Mean	Std. Deviation
1	The digital library reduces costs associated with physical resources.	3.60	0.63
2	Digital delivery of library services is more environmentally sustainable.	3.70	0.69
3	Investment in digital libraries yields better long-term returns than print collections.	3.01	0.85
4	The library's shift to digital platforms reduces space and maintenance needs.	3.70	0.61
5	The digital model supports scalable expansion with limited additional cost.	3.60	0.82
	Overall Mean	3.52	0.72

Source: Survey data, 2025.

Table 4.11 illustrates respondent's perceptions of cost-efficiency opportunities related to digital library services. The overall mean score of 3.52 indicates a generally positive view of the economic and environmental benefits offered by digital platforms. Respondents agreed that digital libraries help reduce costs associated with physical resources (mean = 3.60) and contribute to environmental sustainability through digital service delivery (mean = 3.70). Similarly, the shift to digital platforms was seen as beneficial in reducing space and maintenance requirements within libraries (mean = 3.70). However, the perception that investment in digital libraries yields better long-term returns compared to print collections received a more neutral response, with a mean of 3.01, indicating some uncertainty among users. The scalable nature of digital library models with limited additional costs was also positively acknowledged (mean = 3.60). The results indicate that users recognize digital libraries as cost-effective and sustainable solutions, though confidence in their financial returns remains moderate.

Table (4.12) Perception on Opportunities in Academic Productivity

No.	Statement	Mean	Std. Deviation
1	The digital library streamlines access to research databases and repositories.	3.68	0.71
2	It supports citation management and reference tracking tools.	3.68	0.69
3	Access to open-access journals and preprints enhances academic results.	3.80	0.57
4	The digital library enables faster data collection and literature reviews.	4.05	0.59
5	Digital tools like plagiarism checkers and writing aids are integrated effectively.	3.65	0.72
	Overall Mean	3.77	0.66

Source: Survey data, 2025.

Table 4.12 presents respondent's perceptions regarding the impact of digital library services on academic productivity. The overall mean score of 3.77 reflects a strong positive consensus on the role of digital libraries in enhancing research efficiency and academic work. The highest mean score (4.05) was for the statement that digital libraries enable faster data collection and literature reviews, highlighting the efficiency gains users experience. Access to open-access journals and preprints was also highly valued (mean = 3.80), indicating the importance of freely available scholarly resources. Support for citation management and reference tracking tools, as well as the integration of digital aids like plagiarism checkers and writing tools, were similarly appreciated, each with mean scores close to 3.7. These findings provide that users view digital libraries as essential platforms that facilitate streamlined research processes and improve overall academic productivity.

CHAPTER V

CONCLUSION

5.1 Findings

The main objectives of this study were to investigate the challenges and opportunities associated with digital library services in the Yangon Region, focusing on user experiences, faculty engagement, and library staff perspectives. Data were collected through a structured questionnaire distributed to 300 users selected randomly from a population of approximately 600 at the Sarpay Beikman Library and the National Library of Myanmar (Yangon). The collected data were analyzed using descriptive method, with findings presented through frequency and percentages.

The study reveals that users encounter several significant challenges in accessing and utilizing digital library services. Accessibility remains a primary concern, with users frequently facing difficulties due to unreliable internet connections and platform instability, such as slow loading times and occasional system crashes. These technical issues limit the ability of users to efficiently access digital resources, hindering their overall experience. Additionally, limited availability of necessary devices and occasional physical or cognitive impairments further restrict some users from fully benefiting from digital services.

Usability challenges also affect user satisfaction with digital libraries. While the interface itself is not generally perceived as overly complex, users report a lack of sufficient training and guidance on how to navigate and utilize the platform effectively. This difference in user support contributes to difficulties in finding specific materials and reduces the overall ease of use. Enhancing user education and providing more comprehensive tutorials significantly improve usability and empower users to engage more confidently with digital resources.

Content availability poses another important challenge. Respondent's express dissatisfaction with the limited access to essential academic journals and books, as well as restrictions on the number of concurrent users for certain digital materials. Budget constraints are a significant challenge preventing the acquisition of a broader and more

current range of resources. Furthermore, the existing digital collections do not sufficiently cover the wide variety of academic disciplines needed by the user community, highlighting the necessity to expand and regularly update the content offerings.

Privacy and security concerns are also apparent among users of digital libraries. Cybersecurity risks are a major challenge, emphasizing the need for stronger protective measures to safeguard user data and maintain trust in the digital systems. Inconsistent login procedures and authentication issues further complicate access, leading to frustration. While concerns about privacy policies and compliance with copyright and accessibility standards are present, they are comparatively less prominent but still warrant attention.

Technological limitations form a moderate challenge to optimal use of digital library services. Compatibility problems between digital resources and certain devices restrict access for some users, although mobile browsing is generally less problematic. The technical infrastructure supporting the digital libraries requires strengthening to support seamless access to all services. Challenges related to software updates and poor integration across different systems indicate areas where technical improvements enhance user experience and system reliability.

The findings also indicate that digital library services offer significant opportunities to enhance accessibility for users. Respondents perceive that digital platforms provide easier and more flexible access to a wider range of resources compared to traditional libraries. The ability to access materials remotely, at any time, and from multiple devices is seen as a major advantage, especially for users who face physical or geographical barriers. This expanded accessibility also plays a vital role in reducing information gaps for underserved populations, thereby promoting greater inclusivity.

In terms of usability, users appreciate the digital library's user-friendly design and effective navigation tools. The availability of tutorials and help resources further supports users in making the most of the platform, enhancing their overall experience. Efficient search functions and an interface designed to facilitate research and study contribute to making digital libraries a preferred option over conventional library services. These usability features help users engage more confidently with digital resources and improve their learning outcomes.

Regarding resource availability, digital libraries are valued for offering a diverse and comprehensive collection of academic and professional materials. Users recognize the regular updating of digital content as an improve, which ensures access to current and relevant information. The variety of resource types, including multimedia and interactive materials, supports different learning styles and research needs. Furthermore, access to expensive or specialized databases through the digital library platform enhances the academic potential of users who might otherwise lack such resources.

Cost-efficiency and sustainability emerge as important opportunities of digital libraries. Users see digital delivery as reducing costs associated with physical collections, including space and maintenance. Additionally, digital platforms contribute to environmental sustainability by minimizing the need for printed materials. The scalability of digital services with relatively low additional costs is also viewed positively, making digital libraries a financially viable solution for expanding access and services in the long term.

Finally, digital libraries are perceived as powerful tools for boosting academic productivity. User's opportunities from streamlined access to research databases and tools that support citation management, reference tracking, and plagiarism detection. The availability of open-access journals and preprints enriches academic resources, while faster data collection and literature review capabilities enhance research efficiency. These integrated digital tools collectively facilitate a more effective and productive academic experience, enhancing the value of digital library services in supporting scholarly work and learning.

5.2 Suggestions

Based on the identified challenges and opportunities, several suggestions are proposed to improve digital library services in Yangon's major libraries. To address accessibility issues, it is essential to invest in reliable internet infrastructure both within the libraries and for remote users. Ensuring stable and high-speed connectivity enhance user access and reduce disruptions. Additionally, increasing the availability of necessary devices, such as laptops and tablets, especially for users with limited personal access, help bridge the digital divide. Libraries should also incorporate more inclusive

technologies and assistive tools to accommodate users with physical or cognitive impairments.

Improving usability should be a priority by enhancing user training and support. Developing comprehensive tutorials, help guides, and interactive assistance tools empower users to navigate digital library platforms more effectively and discover resources with ease. Personalization features, such as customizable interfaces or user-specific recommendations, could further enrich the user experience and encourage continued engagement with digital services.

To overcome content availability challenges, libraries need to prioritize expanding their digital collections through increased budget allocation and strategic resource acquisition. Emphasizing the regular update and diversification of academic materials ensure that users have access to relevant and up-to-date information across multiple disciplines. Negotiating broader access rights and reducing user restrictions on digital resources can also enhance equitable access for all users.

Addressing privacy and security concerns is crucial for building user trust in digital library systems. Libraries should implement robust cybersecurity measures and develop clear, transparent policies regarding data privacy, content use, and copyright compliance. Streamlining login and authentication procedures will reduce access difficulties and improve user satisfaction while ensuring that digital platforms comply with legal and ethical standards.

Finally, technological enhancements are necessary to improve overall service quality. Upgrading technical infrastructure and ensuring compatibility of digital resources across various devices and operating systems will facilitate smoother access. Libraries should also focus on better integration of different digital systems and minimize disruptions caused by software updates through proactive planning and user communication. By addressing these technological challenges, digital libraries can provide a more reliable and user-friendly experience that maximizes the potential benefits identified in this study.

REFERENCES

- Al-Aufi, A. S., & Al-Busaidi, K. A. (2020). A framework for developing multilingual digital library systems. *Journal of Librarianship and Information Science*, 52(1), 128–142.
- Al-Aufi, A., & Al-Busaidi, K. (2020). Accessibility and inclusivity in digital libraries. *Library Hi Tech*, 38(3), 459–475.
- Alemneh, D. G., & Hastings, S. K. (2006). Developing the African digital library: A holistic approach. *The Electronic Library*, 24(3), 289–299.
- Arms, W. Y. (2000). *Digital Libraries*. MIT Press.
- Aung, K., & Win, T. (2015). Development of digital libraries in Myanmar: Challenges and prospects. *Journal of Library and Information Science*, 30(2), 45-58.
- Australian National University (ANU). (2017). *Digital literacy training and development in Myanmar libraries*. ANU Press.
- Australian National University. (2017). Digital literacy initiatives in Myanmar.
- Aye Mya Mya Oo. (2021). *Perceptions and attitudes of academic librarians toward marketing of library services in the Mandalay Region*. [Unpublished master's thesis]. University of Mandalay.
- Baro, E. E., Onyenania, G. O., & Osaheni, O. (2013). Challenges of managing digital libraries in academic institutions. *The Electronic Library*, 31(4), 433–446
- Borgman, C. L. (1999). *From Gutenberg to the Global Information Infrastructure: Access to Information in the Networked World*. MIT Press.
- Borgman, C. L. (1999). *What are digital libraries? Competing visions*. *Information Processing & Management*, 35(3), 227-243.
- Borgman, C. L. (2000). *From Gutenberg to the Global Information Infrastructure: Access to Information in the Networked World*. MIT Press.
- Borgman, C. L. (2007). *Scholarship in the Digital Age: Information, Infrastructure, and the Internet*. MIT Press.
- British Council Myanmar. (2022). *Digital Library Services*. Retrieved from <https://www.britishcouncil.org.mm>
- Burgstahler, S. (2003). *Universal Design of Libraries*. In *Universal Design Handbook* (pp. 10-1–10-14). McGraw-Hill.

- Chandra, R. S., & Sharma, R. K. (2023). Digital Libraries and Their Role in Knowledge Management. *Journal of Library Science*, 12(1), 45-60.
- Chen, C., et al. (2020). AI and Machine Learning in Digital Libraries: Enhancing Search and Discovery. *Journal of Information Science*, 46(5), 673–685.
- Chen, J., Xu, Z., & Zhang, X. (2017). Advances in digital library technologies and applications. *International Journal of Digital Libraries*, 18(1), 1-14.
- Conway, P. (2010). Preservation in the Age of Google: Digitization, Digital Preservation, and Dilemmas. *The Library Quarterly*, 80(1), 61–79.
- Conway, P. (2010). Preservation in the digital world. *Library Trends*, 56(1), 84-92.
- Day, M. (2002). Managing the physical and digital library. *The Journal of Academic Librarianship*, 28(3), 136-140.
- Delgado, A., & Nistal, M. (2020). Digital libraries and distance education: An evolving relationship. *Education and Information Technologies*, 25(3), 2217–2234.
- Digital Library Federation (DLF). (2008). Digital Library Federation Framework. Retrieved from <https://www.diglib.org/about/>
- EIFL. (2019). *eLibrary Myanmar: Project Impact Report*. Electronic Information for Libraries.
- EIFL. (2019). Public library innovation in Myanmar. Electronic Information for Libraries. Retrieved from <https://www.eifl.net>
- EIFL. (2022). Supporting library automation in Myanmar. Electronic Information for Libraries. Retrieved from <https://www.eifl.net>
- Electronic Information for Libraries (EIFL). (2019). *EIFL eLibrary Myanmar: Progress report*. EIFL.
- Fakunle, F., Adebayo, A. M., & Aremu, O. A. (2022). Digital literacy as a predictor of library utilization among students in private universities in Oyo State, Nigeria. *Library Philosophy and Practice*, Article 7086.
- Fox, E. A., et al. (1995). Digital Libraries. *Communications of the ACM*, 38(4), 23–28.
- Greenberg, J. (2005). Metadata and Digital Libraries: Some Challenges and Considerations. *Information Technology and Libraries*, 24(4), 189–199.
- Habibi, A., Mukminin, A., Marzulina, L., & Sofwan, M. (2020). Developing media literacy model to improve early-grade students' reading abilities. *International Journal of Instruction*, 13(2), 247–262.

- Jiang, L., et al. (2019). User analytics in digital libraries: A review. *Information Processing & Management*, 56(3), 102–116.
- Khin Aung & Tun Win. (2015). Challenges of digital libraries in Myanmar. *Myanmar Information Science Journal*, 10(1), 23-30.
- Kranich, N. (2011). Environmental impact of digital libraries. *Library Journal*, 136(6), 30-34.
- Kumar, A., & Kumar, P. (2016). Metadata and digital library services. *Library Philosophy and Practice*, Paper 1449.
- Kumar, V., & Singh, K. P. (2018). Challenges and prospects of digital libraries in India. *DESIDOC Journal of Library & Information Technology*, 38(5), 305–310.
- Lertworasirikul, S., & Miller, G. (2008). Digital preservation techniques. *International Journal of Digital Curation*, 3(2), 45-59.
- Li, Y., et al. (2021). AI applications in digital libraries. *Journal of Information Science*, 47(2), 151–166.
- Liu, Z. (2008). Print vs. Electronic Resources: A Study of User Perceptions, Preferences, and Use. *Information Processing & Management*, 44(3), 1017–1029.
- Liu, Z. (2012). Digital Library Development and Its Challenges. *Library Management*, 33(8/9), 446–458.
- Liu, Z. (2018). User behavior in digital library environments. *Library Information Science Research*, 40(4), 277-286.
- López-Escribano, C., Sánchez-Ferreira, M. E., & Melero, R. (2021). Digital literacy and reading development in early childhood education: A mixed-methods approach. *Education and Information Technologies*, 26(3), 3117–3135.
- Lwehabura, M. J., & Stilwell, C. (2008). Barriers to effective use of electronic information resources in academic and research institutions in Tanzania. *Information Development*, 24(3), 200–212.
- Lynch, C. (2003). Digital collections, digital libraries and the digitization of cultural heritage information. *First Monday*, 8(7).
- Marchionini, G. (2000). *Introduction to Digital Libraries*. MIT Press.
- Marsini & Nugroho, D. (2023). The Development of Digital Libraries in Indonesia. *University Doktor Nugroho Journal*, September 2023.

- Mutula, S. M. (2004). It challenges in digital literacy in Sub-Saharan Africa. *Program*, 38(3), 122–128.
- Myanmar Library Association. (2020). *Annual report on library development in Myanmar*. MLA Publications.
- Myanmar Library Association. (2020). Annual report on library development.
- Myanmar Ministry of Education. (2020). *Digital education and library modernization in Myanmar*. Ministry of Education.
- Myanmar Ministry of Education. (2020). ICT and Education Strategy.
- Myo Min Oo. (2018). Digital literacy and library services in Myanmar. *Journal of Library Studies*, 12(2), 15-27.
- National Library of Myanmar. (2021). *OPAC and Digital Services Overview*. Ministry of Religious Affairs and Culture.
- Ohm Mar Oo. (2020). *Library marketing strategies in academic libraries*. [Unpublished research paper]. University of Yangon.
- Oo, M. M. (2018). Enhancing digital literacy skills for effective use of digital libraries in Myanmar. *Myanmar Journal of Information Science*, 12(1), 22-31.
- Patel, S., & Sharma, R. (2020). Government initiatives supporting digital libraries. *International Journal of Library Science*, 9(1), 12-20.
- Research4Life. (2020). *Providing Research Access in Developing Nations*. Retrieved from <https://www.research4life.org>
- Rieh, S. Y., & Hilligoss, B. (2008). College students' credibility judgments in the information-seeking process. In: Metzger, M. & Flanagin, A. (Eds.), *Digital Media, Youth, and Credibility*. MIT Press.
- Rosenthal, D. S. H. (2010). Keeping bits safe: How hard can it be? *Communications of the ACM*, 53(11), 47–55.
- Santos, O. C., & Boticario, J. G. (2015). Digital libraries in education: Integration with LMS and MOOCs. *Journal of Educational Technology & Society*, 18(4), 5–16.
- Sharma, R. K. (2023). Digital Libraries: Concepts and Practices. *Library Review*, 72(3), 210-225.
- Singh, D., & Kaur, K. (2009). Digitization in South East Asian countries: Challenges and opportunities. *The International Information & Library Review*, 41(4), 208–217.

- Singh, V., et al. (2020). Impact of COVID-19 on digital libraries. *Library Management*, 41(8/9), 609-617.
- Sismanto. (2008). *Digital Library Preservation and Access Strategies*. Jakarta: University of Indonesia.
- Smith, A. (2007). Space and Cost Constraints in Modern Libraries. *Library Trends*, 55(3), 595–610.
- Smith, A. (2013). Global collaboration in digital libraries. *International Journal of Digital Library Systems*, 4(2), 25-37.
- Smith, J. (2018). Copyright challenges in digital libraries: A global perspective. *International Journal of Digital Rights Management*, 5(3), 100-115.
- Taylor, A. (2011). Environmental Benefits of Digital Libraries. *Library Hi Tech*, 29(3), 500–509.
- Tenopir, C., et al. (2009). Use and Users of Electronic Library Resources: An Overview and Analysis of Recent Research Studies. *Council on Library and Information Resources*.
- Tenopir, C., King, D. W., Edwards, S., & Wu, L. (2012). Electronic journals and changes in scholarly article seeking and reading patterns. *Aslib Proceedings*, 64(1), 5–24.
- Than Htike. (2020). *Challenges of digital library services in public universities of Myanmar*. [Unpublished master thesis]. Yangon University of Education.
- Than Myint Myint. (2019). Digitization of Myanmar Manuscripts: Preserving Cultural Heritage for the Next Generation. *Myanmar Library Association Journal*, 5(1), 45–52.
- Than, H., & Myint, T. (2020). Challenges of Digital Library Implementation in Myanmar. *Myanmar Journal of Library and Information Science*, 5(2), 34–41.
- Todaro, M. P., & Smith, S. C. (2011). *Economic Development* (11th ed.). Pearson Education.
- Tonta, Y. (2008). Legal Issues in Digital Libraries. *Turkish Librarianship*, 22(2), 185–199.
- Tun Soe Moe & Lwin Moe Moe. (2021). Development of Academic Digital Resources in Myanmar: A Case Study of MERAL Portal. *University of Yangon Research Journal*, 12(2), 88–97.

- UNESCO. (2005). *Guidelines for Digital Libraries*. United Nations Educational, Scientific and Cultural Organization.
- UNESCO. (2021). *Myanmar: COVID-19 Response and Digital Education Platform*. United Nations Educational, Scientific and Cultural Organization.
- University of California, Berkeley. (2007). *Berkeley Digital Library Project*. Retrieved from <https://www2.lib.berkeley.edu/BDLP>
- Witten, I. H., & Bainbridge, D. (2003). *How to Build a Digital Library*. Morgan Kaufmann.
- Zhou, M., & Sun, Y. (2017). Digital Rights Management: Challenges and Opportunities. *Library Hi Tech*, 35(1), 66–78.
- Zhou, Q., & Sun, L. (2017). DRM and copyright issues in digital libraries. *Journal of Digital Media Management*, 6(4), 339-346.

Occasionally

Rarely

Never

Section (B) Challenges in Digital Library Services

Please indicate your level of agreement with each statement below by selecting one of the following options:

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

No.	Questions	1	2	3	4	5
Accessibility						
1	I find it difficult to access digital library resources remotely.					
2	Unreliable internet access limits my use of the digital library.					
3	Limited access to necessary devices (e.g., laptops, tablets) affects my digital library experience.					
4	The digital library platform loads slowly or crashes frequently.					
Usability						
1	The digital library interface is not user-friendly.					
2	Navigating the digital library platform is confusing or unintuitive.					
3	It is difficult to find specific materials in the digital library.					
4	There is a lack of personalization options in the digital library interface.					
5	There is insufficient training on how to use the digital library.					
Content Availability						
1	The digital library lacks access to some essential academic journals or books.					
2	Somen restrictions limit the number of users who can access certain resources.					

3	Some digital content is outdated or not regularly updated.					
4	The library's digital content does not cover a wide enough range of disciplines.					
5	Budget constraints prevent acquiring more digital resources.					
Privacy and Security						
1	Users are concerned about privacy when using digital library platforms.					
2	There is a lack of clear policies regarding digital content use and sharing.					
3	Cyber security threats pose risks to digital library systems.					
4	Inconsistent login or authentication systems create access problems.					
5	The digital library does not comply fully with accessibility and copyright regulations.					
Technological and Compatibility						
1	Some digital resources are not compatible with certain devices or operating systems.					
2	The platform does not support mobile browsing well.					
3	Technical infrastructure in the library is inadequate for supporting all digital services.					
4	Software updates or browser requirements make access difficult for some users.					
5	There is poor integration between different digital library systems or platforms.					

Section (C) Opportunities in Digital Library Services

Please indicate your level of agreement with each statement below by selecting one of the following options:

1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

No.	Questions	1	2	3	4	5
Availability						
1	Digital library services offer easier access to a wider range of resources.					
2	The digital library is accessible 24/7 without major interruptions.					
3	I can access the digital library resources from multiple devices (e.g., phone, laptop).					
4	Remote access to digital library materials is a significant improvement over physical library.					
5	The digital library reduces barriers to information access for underserved users.					
Usability						
1	The digital library platform is user-friendly and easy to navigate.					
2	Search functions in the digital library are efficient and accurate.					
3	The interface design supports an effective research or study experience.					
4	Digital services are more convenient than traditional library services.					
5	Tutorials or help tools are available and useful for using digital resources.					
Resource Availability						
1	The digital library includes a wide range of academic and professional resources.					
2	E-books and digital journals in the library meet my academic/research needs.					

3	Digital collections are regularly updated with new and relevant materials.					
4	There is a good balance between multimedia, text-based, and interactive resources.					
5	The library provides access to databases that are otherwise expensive or inaccessible.					
Cost-Efficiency						
1	The digital library reduces costs associated with physical resources.					
2	Digital delivery of library services is more environmentally sustainable.					
3	Investment in digital libraries yields better long-term returns than print collections.					
4	The library's shift to digital platforms reduces space and maintenance needs.					
5	The digital model supports scalable expansion with limited additional cost.					
Academic Productivity						
1	The digital library streamlines access to research databases and repositories.					
2	It supports citation management and reference tracking tools.					
3	Access to open-access journals and preprints enhances academic results.					
4	The digital library enables faster data collection and literature reviews.					
5	Digital tools like plagiarism checkers and writing aids are integrated effectively.					

