Pagoda Data Management and Metadata Requirements for Libraries in Myanmar

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ABSTRACT

The storage of data documentation for Myanmar pagodas has various issues, and its retrieval method causes problems for users and libraries. This study utilized a mixed-methods approach, combining qualitative and quantitative methods to investigate pagoda data management in Myanmar libraries. The study aims to achieve the following objectives: to study the library collection management of pagodas in Myanmar, to investigate the management of pagoda data in Myanmar libraries, and to identify the pagoda data requirements for metadata development from the library professional perspective. The study findings revealed several challenges facing librarians and library users in accessing and managing Myanmar pagoda data, including limited stocks and retrieval tools, difficulty in accessing all available data online, and a lack of a centralized database or repository for storing and retrieving pagoda data. The study recommends the establishment of metadata criteria for managing a set of pagoda data and improving access to technology to address these challenges.

Keywords: Myanmar pagodas, pagoda data management, pagoda metadata requirements, Myanmar university libraries, Myanmar national libraries

1. INTRODUCTION

Historically, the history and significance of pagodas were recorded on folded paper, palm-leaf manuscripts (*parabaik*) (Universities' Central Library, 2015), and inscriptions. Today, these records are typically authored and published by either historical authors or pagoda trustee members. Libraries preserve pagoda-related resources such as books, inscriptions, palm-leaf manuscripts, parabaik, folded pieces of paper, and electronic books. The University's Central Library (UCL) (Nwe, 2018) and the National Library (Htwe, 2016) in Myanmar have acquired palm-leaves and parabaik from owners and monasteries. The UCL website showcases the color parabaik that King Mindon used to renovate ruined temples and pagodas. Additionally, pagoda donation information is written on palm leaves that have been manually collected. Documents of palm leaf or parabaik can be accessed on the national library website. Furthermore, information about pagoda history and records can be obtained from the community or on stone inscriptions. Documentation about the pagoda repair process is carried out by the Ministry of Religious Affairs and the Ministry of Culture (Aye, 2020). The Department of Archeology and National Museum, along with local and foreign specialists, have conducted a documentation project that includes three-dimensional laser scanning of Bagan pagodas (Coughenour, 2022).

Libraries play a crucial role in acquiring, organizing, storing, and retrieving various resources such as books, journals, magazines, and audiovisual materials. A reliable data management system is essential to meet the needs of users and ensure efficiency. The Library Management System (LMS) is a specialized software that stores and organizes collection and user data, including borrowing history, preferences, and demographics. The library system consists of cataloging, search and retrieval, reporting, integration with other software systems, reference management, and document management capabilities. Libraries use Digital Management Systems to manage data and support users (Tochukwu et al., 2015). Metadata helps users understand and use data by describing its content, context, and structure (Gilliland, 2016; Riley, 2017). Metadata in libraries includes author, title, subject, date of publication, shelf location, and more. E-books, databases, and online journals require metadata management. Metadata is essential for resource management and system integration.

The ancient Myanmar library (*Pitakat Taik*) held Buddhist scriptures (Allon et al., 2016) and other literature. The structure was designed in the form of a temple, and examples include the Anawrahta Pitakat Taik and the Amarapura Pitakat Taik (Revolutionary Government of the Union of Burma, 1963). The British colonial Bernard Free Library founded the modern library system in 1883. Rangoon's 1952 National Library of Myanmar collects and preserves Myanmar's cultural heritage (Oo, 2018). Today, it remains the largest and most significant library in the country, managed by the Department of National Libraries and Archives under the Ministry of Religious Affairs and Culture (Aye, 2020). The Yangon and Mandalay universities have large academic book and journal collections. Despite the growth of these libraries, access to information remains limited, especially in rural academic libraries where they lack modern facilities and technology due to limited funding and resources (Nyein, 2016). Many Myanmar libraries still use manual LMS, and automation is still rare. However, the eLIB library automation system has greatly improved library services and information access. Yangon's and Nay Pyi Taw's national libraries have advanced technology and funding for conservation and digitization (Kaung, 2012). Their online union catalogue holds rare Burmese books, manuscripts, educational reports, and audio and video resources. Myanmar libraries are working with international organizations and government agencies to improve information access and library services. There are 55,755 registered public libraries that are operated by the Ministry of Information, Myanmar, but they only use manual systems for cataloging and circulation (1World Connected, 2017). Private community libraries have been successful with support from donors and Ooredoo Myanmar, using library automation or manual systems. The "Save the Library" initiative has a website and mobile app providing information on various topics, including contact information for public libraries.

The Myanmar Museum protects ancient palaces and libraries, and every archaeological site has a museum. The Mrauk U Archaeological Museum (Zan, 2016) and Bagan Archaeological Museum (Aung, 2018) were founded to preserve many pagodas. These museums display miniature pagodas, inscriptions, and Buddha images. The Shwedagon Pagoda Museum in Yangon displays old lotus petals, bananas, buds, and umbrella crowns, while the Mahamuni Pagoda Museum in Mandalay has a bronze statue and other exhibits.

Previously, the rector committee of the Myanmar Academic Library Consortium (MALC) held a meeting to discuss the implementation of a digital library at the

university. Following this, the university rector approved the transformation of the library's digital infrastructure (Nyein, 2016). However, various obstacles hindered progress, including limited Internet bandwidth, a tight budget, and the absence of a qualified library technician. Additionally, the costs of establishing, processing, and analyzing large datasets must be taken into account.

Thus, this study aims to examine the current LMS, report on its findings, and generate metadata for Myanmar pagodas. These elements are all crucial for establishing a digital library environment. The metadata will be particularly useful for libraries responsible for preserving cultural heritage items and religious monuments, as it will help to maintain accurate and up-to-date information.

2. RESEARCH QUESTIONS AND OBJECTIVES

The storage of data documentation for Burmese pagodas in Myanmar libraries has various issues, and its retrieval method causes problems for users and libraries. To address these issues, this study will focus on creating metadata for Myanmar's pagodas. The research aims to answer the following questions: 1. How does the library manage the pagoda collection? 2. How is the library's pagoda data currently managed? 3. What type of information do library professionals want to include in metadata? The study seeks to investigate and provide solutions to the above issues by analyzing the library's management system and the pagoda data storage process. The research will find out what information library professionals think should be in metadata. This will make the retrieval system more effective and efficient.

The primary objective of this research is to examine the data management system for pagodas and libraries in Myanmar. This study aims to achieve the following objectives: (1) To study the library collection management of pagodas in Myanmar; (2) To investigate the management of pagoda data in Myanmar libraries; and (3) To identify the pagoda data requirements for metadata development from the library professional perspective. By fulfilling these objectives, this research will contribute to the development of a better data management system for Myanmar pagodas and libraries. The findings of this study will provide valuable insights into the library's metadata development process, ensuring a more efficient and effective retrieval system for pagoda-related data.

3. LITERATURE REVIEW

Multiple studies have been conducted on library services in universities across Myanmar. For example, Aung (2018) highlighted the need for Pyay University Library to enhance its services to meet users' demands. The author conducted a comparative study of university libraries in Bago, Pyay, and Taungoo, and recommended acquiring more books and periodicals. Oo et al. (2022) evaluated the Yadanabon University library from 2000 to 2021, assessing its collection, customer service, and information demands over time. The study identified the library's strengths and weaknesses and emphasized the importance of providing adaptable and diverse resources, improved services, and facilities. Another study by Swe and Yang (2021) focused on the accessibility of databases, information sources, library catalogs, and scholarly papers through library websites. The study examined six Myanmar university library websites, including University of Yangon, Universities' Central Library, University of Computer Studies Yangon, Yangon University of Foreign Languages, East Yangon University, and Dagon University. The survey assessed the performance, efficiency, usage frequency, satisfaction, skillfulness, and convenience of these websites, highlighting the need to improve university library websites to enhance customer satisfaction. In 2016, MALC was established with nine universities, and it has since grown to include forty-six academic libraries, of which forty-one are public university libraries. MALC provides extensive training for library staff and librarians, including workshops on library management and research support, capacity building, digital information literacy, and research training. Additionally, MALC has acquired licenses for electronic resources and plagiarism checkers, which are shared among its member libraries in Myanmar (Oo, 2016a). In a separate study, Oo (2016b) analyzed the preservation of palm-leaf and parabaik manuscripts in Yadanabon University, identifying valuable historical records and recommending their digitization. The manuscripts contained information on generalities, history, architecture, and religion on the parabaik. While there may not be any special research on the topic of "pagoda data management in Myanmar libraries," numerous studies have been done on the management and services provided by libraries in Myanmar universities.

There have been many reports for national libraries. Oo (2018) provided discussion of the recent developments and initiatives taken by the National Library of Myanmar. It has many books, periodicals, journals, newspapers, and

other items, including rare publications and manuscripts. To support research, the library buys local and foreign-language literature and interacts with academic libraries, archives, and publishers. The library's online catalogue offers a hybrid approach that combines traditional library operations and automation tools. Aye (2020) reported the history, status, and future of the National Library of Myanmar. It collected books, manuscripts, and digital collections, and collaborated with government and private organizations on collection development and library services. There were only a few visitors a day to the library due to its location. It had 120 employees and an average annual budget of 150 million Myanmar Kyat, which is about $1,500 USD, for collection development.

The Ministry of Religious Affairs and Culture is responsible for preserving Myanmar's religious and cultural heritage, including pagodas, with the Department of Archeology and National Museum overseeing their preservation and development. They collect and preserve artifacts and documents related to pagodas, while also collaborating with volunteers from other countries. The department disseminated information about pagodas through their Facebook page and published research papers, but the information was not widely available. They have collected inscriptions, parabaik, palm leaves, and other ancient documents related to pagodas. The Kabaaye Buddha Research Library's website has an extensive collection of full-text files about Buddhist scripture, Pali texts, monastic history, Buddhist literature, and pagoda histories, but only 64 of these books are pagoda-themed. The Myanmar National Archive has digitized various ancient governmental documents, including those related to pagodas, which can be accessed by visiting the archive in Nay Pyi Taw.

3.1. Myanmar Libraries Management System

According to Maw (2016), Computerized Documentation Service/Integrated Set of Information Systems (CDS/ISIS) was used between 1985 and 1997, but only in English. Since 1997, the eLIB library integrated system has been in use, which supports both Myanmar and English languages. eLIB is a web-based and union catalog system (Naing, 2018) that also provides access to e-books in PDF format and videos (Bhandari, 2023).

According to Htut (2017), the Online Union Catalogue of Myanmar Academic Libraries was a collaborative effort of university libraries in Myanmar, led by the UCL. Member libraries are required to send their book lists to the UCL to be included in the online library catalog. However, libraries must pay a fee if they want to add their book lists

to the national library's union catalogue system, which is why no library has done so yet.

3.2. Pagoda Data Management

According to Tha (2010), the Dewey Decimal Classification (DDC) system is used by all libraries in Myanmar to organize pagoda-related books on their shelves. The DDC number for Myanmar pagoda books is 294.3435, which can be broken down as follows: 2 (Religion), Other and comparative religion (9), Religions of Indian origin (4), Buddhism (3), Doctrines and practices (4), and Pilgrimage and sacred places (35). Additionally, libraries use extended numbers for specific areas, such as Kachin State (1), Kayah State (2), Kayin State (3), Chin State (4), Sagaing Region (5), Taninthayi Region (6), Bago Region (7), Magway Region (8), Mandalay Region (9), Mon State (10), Rakhine State (11), Yangon Region (12), Shan State (13), Ayeyawady Region (14), and NayPyiTaw (15) in accordance with Myanmar's Constitution (2008) (Comparative Constitutions Project, 2008). For example, the DDC number for books related to the Pagoda of Ton Kwe Ceti in Kayah State would be 294.3435092, which includes the specific area extension. However, most libraries use the general DDC number of 294.3435 for pagoda-related books.

4. SCOPE OF THE STUDY

The library possesses data related to pagodas, and its staff and librarians have experience managing such data. This research involved eight participants. The scope of this qualitative study was limited to seven select university libraries located across Myanmar and the National Library (Yangon). The participating academic libraries were the Yangon Economic University Library, Yangon University Library, Sitagu International Buddhist Academy Library, Yenangyaung University Library, Yadanabon University Library, Mandalay University Library, and Kyaukse University Library. For the quantitative research, an online Google form was sent to member libraries of MALC (Oo, 2016a) and national libraries. The purpose of this research was to investigate and analyze the management of pagoda-related data in libraries across Myanmar, and the study's findings will provide valuable insights into developing metadata for Myanmar pagodas.

5. RESEARCH METHOD

The present study utilizes a mixed methodology of

both qualitative and quantitative data collection and analysis techniques to gain a comprehensive understanding of the library system for pagoda data management, the demand for pagoda information, and metadata concerns in Myanmar libraries. For the qualitative study, eight participants were selected for this study using purposive sampling based on their knowledge about pagoda data and expertise in library services, which included library staff, librarians, and retired experts who were interviewed using a semi-structured approach to explore pagoda data in the libraries. The interviews were conducted online and audio-recorded with participants' consent. For the quantitative study, a questionnaire was developed to investigate pagoda data management and necessary metadata elements in libraries of Myanmar, including 23 university libraries of the MALC membership and two national libraries. Two questionnaires were sent to each library via email or social media private accounts to collect data from the decided representatives of the library who were most involved with library information resource management and pagoda data management. Fifty-seven questionnaires were returned, of which at least one questionnaire was returned from each library.

The qualitative data analysis process typically involves organizing and coding the data, identifying patterns and themes, and interpreting the results. In this study, recorded interviews were transcribed verbatim and analyzed using thematic analysis. Independent codes were used to analyze the transcripts, and themes were identified from the codes to gain insights into pagoda data management systems and metadata development. After analyzing the data, the researcher drew conclusions and made recommendations based on the findings. For the quantitative component of the study, SPSS was used to analyze the data obtained from the questionnaire survey. The overall responses of survey participants to each question were calculated by conducting a frequency analysis for each question. This allowed for a comprehensive understanding of the trends and patterns in the data collected. Given that the random sampling method used in this study ensures that the sample is representative of the entire population of libraries of MALC member libraries and national libraries in the country, the results of the data analysis can be generalized to the broader population.

The research findings highlighted the importance of using multiple data collection methods to gain a comprehensive understanding of the research. During the interview, in cases where participants misunderstood the questions, the researcher sought clarification by rephrasing the queries. While half of the participants indicated that the metadata element in question should be added, the remaining half expressed uncertainty. In order to validate these findings, a survey form was administered, wherein the same question was posed once more.

The researcher followed the Khon Kaen University's Ethics Committee for Human Research rules and got a certificate with the number HE 653250 on October 10, 2022.

6. FINDINGS AND DISCUSSION

6.1. Respondents' and Informants' Background Data

According to the results of the qualitative research, the study was mostly about librarians and library staff from different universities in Myanmar. The participants included a retired librarian from Yangon University, a library assistant from Yangon University of Education, a librarian from Sitagu International Buddhist Academy, a library staff member from the National Library in Yangon, a librarian from Yenangyaung University, and library staff members from Yadanabon University Library, Mandalay University, and Kyaukse University. Their educational backgrounds varied, with some having degrees in science (such as chemistry, physics, and zoology) and others in the humanities (such as history, geography, and the Myanmar language). All of the participants held a diploma or master's degree in library and information studies, one participant received a Master of Research of Library Studies, and their work experience ranged from 7 to 36 years. Some had experience in electronic and online library services.

In the quantitative study, it was found that the majority of respondents (56.1%) held a master's degree in Library and Information Science, while 21.1% had a diploma and 17.5% had other degrees. In terms of work experience, 38.6% had worked between 11-20 years, while 31.6% had less than 10 years of experience. The largest group of library staff members were library assistants (1-5), accounting for 56.1% of the respondents, followed by assistant librarians (21.1%), others (14.0%), and librarians (8.8%). The most common library staff skill reported was circulation (36.8%), followed by digital skills (24.6%), and cataloguing (3.5%). All respondents reported having library staff skills.

6.2. Library Collections of Myanmar Pagoda

Based on the interview results, Mandalay University and Yadanabon University libraries have a collection

of Myanmar pagoda research papers written after 2010 stored in their computerized systems. These research papers are likely organized based on the year of publication or accumulation. It is also mentioned that before 2010, research papers related to Myanmar pagodas were only available in print or hard copy. Other libraries are not known to store electronic versions of the research papers.

Seven of the participants said that their library users had frequently used their services for local research projects such as theses or term papers. Academic researchers in the fields of archaeology and history demand information on Buddhist art and architecture, comparative design and history, connections with the Kingdom's ideology, history, philosophy, economy and policy, conflict history, changing processes of design, technique or theory, external culture explosion design, various designs upon geography or race, preservation and restoration materials and methods, stone, bronze and iron Buddha images, and protection and preservation management systems. One of the participants stated that tourist freelance researchers and regular readers come to the National Library (Yangon) to access information on related pagoda names, history, conflict history, and significant topics in both English and Myanmar languages.

Table 1 presents a quantitative analysis of library information resource management and systems in Myanmar, with a focus on pagoda collections. The sample comprised 57 respondents, who reported using various library automation systems, including eLIB commercial software (50.9%), Solib commercial library automation software (8.8%), both softwares (10.5%), and other software (29.8%), which encompasses both commercial and open-source solutions. Regarding data management systems, the respondents reported using manual card catalogs (33.3%), computerized catalogs (29.9%), online library catalog systems (1.8%), and both card catalogs and computerized systems (35.0%). For electronic resource storage, the majority of respondents (72.2%) reported using computer storage, Google Drive, and other online storage solutions, while a smaller proportion reported using compact discs (CDs) and digital versatile discs (DVDs) (17.0%) and hard disks (5.3%), while a small percentage (5.5%) reported having no electronic storage at all. The respondents also reported having special collections in their libraries, including palm leaf, manuscript, and folded paper materials (14.0%), rare book collections (19.8%), and donor or author collections (30.3%). The remaining percentage included all of these special collections. The study also suggests that libraries should expand their special collections to meet the diverse needs of their users.

6.3. Pagoda Data Management in Libraries in Myanmar
6.3.1. Retrieval of Pagoda Data Storage Places

The retrieval and storage system of pagoda data is a complex and challenging task because the records and manuscripts stored in these locations have been lost or damaged beyond repair. However, there are ongoing efforts to preserve and protect these important cultural artifacts. Additionally, there are efforts to digitize manuscripts to make them more accessible to scholars and researchers around the world. Several universities and national libraries have collaborated with Myanmar libraries to digitize manuscripts that included pagoda data. On the other hand, traditional ways of storing and organizing information, like open shelf systems and library catalogues, are still the main ways to find and get information in these libraries. An electronic data management system is not used in these libraries for electronic books. The electronic resources for pagoda data are not assembled individually; rather, they are assembled along with other data on CDs, and DVDs (Finch & Webster, 2008), or other computer

Table 1. Quantitative data of library information resource management and systems in Myanmar libraries from the respondents' views (n=57)

Library automation system	Data management systems	Storage of electronic resources	Special collections
eLIB commercial software (50.9%)	Manual card catalog system (33.3%)	CDs, DVDs (17.0%)	Palm leaf, manuscript, and folded paper (14.0%)
Solib commercial software (8.8%)	Computerized library catalog system (29.9%)	Hard disks (5.3%)	Rare book collection (19.8%)
Both software (10.5%)	Online library catalogue system (1.8%)	Computer storage, Google drive, and other online storage (72.2%)	Donor or author collection (30.3%)
Other software (29.8%)	Both card catalogue and computerized system (35.0%)	None (5.5%)	-

CDs, compact discs; DVDs, digital versatile discs.

storage systems. Instead, users must look for information in the library's catalogue or by searching the Internet directly for the name of the pagoda.

Based on the interview results, it was discovered that the Myanmar Archeology Department has only one research and training sub-department within the institution and owns a library with a limited number of registered books. Additionally, the data is recorded in register books, and there is no comprehensive library system in there. The system utilizes a manual storage system that may face challenges in managing large amounts of data. Despite this, preserving the pagodas is essential for the department, and research can provide valuable insights into Myanmar's history, architecture, and culture. However, the limited dissemination of research papers hinders the sharing of knowledge and impedes future research. To improve, the system needs to explore digital storage options and increase the dissemination of research findings.

6.3.2. Information-Seeking Patterns

The information-seeking pattern in the library involves users approaching reference librarians for assistance in locating data (Sinha, 2015). The librarians may suggest various search methods or resources, including interlibrary loan. In Myanmar, the user can find general historical books, historical theses, archeology theses, and research reports about Myanmar pagodas by using library catalogs or registered books. In some cases, researchers and local scholars search for well-known authors who have many years' experiences of pagoda data finding, such as Dr. Gordon Hannington Luce and Dr. Toe Hla. Myanmar authors who have written about Myanmar pagodas in English include Dr. Khin Maung Nyunt and Dr. Thaw Kaung. Occasionally, users knew previously which respectable translators to seek out in the library collection. In a different search strategy, users utilize keywords such as "Myanmar pagodas," "Buddhist architecture," and "Buddhist temples" to find books and articles written regarding Myanmar pagodas. As a result, pagoda names, author names, translator names, and key words are essential data elements to search for pagodas.

6.3.3. Important Information in the Search for Myanmar Pagodas

The interview result of identifying important information in the search for Myanmar pagodas revealed that: One participant mentioned the "Title" and "Location" where a pagoda was placed. The subject also mentioned the "similar name" of the pagoda, which is the name for

the length of the structure of the pagoda or the Buddha image. Thus, the method of construction consisted of building a bamboo scaffolding that reached a height of six stories, so it was called a six-story pagoda such as the Ngahtatgyi Buddha Temple (Yangon) or Ngahtatgyi Buddha Temple (Sagaing). Also, the "Date" of the founding is a follow-up preservation date, renovation date, or a crashed-down date that is man-made or via a natural disaster: for example, Bagan Period Pagodas and Innwa Period Pagodas.

Other participants mentioned the "Related History" of a pagoda, which contained information about the pagoda's history and remarkable attributes, such as praying for one's wishes while traveling to four different pagodas in one day to fulfill those wishes. One participant stated that the user needs regional pagoda information that was written in the ethnic languages.

Seven of the respondents stated that the user solely searches for the names of individual pagodas for the sake of either personal interest or academic study. If users were planning a trip to a place with many pagodas, they could have looked for information about famous pagodas.

6.3.4. The Problem of Pagoda Data Management

There have been found to be three major challenges in pagoda data management, as determined by this study's findings. Firstly, the current tools for retrieving pagoda data are time-consuming, since users must access manual library catalog tools or a computerized catalog on a library computer, which requires them to physically visit the library. Remote access to library resources is not available. Secondly, half of the libraries surveyed reported insufficient resources, making it challenging to meet user needs and demands regarding pagodas. Library staff struggle to find and remember articles on pagodas in daily newspapers, journals, or magazines, leading to dissatisfied and unhappy library clients. Finally, CDs and DVDs were used to store digitized books found on Google, and they were arranged by subject in a computer database. However, Google does not have sufficient information on pagodas in Myanmar, making it challenging to build a comprehensive database.

6.3.5. Pagoda Data Demands

A few decades ago, pagoda data in the national library in Yangon was arranged geographically, with materials organized by region under Rakhine State and Yangon Region. However, the collection is now organized using the DDC system. UCL, Mandalay University Library, and the

national libraries have a strong budget and can collect and update books on pagoda data. However, 73.0% of libraries are unable to meet the requirements for pagoda data. In both the national and university libraries of Myanmar, the traditional card catalog system is still in use.

Users search for pagoda data by various criteria, including name, parallel name, common name, type and kind of the pagoda, donor or founder, founding history and reason, dedicated donation, founding purpose, real and faith stories, related historical data, replica of the pagoda and Buddha image, founding year, pagoda location, different beliefs and rituals, measurement of the pagoda, art and architecture, enshrined material, distinguished decorative materials, features, archeological facts, painting, physical description, inscription on the stone, and the bell stone, among others. The most popular pagodas among users are Shwedagon and Kyiktiyo Pagoda, followed by Bagan, Innlya, Rakhine, and Kachine regions. In universities, users search for data and information in the Myanmar language. Tourist guides visit the National Library in Yangon and demand both Myanmar and English language books on pagoda information.

The findings also suggested that the available retrieval tools in libraries include accession books, registration books, and card catalogs. Accession books are used by library staff to keep track of the library's inventory. Registration books contain information about scholarly works like theses and dissertations, but searching through them can be time-consuming for users. Academic libraries usually organize their collections by subject or department. Libraries use either a card catalog or an electronic catalog to help users find information. Card catalogs can benefit both the library and the user.

Table 2 provides results of a quantitative data analysis conducted through questionnaires on demands for pagoda data and related issues. The findings show that the most requested pagoda information is about the well-known pagodas located in Bagan, accounting for 54.4% of the responses. Other pagodas in Bagan accounts for 22.8%, while local pagodas have a share of 8.8%. The remaining 14.0% is for other unspecified pagodas. The analysis further highlights that both the whole country and western Myanmar have the same percentage of 40.4% regarding the most requested pagoda's location, which is the highest among the options. Central Myanmar has a lower percentage of 19.2%. The third question inquired about the demand for pagoda information on various aspects, such as history, design, faith, and other unspecified categories. The results indicate that users demand infor-

Table 2. Demands for pagoda data and related issues

Demands for pagoda data	Percentage
Requested pagoda information	
Well-known pagodas (Bagan)	54.4
Other pagodas (Bagan)	22.8
Local pagodas	8.8
Others	14.0
Most requested users' location	
The whole country	40.4
Central Myanmar	19.2
Western Myanmar	40.4
Demand for pagoda information	
Pagoda history	49.2
Design	14.0
Faith	17.5
Most Powerful Mantra and Chanting	3.5
All	8.8
Other	7.0
Library concerns about pagoda information resources	
Insufficient books	52.7
Missing shelves and lack of an electronic retrieval system	17.6
Not electronic retrieval system	7.0
Others	22.7

mation about pagoda history (49.2%), design (14.0%), and faith (17.5%). The demand for "All" pagoda information (8.8%) is lower, while "Most Powerful Mantra and Chanting" has the lowest demand (3.5%). Additionally, 7.0% of respondents expressed a demand for "Other" types of pagoda information. The last section of the table discusses the concerns of the library regarding pagoda information resources, where the library's primary drawback is the insufficiency of books, accounting for 52.7% of the responses. The next concern is missing shelves and a lack of electronic retrieval systems (17.6%), followed by a nonelectronic retrieval system (7.0%). The remaining 22.7% refers to other minor issues that are not consistent.

In conclusion, the findings of this study suggest that the library should update its collection and invest in electronic retrieval systems to address the identified concerns. Additionally, it is crucial to consider user requests for a broader range of pagoda-related resources beyond the library's

existing collection. These measures would enhance the library's ability to meet the demands of its users effectively.

6.4. Metadata Requirements for Pagoda Data Management

It is also important to note that metadata should be available in both Myanmar and English languages, as both locals and tourists use the pagoda retrieval system. The metadata should also be regularly updated to ensure that it remains accurate and relevant. The National Libraries, in collaboration with the Department of Archaeology and National Museum, should be responsible for managing and updating the metadata to ensure consistency and accuracy across all libraries.

There are various names used for pagodas, including official names, well-known names, and nicknames. It is recommended that all these names be included in the metadata for pagodas. The National Library (Yangon) and Yenangyaung University Library suggested that the National Libraries should be responsible for managing the pagoda metadata. One suggestion is for the National Library to collaborate with the Yangon University Library. It is also appropriate for UCL to have management control of the pagoda metadata because it has the authority to collaborate with other Myanmar university libraries for data entry and other related activities. This would ensure that pagoda data from across the country is included in the metadata.

From the library users' perspective, metadata should include history, architecture, structure, and design. The Department of Archaeology and National Museum should be responsible for managing and retaining this metadata. All libraries participating in the study require training for data entry, as they are concerned about issues related to data entry and processing, such as errors, maintenance costs, licensing fees, annual service charges, and technical errors. Library staff must have both computer skills and knowledge about pagodas, and the department head must be informed before any data entry. However, respondents agree that metadata should not include oral histories or pagoda income, donation money, materials, and expenditures. Only 25.0% of annual income and outcome data from quantitative surveys should be included in the metadata. There is no information about whether the government or the Department of Archaeology will make pagoda data available online. Respondents have not seen all Myanmar pagodas included on the website.

In the metadata, the pagoda retrieval system should offer both "simple search" and "advanced search" to help all users who will have varying skills and experience in dealing with pagoda data. Those who have limited experience can conduct their searches at a basic level. The user types the words "pagoda name" and "location" in the search box, presses enter, and then their queries will be processed. Advanced search key words are official name, well-known name, period, subject heading (Bristow & Farrar, 2014), content summary, and related history, hidden legends and stories, primary history, related historic, archaeological data, images, and related writing materials. The majority of users describe thespecificinformation they want, the type of information they seek, and their intended use. Hence, they can easily search what they want, although in some cases a pagoda has many different names. Occasionally, the user may know the pagoda's content, but they may or may not know the keywords to use or where to begin their search. They only know the name of the pagoda.

Users have normally not utilized the publisher or pagoda trustee name to search for pagoda data. Typically, academics first go to the university library and search for information in both the departmental library and the main university library. They may also consider visiting a pagoda bookshop, which may have information written by various authors. If they cannot find the information they need, they will then go to the National Libraries in Yangon and Nay Pyi Taw, which house a comprehensive collection of published materials in Myanmar. These libraries also have a vast collection of well-known English books on Myanmar that provide unique information.

The retrieval tools should provide users with information and suggestions that can lead to other similar works. An advanced search option would be helpful, and it should be possible to link and display the full data. Related works could include:

Similar or related stories at other pagodas
Other pagodas with the same name in different locations
Pagodas from the same period (date)

Table 3 provides a comprehensive summary of both quantitative and qualitative findings related to the information required for pagodas in Myanmar libraries to develop metadata. The information presented in this table is crucial for Myanmar libraries to enhance metadata development efforts. The information was categorized into three subject areas: (1) general information, (2) location, and (3) building structure, architecture, painting, and arts. The general information subject area includes important

Table 3. Quantitative and qualitative findings of pagoda information for metadata development

Subject area	Specific information
General information	Name of the pagoda, common name, background story and history, founding year, donor, location, pagoda data written in Pali, Mon, or Pyu language Enshrined material and decorated valuable jewelry, Buddha footprints and relics data, and archeology and tourist attraction facts
Location	Pagoda in Rakhine State, Innlay Lake, Kachin Region, Shwedagon, Bagan, regional pagoda data
Building structure, architecture, painting, and arts	Pagoda type, design by period and regional design, characteristics and features, measurements

Table 4. Respondents' concerns about Myanmar pagoda metadata

Statement	Percentage				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Myanmar pagoda metadata would be useful for the library	0.0	0.0	3.5	52.6	43.9
This metadata assists in the promotion of library resources, services, and library activities	0.0	0.0	7.0	64.9	28.1
Metadata helps in promoting library services and activities	0.0	0.0	10.5	63.2	26.3
The metadata facilitates learning, teaching, research, and visiting	0.0	0.0	7.0	64.9	28.1
It should include history, design, and belief	0.0	0.0	3.5	66.7	29.8
It supports the library retrieval process	0.0	0.0	8.8	63.2	28.1
It should be maintained collaboratively by university library staff	0.0	0.0	7.0	61.4	31.6
Myanmar's Department of Archeology and National Museum should manage and maintain it	0.0	3.5	7.0	43.9	45.6
It is a new format for Myanmar pagoda data	0.0	0.0	7.0	59.6	33.3
Metadata entry is a critical issue for library staff due to lack of experience	0.0	3.5	33.3	50.9	12.3
There should be a metadata development policy	0.0	0.0	12.3	63.2	24.6
The spiritual belief should be included in the metadata	12.3	54.4	17.5	14.0	1.8

details such as the name of the pagoda, its common name, background story, and history, founding year, donor, location, and language of the written data. The location subject area provides insight into the various locations of pagodas, while the building structure, architecture, painting, and arts subject area contains details about the pagoda type, design by period and regional design, characteristics and features, and measurements.

The results presented in Table 4 were from a survey that aimed to determine the usefulness and potential issues related to developing metadata for Myanmar pagodas. The table displays the statistical frequency of responses to various statements in the questionnaire, indicating the percentage of respondents who strongly disagreed, disagreed, were neutral, agreed, or strongly agreed with each statement. The findings suggested that over 50.0% of respondents agreed or strongly agreed that Myanmar pagoda metadata would be useful for the library, and that metadata could assist in promoting library resources, services, and activities. Furthermore, 66.7% of respondents believed that pagoda metadata should include information about the history, design, and belief associated with the pagodas. However, it is noteworthy that the inclusion of spiritual beliefs in the metadata was not favored by the majority of respondents, with 54.4% disagreeing with this statement. Additionally, while the majority of respondents preferred collaborative maintenance of the metadata by university library staff, rather than Myanmar's Depart-

ment of Archeology and National Museum, some respondents disagreed with this preference. The survey findings indicate that the respondents recognized the potential benefits of metadata development for Myanmar pagodas, including facilitating learning, teaching, research, and visiting. The survey also highlighted the need for a metadata development policy to ensure consistency and standardization in metadata creation.

7. CONCLUSION

This study identified four main challenges in the management of pagoda data in libraries in Myanmar, including difficulties in finding information on the open shelf system, lack of online access, insufficient storage, and the need for visitors to physically go to the library to get data. The Pagoda Data System of the Myanmar Archeology Department and National Museum plays a crucial role in preserving and conserving pagodas in Myanmar, but the lack of widely published research papers limits knowledge dissemination and prevents further research. To address these issues, this study suggests using metadata in both Burmese and English languages to improve the storage, retrieval, and organization of pagoda data documentation. The metadata should be updated regularly and contain information about famous pagodas. The National Library, Department of Archaeology, and National Museum should work together to update metadata to ensure library uniformity and correctness.

Based on the findings of the research, it appears that there are several challenges facing library users and librarians in accessing and managing Myanmar pagoda data. The libraries face challenges in retrieving and storing pagoda data due to limited stocks and retrieval tools. This makes it difficult for librarians to manage this information and provide access to users. Library users may have difficulty accessing all of the available pagoda data easily online. This can make it challenging to research and understand the cultural significance of Myanmar pagodas. Users desire to secure unrestricted access to the pagoda data for academic libraries. Currently, the arrangement of the books on the shelf is convenient, but they all want to get Myanmar pagoda metadata. The National Library can only transition to an online library system, but it is still facing financial and technological challenges. Another staff member is concerned about the pagoda metadata because of their past negative experiences with library software that needs to be updated, cannot be accessed with library computers or electronic devices, and requires

high-speed Internet. However, the national museum is responsible for managing this metadata. This is due to government organizations' limited freedom and a lack of library staff with information literacy skills. According to research findings, there is no centralized database or repository for retrieving and storing pagoda data. To manage a set of pagoda data, libraries must establish certain metadata criteria to assist users in finding and accessing relevant data. Overall, it is clear that there is a need for better management of Myanmar pagoda data in libraries. Improving access to technology and developing metadata can all help to address these challenges. By ensuring that accurate information is available and accessible to library users, we can better understand and appreciate the cultural significance of Myanmar pagodas.

The scope of this study was constrained to qualitative research conducted at seven university libraries and the National Library in Yangon, along with quantitative research carried out at MALC member libraries and national libraries. Consequently, the data collected only reflected the perspectives and practices of national and academic libraries in Myanmar pertaining to pagoda data management. Furthermore, the study did not incorporate the viewpoints and practices of other types of libraries, including public libraries, self-funded community libraries, and other special libraries which could be involved with pagoda data management in the future.

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CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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