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ENVIRONMENT**

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THE CHALLENGES OF HERITAGE BUILDING MAINTENANCE – SERI MENANTI MUSEUM

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ABSTRACT

Heritage buildings play a crucial role in preserving a nation's cultural identity and history. In Malaysia, these buildings hold significant importance, reflecting the country's diverse heritage and serving as tangible reminders of the past. The issue is due to costing, ongoing maintenance after renovation, conservation plan, conservator duty and labour shortage and choice in material. This research focuses on the challenges of maintenance in Seri Menanti. This research implements a qualitative methodology that needs to interview the personnel of Lembaga Muzium Negeri Sembilan. The significant of the challenges is cost due to limited resources available and renovation. Besides, The materials are also difficult to find with the original. The outcome of the research enhances acquiring additional information on the subject and in guiding the public to a deeper understanding of the challenges involved. The long-term planning and decision-making help in further practices to ensure that the heritage building can be preserve for future generation.

Keywords: *heritage building, costing, qualitative methodology, interview approach*

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INTRODUCTION

The heritage building is symbolic of the culture a representation of the cultural identity of a certain community or group in particular that has historical, architectural, cultural aesthetic, or ecological significance and should be preserved. Refer to the Ministry of Housing and Urban Affairs, Government of India in chapter 8-8.1.1 "For the purposes of this definition, a "heritage building" is any building, structure, or artifact that requires conservation or preservation for historical or architectural, or artistic, or artisanal or aesthetic, or environmental, or ecological purposes, and includes any land adjacent to such a building or part thereof that may be required for fencing, covering or in any other way preserving the history of such a building."

Based on research by Jimura, (2019) there are more than 35,000 pre-war structures (pre-1945) are discovered in the 265 studied towns in Malaysia, according to a 1992 National Museum historic buildings inventory assessment. The rapid expansion of urban areas in Malaysia may be attributed to the country's metropolitan center being more developed over the course of the last several decades.

This chapter is concerned with the maintenance of heritage buildings due to remain its usage and structural design for today and the future. The majority of preservation efforts for historic structures are impacted by a few interconnected issues that have an effect on the entire building conservation strategy. As stated by Zolkafli (2019), maintenance is distinct from other operations in conservation in that it must be carried out in an ongoing manner rather than only in response to an identified need.

METHODOLOGY

Data collection refers to the process of collecting relevant facts and details for the purpose of using them as a point of reference and as a map throughout the course of the investigation. A certain method of data analysis was used in order to ensure that the objectives of the research were met. This study only measures a few variables to the issue of preventing heritage building. The result would be informative if other studies in refurbishment so it can investigate more about the type of structure, finishes and etc.

Qualitative Data

According to Dilshad & Latif, (2013), an alternative name for the qualitative research method known as the focus group is the focus group interview. "a group comprising of persons with specified traits who concentrate conversations on a certain subject or topic" is the definition of what is known as a "focus group." Focus group interviews are the most efficient way to get in touch with the professionals who will be

participating in the research from the management of historic buildings. Because of this, we will be able to start the data analysis before we do the interview. The literature review from this investigation served as the basis for the structured interview, and all of the questions asked were closed-ended.

The study design directs the researcher to make use of certain strategies for data collection and evaluation. This sample is necessary for data entry in the results from the site in order to carry out the dilapidation study successfully. To accomplish the main objective of the study, focus group interviews were undertaken. The questions on the current condition and maintenance heritage building were the major focus of the development of this focus group interview form. The framework of the interview form's questions was developed using a survey of the literature. Sections A and B make up the question's format, which is broken down into two halves.

Table 1.1: Divided Section of the Question

SECTION	ITEMS
SECTION A	General Background
SECTION B1	Current Condition of Seri Menanti Museum
SECTION B2	Heritage Building Project – Challenges
SECTION B3	Remarks About the Survey

Table 1.2: Likert Scale Type 1

	1	2	3	4	5
Description	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Table 1.3: Likert Scale Type 2

Scale	1	2	3	4	5
Description	Not needed	Medium needed	High needed	Already provided (more information required)	Already provided (high quality)

Analysis for Section A: General Background

Table 1.4: Summarization of Section A

Respondent	Name	Age	Field Work	Organization
1	Nurul Ain Abd Rahman	43	Architect	National Heritage Department PAM (Malaysian Institute of Architect LAM (Board of Architect Malaysia)
2	Nor Kamaruddin B Mohd Zainal	45	Building Manager	National Heritage Department CIDB (Construction Industry Development Board Malaysia)
3	Masrita Binti Mohd Yusof	45	Senior Curator Asisstant	National Heritage Department CIDB (Construction Industry Development Board Malaysia)
4	Amir Nakhaie Bin Busu	38	Engineer Asisstant	National Heritage Department CIDB (Construction Industry Development Board Malaysia)
5	Noorul Farahashikin Binti Sakim	37	Curator	National Heritage Department CIDB (Construction Industry Development Board Malaysia)
6	Rosrita Binti Mohamad Nordin	38	Curator	National Heritage Department CIDB (Construction Industry Development Board Malaysia)

Analysis for Section B1: Current Condition of Seri Menanti Museum

i. Key Reasons for Retaining Seri Menanti Museum

Table 1.5: Result on Key Reason for Retaining Seri Menanti Museum

Strongly Agree (5)
Structural stability and integrity Roof condition and integrity

Historic fabric preservation and authenticity Exterior façade condition Historical and cultural significance of the building Compliance with preservation guidelines and regulations Accessibility and safety consideration Condition of decorative elements and moldings Damage or alterations to original architectural features General maintenance and cleanliness
Agree (4)
Floor condition Presence of moisture or water
Equal
Foundation condition Wall stability and cracks State of original finishes (paint, wallpaper, etc.) Condition of historic materials Window and door condition Ceiling condition Interior wall condition

Observation score scale: from 1 = strongly disagree to 5 = strongly agree

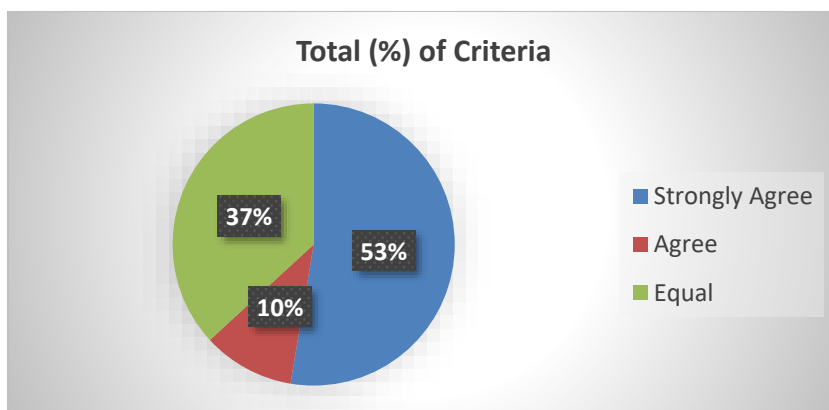


Figure 1.1: Percentage of score scale on Key Reason for Retaining Seri Menanti Museum

Based on the result, ten criteria (53%) had been chosen for Strongly Agree as the key reason for retaining the Museum of Seri Menanti. Only two criteria (37%) had been chosen for Agree, and the rest (10%) were chosen for equal answers, including both Strongly Agree and Agree.

ii. Main Challenges for Retaining Seri Menanti Museum

Table 1.6: Result on Main Challenges for Retaining Seri Menanti Museum

Strongly Agree (5)
1. Cost/Investment
2. Availability of funding sources (Gov., non Gov., private, etc.)
3. Project risk (program/financial)
4. Poor maintenance of current building stock
5. Ongoing maintenance after renovation/high cost
6. Urban development
Agree (4)
7. Contamination (asbestos, soil, etc.)
Equal
8. Compliance (heritage approvals – development approvals) / regulatory barriers/ policy requirements

Observation score scale: from 1 = strongly disagree to 5 = strongly agree

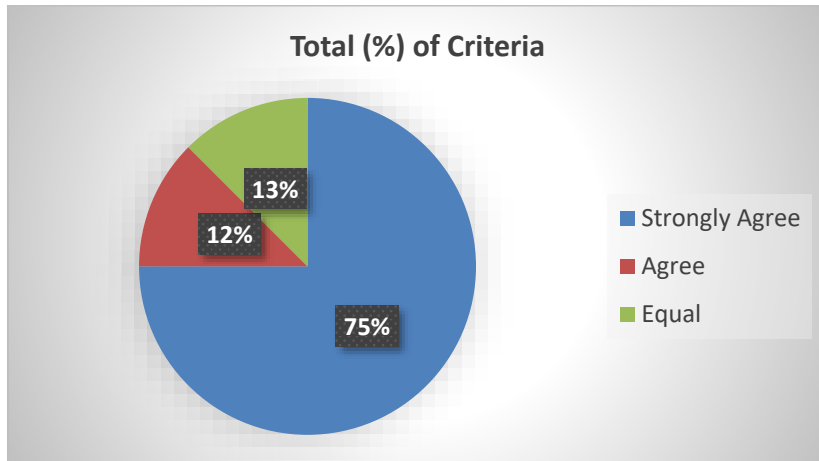


Figure 1.2: Percentage of score scale on Main Challenges for Retaining Seri Menanti Museum

Based on the result, six criteria (75%) had been chosen for Strongly Agree as the main challenges for retaining Seri Menanti Museum. Only two criteria (12%) had been chosen for Agree, and the rest (13%) were chosen for equal answers, including both Strongly Agree and Agree.

Analysis for Section B2: Heritage Building Project – Challenges

i. Challenges During Design/Preconstruction Phase have an Influence on Meeting Project Delivery Objectives (On Time and On Budget)

Table 1.7: Result on Challenges During Design/Preconstruction Phase have an Influence on Meeting Project Delivery Objectives (On Time and On Budget)

Strongly Agree (5)
<p>Approvals - Timeframes for Local/State/Federal heritage Availability of funding sources Defining the scope accurately Defining the consultants fee to do the work Quantifying the capital cost of works Existing condition of building Lack of ability to fully ascertain "condition of the building" Limitations with methodology for repairs or new works due to heritage constraints Discontinuous or unknown existing building fabric/materials causing delay or rework</p>
Agree (4)
<p>Multiple stakeholders input</p>
Strongly Disagree (1)
<p>Lack of appropriate staff skills Qualifications/experience of Project Team</p>
Equal
<p>Level of appropriate contingency Political influence/interest Implications of change of use/ significant works causing compliance with current codes (BCA code) Non availability or incomplete original building plans</p>

Observation score scale: from 1 = strongly disagree to 5 = strongly agree

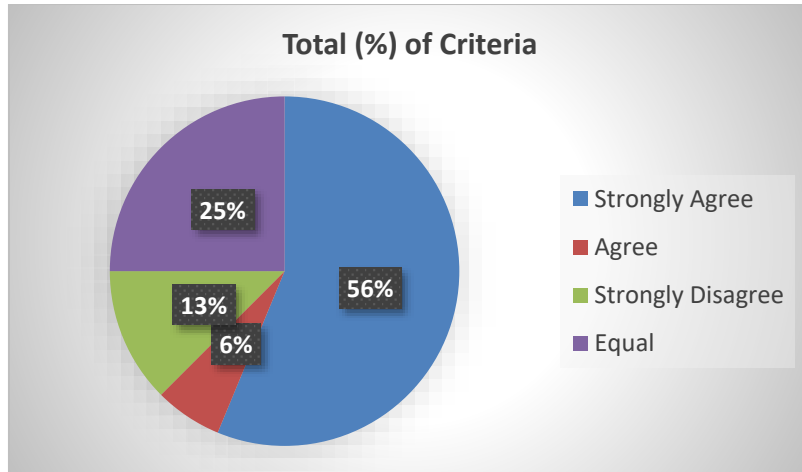


Figure 1.3: Percentage of score scale on Challenges During Design/Preconstruction Phase have an Influence on Meeting Project Delivery Objectives (On Time and On Budget)

Based on the result, nine criteria (56%) had been chosen for Strongly Agree as the challenges during design/preconstruction phase have an influence on meeting project delivery objectives (on time and on budget). Only one criteria (6%) had been chosen for Agree, two criteria (13%) were chosen for Strongly Disagree, and equal answer (25%) that including Strongly Agree, Agree and Neutral (this can refer to data on appendix).

Key Challenges in Execution/Construction Phase of Seri Menanti Museum

Table 1.7: Result on Key Challenges in Execution/Construction Phase of Seri Menanti Museum

Strongly Agree (5)
Documentation quality (on the site) Discontinuous/unknown existing building fabric/materials Financial/budget considerations/constraints
Agree (4)
Qualifications/experience of Project Design Team Qualifications/experience of Project Client Team Qualifications/experience of Contractor/Subcontractor Pre Demolition phase/detailed investigation of building
Equal
Gaps in tendered documentation (all actions has not been covered by tender) Post demolition investigation Administration Lack of coordination/communication between Design Team/Client/Contractor Incomplete project construction documentation (lack in detail – results with variations)

Observation score scale: from 1 = strongly disagree to 5 = strongly agree

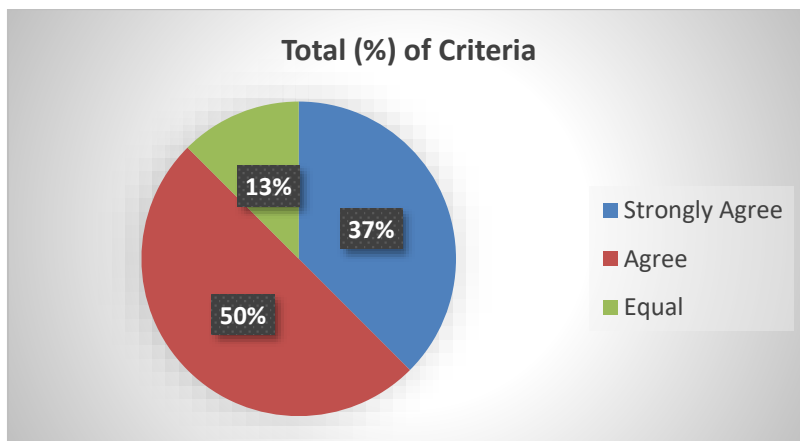


Figure 1.4: Percentage of score scale on Key Challenges in Execution/Construction Phase of Seri Menanti Museum

Based on the result, three criteria (37%) had been chosen for Strongly Agree as the main challenges for retaining Seri Menanti Museum. There are four criteria (50%) had been chosen for Agree, and the rest (13%) were chosen for equal answers, including

all scores which are Strongly Agree and Agree, Neutral, Disagree and Strongly Disagree. Based on these criteria that refer to project team, it mostly does not affected to the challenges of the maintenance Seri Menanti Museum

Industry Wide Checklists, Specifications, Procedures and Guidelines Needed

Table 1.8: Result on Industry Wide Checklists, Specifications, Procedures and Guidelines Needed

Already Provided (High Quality) (5)
Heritage protocol System in place to identify what is significant fabric Architectural detailing Structural testing
Already Provided (More Information Required) (4)
Consistent procedures how to deal with specific issues – to help to mediate this detail/issue Design in regard to the proposed usage (e.g. BCA code)
Equal
Guidance on different construction methodologies used at various times & locations Procedures for repair or rebuild of: stone work, brick work, steel work, concrete work and timber work

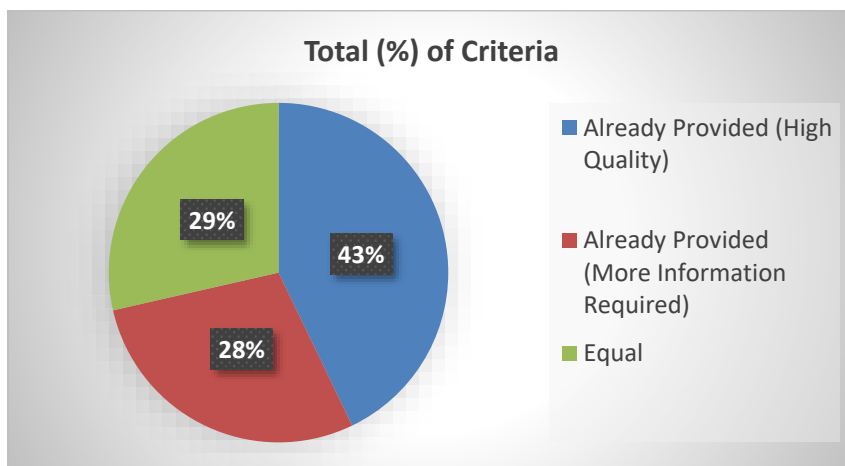


Figure 1.5: Percentage of score scale on Industry Wide Checklists, Specifications, Procedures and Guidelines Needed

Based on the result, four criteria (43%) had been chosen for Already Provided (High Quality) as the industry wide checklists, specifications, procedures and guidelines

needed. Both of Already Provided and Equal has same number criteria had been chosen which are 28% and 29% respectively.

Analysis for Section B3: Remarks About the Survey

This section was designed for additional survey about maintenance in Seri Menanti. It is including the issue regarding heritage project and measures are needed (or desirable) to assist the conservation of heritage buildings. The survey may help in accomplish in any requirement about the objectives goals.

Table 1.9: Result on the Survey

Description	Observation
Other issues/experiences regarding heritage projects that have worked on and have not already been covered in this survey	<p>Respondent 1 – <i>“Maintain the building by adding modern elements such as light fixtures, and fans. We had to modify the new plan and add some new structures to protect the electrical parts.”</i></p> <p>Respondent 2 – <i>“It is difficult to buy and find the same elements as the building. The cost of elements becomes expensive because they have to be ordered in advance.”</i></p> <p>Respondent 3 – <i>“Requires people who specialize in handling maintenance.”</i></p> <p>Respondent 4 – <i>“Unable to repair with what it should be/according to the original concept of this museum because it does not have a supply of quality materials.”</i></p> <p>Respondent 5 – <i>“Funds are not sufficient to maintain the building.”</i></p> <p>Respondent 6 – <i>“Finances to improve the building are very limited.”</i></p>
Other measures are needed (or desirable) to assist the conservation of heritage buildings/places	<p>Respondent 1 – <i>“Due to the lack of funds, it is necessary to create awareness among the public to help financially.”</i></p> <p>Respondent 2 – <i>“This building is under the Negeri Sembilan Museum Board and there is no other statutory body that operates this building. So need to work with the government in terms of funds.”</i></p>

	<p>Respondent 3 – <i>“Need sufficient funds to maintain historic buildings.”</i></p> <p>Respondent 4 – <i>“Need to study other corporations including foreign ones that produce more durable quality for historic buildings in their country and we can compare with suppliers in the country that have a range of 90-95% quality and reasonable prices.”</i></p> <p>Respondent 5 – <i>“Collaborate with the government to obtain funds.”</i></p> <p>Respondent 6 – <i>“Require funds or finance from any source to maintain the performance of the building.”</i></p>
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DISCUSSION AND ANALYSIS

The questionnaire was created using the findings from the literature research and took considered the preliminary case study findings (based on actual historic maintenance experience) to make sure that both professional or non-professional stakeholders were represented in the survey. Therefore, the survey questions were directed at Lembaga Muzium Negeri Sembilan (LMNS) in order to provide an appropriate range of responses to answer the relevant research questions. The survey including general background of the respondent and section of targeted question to determine the key reasons of the challenges and current condition in maintaining Seri Menanti Museum. The survey also consists of the respondent’s opinion in other issues/experience regarding heritage project that they have worked on but not already covered in this survey and other measures are needed to assist the conservation of heritage building. These opinions may help in proceeding additional data. Questionnaire surveys that incorporate Likert scale enable researchers to assess stakeholder perspectives on building heritage maintenance. By capturing respondents' opinions regarding conservation efforts, cultural significance, and community involvement, researchers can gain a comprehensive understanding of building heritage maintenance practices (Agyeman et al., 2020). Respondents can provide ratings on factors such as restoration techniques, material selection, and adherence to heritage guidelines. This data helps identify strengths and weaknesses in current maintenance approaches (Aspinall et al., 2018). By analyzing data on stakeholder perceptions and preferences, policymakers can make informed choices regarding resource allocation, policy revisions, or adaptive strategies to ensure effective heritage preservation (Franzel et al., 2019).

CONCLUSION

In conclusion, this thesis aimed to identify the challenges associated with maintenance in heritage buildings. Through an extensive review of existing literature and analysis of case studies, we have gained valuable insights into the complexities and unique difficulties involved in preserving these architectural treasures. By understanding these challenges, stakeholders can develop strategies and solutions that address the unique preservation needs of these architectural gems. Continued research, collaboration, and innovative approaches are vital to ensure the long-term survival of heritage buildings for future generations to appreciate and enjoy.

RECOMMENDATION

To ensure the long-term preservation and sustainability of these precious cultural assets, it is crucial to provide recommendations for addressing the maintenance challenges of heritage buildings. Heritage building proprietors, conservationists, and stakeholders can surmount maintenance challenges and preserve these architectural treasures for future generations by employing proactive and considerate strategies. Here are some important recommendations:

Recommendation 1: Financial Support

Governments frequently provide funding for cultural preservation through grants, subsidies, and tax breaks. Organizations and people committed to historic conservation must interact with political decision-makers and push for more financing in this area. The opportunity exists for private organizations, philanthropists, and individuals to become ardent advocates of cultural preservation. Partnerships and sponsorship initiatives can help private organizations and historic structures forge deep relationships. Both financial resources and a sense of shared responsibility may be made available by this synergy. The repair and restoration of heritage buildings should get a special budgetary allocation from organizations responsible with taking care of them. In order to reduce the danger of financial instability, organizations can guarantee a steady supply of financing by creating a ring-fenced fund for historical preservation.

Recommendation 2: Materials Availability Research

A thorough examination of historical documents, photo albums, and records might turn up crucial details on the original building supplies. This information serves as the cornerstone for all maintenance and restoration tasks, ensuring that modifications maintain the building's original character. Collaboration with conservation specialists and history preservation-focused architects is essential. Their understanding of

conventional building materials and methods makes it possible to recreate historical accuracy while maintaining structural integrity. Local material sourcing is ethical and practical. Utilising local resources not only fits with the historical setting of the building but also promotes sustainable practises by reducing carbon emissions associated with transportation.

Recommendation 3: Collaboration and Expertise Exchange

Heritage structures often confront issues that are both one of a kind and particularly difficult to maintain owing to the historical importance of their construction techniques. On the other hand, relevant knowledge relating to these difficulties is often dispersed over a wide variety of sources or is confined to the expertise of certain individuals working in the field. The establishment of a centralized database will guarantee that essential maintenance information is available to all stakeholders, therefore giving them with an in-depth grasp of the maintenance practices that are required for historic buildings.

Recommendation 4: Collaboration and The Sharing of Expertise

For historic structures to be effectively maintained, there must be collaboration among a wide variety of stakeholders. These stakeholders include building owners, heritage conservation organizations, architects, engineers, and specialized craftspeople. A centralized platform for the sharing of information would make communication easier and increase cooperation, making it possible for many stakeholders to exchange their experiences, ideas, and areas of expertise. This suggestion would aid in spreading best practices and new solutions by linking specialists working on various projects and in different places. The end result of this would be an improvement in the overall maintenance standards for historic structures.

Recommendation 5: Long-Term Planning and Decision Making

In order to preserve the preservation and long-term viability of historic structures, the maintenance operations that are performed on these buildings must be addressed with a long-term view. The centralized database would include historical data, case studies, and recorded maintenance practices, making it an invaluable resource for strategic planning. The choices that need to be made about maintenance interventions, funding allocations, and the prioritization of preservation activities may be assisted by the information provided here.

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Saya yang menjalankan amanah,

SITI BASRIYAH SHAIK BAHARUDIN
Timbalan Ketua Pustakawan

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Setuju.

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