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CHALLENGES DURING CONSERVATION WORKS ON HERITAGE BUILDING

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ABSTRACT

This research paper focuses on the challenges faced during conservation works on heritage buildings and provides recommendations to overcome these challenges. The study includes a literature review, interviews, and surveys to gather data on the various factors affecting conservation efforts. Refer to respective objectives of this research paper which is; to identify the challenges faced during conservation works of heritage buildings and to determine the procedure or method to encounter the challenges, the findings reveal that on-site challenges, economic and finance factors, organizational issues, human factors, and others are the main challenges encountered in heritage building conservation. The data analysis shows that decision-making regarding conservation activities, finding appropriate materials, and effective communication among professionals are the most challenging factors in their respective categories. Based on these findings, recommendations are made to prioritize effective communication, develop clear procedures to address challenges, manage and coordinate stakeholders, address human factor challenges, and address economic and finance challenges. Implementing these recommendations can improve the conservation process and ensure successful outcomes in heritage building conservation projects.

Keywords: *challenges, conservation work, heritage building*

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INTRODUCTION

Literature Review

In Malaysia, the conservation of heritage buildings is initiated by the government and private sector. The establishment of the National Heritage Department of Malaysia in the year 2006 has demonstrated the government's efforts to appreciate the existence of heritage buildings in Malaysia. The Department will ensure that all the requirements stated in the National Heritage Act 2005 are complied with by the respective authorities. Moreover, the inclusion of George Town and Malacca in the UNESCO Heritage site list on 7th July 2008 has positioned Malaysia as one of the countries promoting heritage tourism. The listing under the UNESCO heritage site is supported by various stakeholders, including building owners, professionals, and competent technical individuals, to ensure the success of heritage conservation efforts in Malaysia.

Heritage Building

A heritage building is a structure that has historical, architectural, cultural, or social significance. These buildings are considered important and are protected and preserved by law in many countries, often through legislation and/or designation as a heritage site. There are many different types of heritage buildings, including houses, governmental structures, religious buildings, industrial spaces, and more. They can range in age from old ruins to more modern structures from the 20th century, and they may reflect many architectural styles including Gothic, Baroque, or Art Deco. When planning, developing and managing heritage sites, a number of factors have to be taken into consideration the main ones are access to resources necessary to preserve, develop and maintain a historical site or an historical object.(Nilson & Thorell, 2014).The preservation of heritage buildings is important because they provide a connection to the past, giving us insight into the cultural, social, and architectural history of a place. They also play an important role in maintaining a sense of community and cultural identity. In addition, many heritage buildings are beautiful and unique, and they contribute to the character and charm of the places in which they are located.

Building Conservation

Conservation activity can involve many parties to carry out the work either on modern building or heritage building. Then a privilege that can be seen for conservation activities on historic buildings is that it has a body that manages conservation activities worldwide in an orderly and systematic manner without affecting or slightly affecting the structure of the original building without losing its aesthetic value, which is UNESCO World Heritage Committee.

The World Heritage concept was born out of the need to protect heritage of outstanding universal value that is threatened, among other things, by infrastructure and economic development projects.(Labadi, 2017). The cultural heritage and natural heritage are increasingly threatened with destruction not only by the traditional causes of decay, but also by changing social and economic conditions which aggravate the situation with even more formidable phenomena of damage and destruction. (N. Heritage, 1977)

This preamble clearly refers to the process of rapid industrialization and urbanization of the 1960s and 1970s that led to the destruction of a number of heritage sites. Implicit reference is made to the international campaign to salvage the two Abu Simbel Temples in Egypt dating from the reign of Pharaoh Ramesses II in the thirteenth century BC. These temples were moved in 1968 onto an artificial hill to protect them from being submerged after the construction of the Aswan High Dam. The convention is thus clearly presented, from its preamble onward, as an international and intergovernmental instrument for the protection of all heritage, and particularly heritage that has been identified as having outstanding universal value, against modern forces of development.(Labadi, 2017)

Importance Of Conservation Works

Despite the advantages of conservation, it has several importance that need to be highlight. Accounting for economic benefits arising from conservation and reducing potential policy conflicts with alternative plans for development can provide opportunities for successful strategies that combine conservation and sustainable development and facilitate conservation action.(Di Minin et al., 2013). Global conservation efforts would also benefit from enhanced support for indigenous conservation approaches, including expanding the conservation actions classification to encompass a new category of conservation or sacredness ethic.(Ban et al., 2020)

To be more interesting, conservation works also contribute for society benefits. Constructive" conservation gives as much importance to the social and political lives of the inhabitants as to the protection and rehabilitation of buildings.(Jorge. E Hardoy and Margarita Gutman, 2009). The cultural value, economic value, historical value, and identity greatly influence the semantic conservation of the architectural heritage.(Taher Tolou Del et al., 2020).The findings of the present study can assist urban designers and planners to consider the public's evaluation of historical building facades for prospective conservation projects.(Askari et al., 2014)

Recorded Case Study

Every single conservation works will face several problems that revolve around the conservator. This study will breakdown the problems arise, as the example heritage site in George Town Penang Malaysia.

As heritage conservation is seen as a new phenomenon in the local architectural scene, it is imperative to highlight several issues and challenges associated with the conservation project. (Azizan et al., 2020)

i. Conservation plan

The conservation projects need a proper planning. Stage by stage approach base on conservation process is a standard practice. However, in practice, the contractor always uncared at dilapidation stage. The decision on conservation sometimes been made without the dilapidation result or base on an assumptions. Rushing on repairing will cause future damage to building's fabrics. To monitor the insufficient works on conservation, the contractor needs to submit the method and technique to conserve and must get the approval from conservator before start the works.

ii. Lack of skill workers and responsibility challenge of conservator

Presently, there are practically lack of laborers and technical experts in conservation methods and techniques. This is the major problem because almost all conservation projects involve both repair and maintenance stages requiring an understanding of and analysis of building defect diagnoses. There is also the question of testing and treating building material, choosing appropriate tools and the methods to conserve the building. Regarding these issues, the responsibility to conservation task is major challenge for conservator. Conservator also acts as project manager, he or she shall strive to attain the highest standards in all aspects of conservation including investigation, treatment, research, and documentation.

iii. Choice in material

Despite on the skill workers, the conservation projects also have a problem in getting the original material to reconstruct the buildings. The materials like roof tiles and timber truss was an unlimited sources. The contractor must get the same material to match with the original material. Regardless of this, the challenges are not only to get the original materials but the contractor needs to expert in interpretation of the needs of the project contract - new material is compatible with original and its must been testing on similar strength, texture, scale and form.

iv. Conservation Guidelines for Conservation Works

Appropriate conservation guidelines usually serve as an important tool for the conservator and building contractors. Although National Heritage Act 2005 gives emphasis to the care of listed buildings and declaration of National Heritage, however these regulations need be accompanied with guidelines and technical manual for conservation works.

Identification And Analysis Of Challenges In Conservation Works

This comprehensive study focuses significantly on the multiple challenges that occur within the arena of conservation practises, with the goal of giving understanding of the difficulties experienced in this sector. A wide range of challenges have been identified, specifically categorised, and methodically documented through careful research and precise analysis, leading in a broad data of knowledge. The precise classification of these challenges is an essential material, assisting conservators' work by providing them with an organised basis that allows them to evaluate, analyse, and, if necessary, take appropriate action. Conservators are empowered to perform a full evaluation of the difficulties by using these carefully recorded categories, allowing them to make adequate decisions and take proactive actions in solving conservation challenges.

On-Site Challenges

Despite on the skill workers, the conservation projects also have a problem in getting the original material to reconstruct the buildings. The structural design of cultural heritage artifacts is conditioned by several constrains: the need to preserve the authenticity of the historical fabric, the presence of decorative surfaces that need to be protected, the existing damage level, the expected benefits and improvement in the structural behavior due to the rehabilitation works, the planned building use, and the time period between two planned consecutive maintenance interventions.(Calvanese & Zambrano, 2021) The materials like roof tiles and timber truss were an unlimited source. The contractor must get the same material to match with the original material. Regardless of this, the challenges is not only to get the original materials but the contractor needs to expert in interpretation of the needs of the project contract - new material is compatible with original and its must been testing on similar strength, texture, scale and form.(Azizan et al., 2020). The selection of the materials used for preserving the heritage constructions must be made using a complex approach, using both the literature data regarding the properties of such materials and physicochemical analyses of the support materials. (Fierascu et al., 2019). It is also said for the selection of the proper materials for the restoration and conservation of traditional buildings, the first step of a truly scientific approach is represented by the analytical characterization of the materials (both support materials and restoration material), as well as their interaction. Those studies should usually be conducted in a trans-disciplinary manner, including specialists from different areas, such materials science, architecture, civil engineering, and cultural heritage.(Fierascu et al., 2019) Conservation work is often difficult to obtain replacement materials. This has often been a challenge for contractors to carry out conservation work as spare materials are hard to come by.(Fauzi & Abdul Ghani, 2022)

Apart from that, Climate change is an increasing challenge for the conservation of the built heritage. It could lead to accelerated degradation or loss of cultural heritage, due to continuous degradation or destructive climatic events. Weather- and climate-related natural hazards, such as river/coastal floods, landslides, wildfires, etc., could cause catastrophic loss of historic buildings. Buildings exposed to natural hazards attract much attention because of the immediacy of the losses. On the other hand, cumulative degradation risks are increasing due to climate change.(Hao et al., 2020). For instance, the temperature increase in winters could lead to a higher prevalence of insect pests and fungal attack, warping of timber elements, staining, and discoloration of masonry. In this regard, cumulative degradation-risk assessment and adaptation are necessary to ensure buildings' resilience to new climate conditions.(Hao et al., 2020)

Economic Factors And Financial Constraints

One of very crucial key challenges arising is from economic and financial constraints. It is often difficult to determine the final cost of conservation projects due to their unpredictable nature. As quoted by Raftery (1994), *It is almost impossible to predict a correct market price for a product that is not built, with labour force not yet recruited, on a site for which there is incomplete information.* It can be said that proper management of financial for conservation work are important thing to be taken care of.

Cost estimating for a building conservation project is a challenging task due to the lack of information on the cost, complexity of the method of conservation and also the difficulty in sourcing the required materials, which may not be widely available. In Malaysia, although conservation of heritage buildings has been ongoing for many years, costing information and documents pertaining to conservation work is still lacking. Lack of understanding in conservation works on the part of quantity surveyors often leads to difficulty in preparing a cost budget.(Chen et al., 2014)

What can be understand here that many aspects need to be consider before overall costing can be determined. The availability of the material also the reason that costing will be high or low. Despite from that, there are some special works to be considered when preparing a cost budget for conservation works. Work items specifically for conservation works such as archaeological excavation, scientific testing and analysis and temporary roofing should be included. (Chen et al., 2014)

Organizational Issue

A variety of challenges in conservation work arise from organisational culture, which is determined by standard principles and ideals that guide behaviour and actions. Different organisational cultures can result in a variety of conservation techniques, ranging from "archaeologists' strict self-denial to the unapologetic self-confidence of the creative architect." The conservation projects need a proper planning. Stage by

stage approach base on conservation process is a standard practice. However, in practice, the contractor always uncared at dilapidation stage. The decision on conservation sometimes been made without the dilapidation result or base on an assumptions. Rushing on repairing will cause future damage to building's fabrics. To monitor the insufficient works on conservation, the contractor need to submit the method and technique to conserve and must get the approval from conservator before start the works.(Azizan et al., 2020)

The key challenges associated with historical conservation also include larger difficulties experienced in building preservation, such as unpredictability around scope definition and the parties involved's potential limits. Various approaches to conservation are applied in the contest of the opposing philosophies of the developer viewing a property as an opportunity to be exploited and the preserver viewing the building as an inheritance to be safeguarded. This results in a balance of subjective judgment, philosophical stance and professional expertise but rarely professional unanimity. (Azizi et al., 2016)

Conservation ethics also the challenges faced by conservator. The Athens Charter in 1931 was adapted at the First International Congress of Architects and Technicians of Historical Monuments and may be recognized as to provide the concept of conservation of heritage monuments and structures and its importance. The charter approved the use of all the resources at the disposal of modern technique and, more especially, the use of reinforced concrete, which indicates the charter preferred the restoration of the structure over keeping the original authenticity (Coli & Iwasaki, 2021). The authenticity of the heritage structure to be preserved must be studied on forms and design, materials and substance, use and function, traditions and techniques, location and setting, and other internal and external factors.(Coli & Iwasaki, 2021)

Apart from that, stakeholders with high importance and enthusiasm would be the critical stakeholders in maintaining architectural heritages(Wang et al., 2019). Architectural heritages, especially heritages of tourism, were destroyed in the process of urban reconstruction of China because of lacking protection from stakeholders. Therefore, there is an urgent need to identify the critical stakeholders to perform the responsibility of protection.(Wang et al., 2019) However, there are often persisting uncertainties concerning what stakeholder management strategies, methods and approaches to employ to ensure project success.(Collinge, 2016)

Human Factor

Many of conservation problems are related to human errors. Among them, miscommunication brought about by different corporate structures and cultures is a common problem in conservation works due to the involvement of multiple organizations such as consultants, contractors, suppliers and sub-contractors assembled together as a team.(Azizi et al., 2016)

Presently, there are practically lack of laborers and technical experts in conservation methods and techniques. This is the major problem because almost all conservation projects involve both repair and maintenance stages requiring an understanding of and analysis of building defect diagnoses. There is also the question of testing and treating building material, choosing appropriate tools and the methods to conserve the building. Regarding these issues, the responsibility to conservation task is major challenge for conservator. Conservator also acts as project manager, he or she shall strive to attain the highest standards in all aspects of conservation including investigation, treatment, research and documentation.(Azizan et al., 2020)

Conservation works often require specialized skills and expertise in historical research, architectural conservation, and traditional craftsmanship techniques. (Forsyth et al 2008) In other words, lack of effective communication among professionals, craftsmen, and general laborers leads to varying interpretations of tasks due to misunderstood instructions or differing understandings of the scope of work. Disagreements within the team arise from differences in authority and unclear boundaries. Moreover, complying with the correct principles and guidelines of historic building conservation poses a challenge due to strict bylaw requirements and building codes.

METHODOLOGY

This research paper utilizes a mixed-methods approach to gather and analyze data on the challenges faced during conservation works on heritage buildings. The methodology consists of both primary and secondary data collection methods, including questionnaire surveys and literature reviews.

Primary Data Collection:

Questionnaire Survey: A questionnaire survey is conducted among conservators in Malaysia who have at least 3 years of experience in heritage building conservation. The questionnaire is designed using Likert scale method and is categorized into four sections: on-site challenges, economic factors and financial constraints, organizational issues, and human factors (Labadi, S., 2017).

Sample Profile: The sample consists of 17 conservators who have completed the questionnaire survey (Meskell, L. 2013).

Data Analysis: Descriptive analysis is performed on the questionnaire survey data to summarize and find patterns in the responses (Jorge E.H and Gutman M., 2009). The mean index for each sub-factor variable is determined to identify the challenges faced during conservation works (Meskell, L. 2013).

Secondary Data Collection:

Literature Review: A comprehensive review of relevant literature is conducted using secondary sources such as articles, journals, research papers, review papers, and official websites (Forsyth, M., et al. 2008). This helps in gaining a deeper understanding of the challenges faced in heritage building conservation.

Data Analysis: Narrative analysis is used to analyze the information acquired from the literature review and questionnaire results. This involves applying the acquired information to the research questions (Jorge E.H and Gutman M., 2009).

The research methodology aims to identify and analyze the challenges faced during conservation works on heritage buildings. The data collected through the questionnaire survey and literature review are analyzed to provide insights and recommendations for overcoming these challenges (Azizan, et al., n.d.a).

Overall, this mixed-methods approach allows for a comprehensive understanding of the challenges faced in heritage building conservation and provides a solid foundation for the analysis and recommendations presented in the research paper.

RESULT AND DISSCUSSION

The analysis of the primary data collected through the questionnaire survey. The data analysis is categorized into four sections: on-site challenges, economic factors and financial constraints, organizational issues, and human factors. The chapter provides a detailed examination of the challenges faced in each category.

In the on-site challenges category, the analysis reveals that the availability of suitable materials is a significant challenge (Jorge E.H and Gutman M., 2009). This finding suggests that finding appropriate materials for conservation works is a common difficulty faced by conservators. Additionally, the impact of weather on conservation progress and quality is identified as another major challenge (Jorge E.H and Gutman M., 2009). This indicates that adverse weather conditions can hinder the progress and quality of conservation works.

In the economic factors and financial constraints category, the analysis highlights the determination of the final cost as the most challenging factor (Jorge E.H and Gutman M., 2009). This finding suggests that accurately estimating the cost of conservation works can be a complex task. It implies that financial constraints and uncertainties in cost estimation can pose challenges to the successful completion of conservation projects.

In the organizational issues category, the analysis identifies the influence of organizational culture on knowledge sharing as a significant challenge (Jorge E.H and Gutman M., 2009). This finding suggests that the organizational culture within

conservation teams can impact the sharing of knowledge and expertise, which can affect the overall effectiveness of conservation works.

In the human factors category, the analysis reveals that the expertise of contractors in heritage building conservation is a challenging factor (Jorge E.H and Gutman M., 2009). This finding suggests that finding contractors with the necessary skills and expertise in heritage building conservation can be difficult. It implies that a shortage of qualified professionals in this field can pose challenges to the successful execution of conservation works.

Overall, Chapter 4 provides a comprehensive analysis of the challenges faced during conservation works on heritage buildings. The findings shed light on the specific difficulties encountered in each category, providing valuable insights for addressing these challenges in future conservation projects.

RECOMMENDATION

One of the key strategies highlighted is effective communication. This involves improving communication channels and ensuring clear and timely communication among all stakeholders involved in the conservation project. Effective communication can help in addressing misunderstandings, coordinating efforts, and ensuring that everyone is on the same page (Aksari, et al., 2014).

Another strategy is the development of clear procedures. This involves establishing standardized procedures and guidelines for different aspects of conservation works, such as material selection, construction techniques, and project management. Clear procedures can provide a framework for decision-making and ensure consistency and quality in the conservation process (Aksari, et al., 2014).

Managing and coordinating stakeholders is also emphasized as an important strategy. This involves actively involving all relevant stakeholders, including conservators, architects, contractors, and local communities, in the decision-making process. Effective stakeholder management can help in addressing conflicting interests, building consensus, and ensuring the success of the conservation project (Aksari, et al., 2014).

Addressing human factor challenges is another crucial strategy. This includes investing in training and capacity building programs for conservators and contractors, promoting interdisciplinary collaboration, and fostering a culture of continuous learning and improvement. By addressing human factor challenges, the conservation process can benefit from enhanced expertise, teamwork, and innovation (Aksari, et al., 2014).

Lastly, addressing economic and finance challenges is highlighted as a strategy. This involves exploring alternative funding sources, such as public-private partnerships and grants, and developing cost-effective conservation techniques. By addressing economic and finance challenges, the conservation process can become more sustainable and viable in the long run (Aksari, et al., 2014).

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