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A STUDY ON MAINTENANCE MANAGEMENT AT MOSQUES

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ABSTRACT

This thesis examines maintenance management practices at two mosques in Malaysia, Masjid Sultan Yusuff Izzuddin Shah in Seri Iskandar and Masjid Abdullah Fahim in Kepala Batas, to evaluate their effectiveness and identify areas for improvement. The study uses a mixed-methods approach, including questionnaire surveys with 100 mosque visitors and interviews with mosque management personnel. The findings show varying levels of satisfaction and facility conditions between the two mosques, with Masjid Sultan Yusuff Izzuddin Shah facing maintenance challenges and Masjid Abdullah Fahim demonstrating effective practices resulting in higher user satisfaction. Based on the analysis, recommendations are proposed to enhance maintenance management, such as increasing awareness of maintenance importance, implementing efficient management systems, establishing a proper complaint mechanism, employing skilled workers, and following a planned maintenance schedule. This research contributes to knowledge on mosque maintenance and offers practical insights for religious building upkeep. By implementing the recommendations, mosques can improve facilities, user satisfaction, and ensure the longevity of these important religious and community spaces. The study emphasizes the significance of maintenance management at mosques and lays the groundwork for further research to continually enhance maintenance practices in these sacred places.

Keywords: *maintenance management, mosque, user satisfaction*

INTRODUCTION

In Malaysia, the rich architectural heritage, including numerous mosques, plays a vital role in shaping the country's unique national identity. As focal points for communal worship, mosques reflect the distinct needs and scale of Muslim communities, historically serving as centers of learning and intellectual exchange. Their decorative elements, adorned with Qur'anic inscriptions and intricate patterns, symbolize the connection between the holy book and the sacred place of worship. Maintaining mosques in good condition is essential as it attracts Muslims and people from diverse ethnic backgrounds, making them prominent public attractions and leaving a positive first impression. However, mosques, like other ancient structures, are susceptible to wear and degradation over time, highlighting the need for proper maintenance to preserve these significant religious and cultural landmarks (Ibrahim et al., 2009; Ishak, Chohan & Ramly, 2007).

Understanding maintenance management, its various types, and the role of the State Islamic Religious Council is critical in achieving the research's objectives. The concept of maintenance emphasizes caring for buildings to maintain a safe, comfortable, and functional environment. Building maintenance management involves organizing tasks to upkeep structural assets in both commercial and public buildings, encompassing essential upkeep and repairs of mechanical, electrical, landscaping, HVAC, and fire alarm systems. The research aims to explore and propose effective maintenance strategies, contributing to the preservation and enhancement of mosques' conditions and cultural significance in Malaysia (Utaberta et al., 2012).

LITERATURE REVIEW

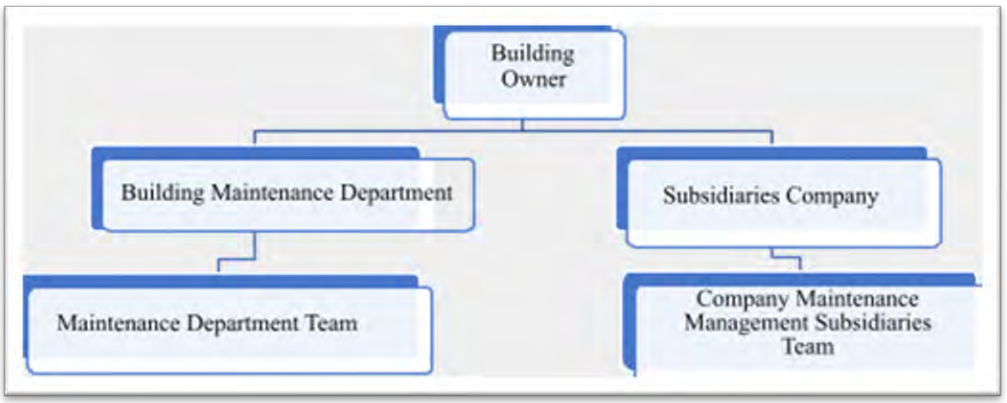
Maintenance, as defined by British Standard BS 3811, involves technical, administrative, and supervisory actions to preserve or restore an item's functionality. Building maintenance is essential from completion to prevent deterioration, ensuring safe and efficient operation (Williamson, Williams & Gameson, 2010).

According to Garg & Deshmukh (2006), building maintenance aims to sustain stability and functionality throughout a structure's lifespan. It includes activities like redecorating to prevent damage and enhance appearance (De Brito & Silva, 2020). Maintenance management integrates principles to support organizational operations and minimize breakdowns, preserving buildings effectively.

Types of Maintenance Management

There are two types of maintenance management systems: in-house and outsourced. In-house maintenance involves conducting business activities using the company's personnel and time, providing greater control and insight into operations.It can be advantageous for certain businesses seeking additional revenue sources and greater control over their teams. However, it may be costlier and divert resources from the primary line of business, particularly for smaller businesses with limited workloads.

Figure 1: Inhouse Organization Chart



On the other hand, outsourced maintenance involves hiring third-party organizations to carry out tasks previously done in-house. It is often adopted as a cost-cutting strategy, reducing labor costs and avoiding overhead expenses. Outsourcing allows companies to focus on core competencies, increase productivity, and lower operational costs. However, potential challenges include meeting specific client needs and potential conflicts due to differing management approaches between the client and contractor. Overlapping roles and tasks in the maintenance organization can lead to inefficiencies and a perception of excess management.

Figure 2: Outsource Organization Chart

Types of Maintenance Strategy

Figure 3: Types of maintenance Strategy

There are two main types of maintenance strategies: unplanned and planned. Unplanned maintenance, also known as reactive maintenance or emergency maintenance, occurs in response to unforeseen circumstances, resulting in higher maintenance costs. It involves tasks that were not previously planned for and often arise due to unexpected equipment failure.

On the other hand, planned maintenance is widely utilized in maintenance management and relies on reliable and accurate data. It consists of two sub-strategies: pro-active maintenance, which identifies failures at their sources to increase production capacity and equipment life; and preventive maintenance, which involves routine evaluations of equipment effectiveness to extend its lifespan,reduce failures, and lower operation costs. Corrective maintenance, carried out in response to malfunctions or user requests, is the simplest type of maintenance. Lastly, predictive maintenance uses condition monitoring tools to assess equipment condition and make informed maintenance decisions. Each strategy has its purposes, and the chosen maintenance approach should depend on the specific issue identified and how the overall maintenance strategy is developed.

Definitions of Public Building

Public buildings are structures or facilities owned or operated by public entities for public use. They are subject to regulations outlined in laws and guidelines, including Act 663, UBBL 1984, and the Strata Title Act 1985. Public buildings can be classified as general public buildings, special purpose buildings, major public housing projects, and signature buildings, each serving distinct functions and requiring specific considerations in design, maintenance, and operation. Safety, accessibility, functionality, aesthetics, and sustainability are essential factors in theirplanning and development. Guidelines from the Malaysian Institute of Architects (PAM) and policies help maintain quality, safety, and functionality in public buildings, ensuring they meet necessary standards for the public's well-being.

Building Performance at Public Building

Building performance in public buildings, particularly mosques, is essential for functionality, efficiency, and sustainability. Evaluating and optimizing building performance includes aspects like energy efficiency, indoor environmental quality, maintenance practices, and user satisfaction. Research emphasizes the significance of performance evaluation to enhance energy efficiency and environmental impact in mosques. Indoor environmental quality, including factors like ventilation and lighting, is crucial for occupant satisfaction during worship. Proactive maintenance strategies are essential to preserve functionality and minimize downtime in public buildings, while user satisfaction relies on factors such as accessibility, cleanliness, and comfort. Overall, optimizing building performance in mosques requires a focus on sustainability, occupant comfort, and effective strategies for improvement.

METHODOLOGY

The research methodology employed in this study aims to achieve the objectives by collecting and analyzing data. Two main types of research methods have been utilized which are quantitative research and qualitative research. By combining both quantitative and qualitative research, this study aims to provide a comprehensive and well-rounded analysis, enabling a deeper exploration of the research topic and achieving a more holistic understanding of the subject matter.

Methodology Used

1. Primary Data:

   a) Questionnaire: A structured questionnaire with 15 questions was used to collect data relevant to the research objectives. Section A gathered demographic information from respondents. Section B assessed the satisfaction levels of mosquevisitors regarding its facilities.

   b) Interview: Interviews were conducted with the person responsible for maintenance activities at the mosque.

2. Secondary Data:

   a) Literature Review: Extensive review of relevant journals, articles, books, research papers, and other sources was conducted. Secondary data was sourced from legal websites such as Google Scholar and official websites with pertinent knowledge on the topic.

Case Study

The background of two selected case studies is summarized in Table 1

Table 1: Summary building background of selected case studies

Case Study	Mosque A	Mosque B
Address	Kepala Batas, Pulau Pinang	Seri Iskandar, Perak
Capacity	6000 people	4000 people

FINDINGS AND ANALYSIS CASE STUDY:

Table 2: Level of User Satisfaction Towards Facilities Provided

MASJID SULTAN YUSUFF IZZUDDIN SHAH				
No	Facilities	Mean Value	Std. Deviation	Ranking
1	Toilet	3.18	1.082	15
2	Airconditioning	3.52	1.035	8
3	Fan	3.54	0.994	7
4	Lighting	3.68	1.019	4
5	Water Supply	3.70	1.015	3
6	Electricity	3.74	1.046	2
7	Garbage Dump	3.20	0.935	14
8	Parking	3.35	1.110	11
9	Ablution Area	3.42	1.214	9
10	Prayer Area	3.82	1.024	1
11	Fire Extinguisher	3.37	0.972	10
12	Safety System (cctv)	3.22	0.941	13
13	Door	3.64	0.942	6
14	Window	3.66	0.961	5
15	Sound System	3.82	0.941	1
16	Shoe Rack	3.28	1.144	12
17	Staircase	3.28	1.213	12
18	Drainage	3.22	1.075	13
19	Landscape	3.22	1.217	13
20	Ramp	3.18	1.190	15

MASJID ABDULLAH FAHIM				
No	Facilities	Mean Value	Std. Deviation	Ranking
1	Toilet	4.72	0.454	10
2	Airconditioning	4.94	0.314	2
3	Fan	4.90	0.364	4
4	Lighting	4.96	0.198	1
5	Water Supply	4.94	0.240	2
6	Electricity	4.96	0.198	1
7	Garbage Dump	4.56	0.577	11
8	Parking	4.72	0.536	10
9	Ablution Area	4.84	0.370	6
10	Prayer Area	4.92	0.274	3
11	Fire Extinguisher	4.80	0.535	8
12	Safety System (cctv)	4.72	0.497	10
13	Door	4.92	0.274	3
14	Window	4.88	0.480	5
15	Sound System	4.96	0.198	1
16	Shoe Rack	4.56	0.541	11
17	Staircase	4.82	0.523	7
18	Drainage	4.52	0.677	12
19	Landscape	4.74	0.443	9
20	Ramp	4.92	0.274	3

In this case study, a Likert scale has been utilized to gather data for ranking, mean value, and standard deviation (std value) calculations as shown in Table 2. The Likert scale is a commonly used survey tool that allows respondents to indicate theirlevel of agreement or disagreement with a series of statements or questions. The respondents ranked 20 facilities at Masjid Sultan Yusuff Izzuddin Shah and Masjid Abdullah Fahim based on their satisfaction levels. At Masjid Sultan Yusuff Izzuddin Shah, the sound system and prayer area received the highest mean score of 3.82, indicating higher satisfaction, while the toilet and ramp had the lowest mean score of 3.18, indicating lower satisfaction. At Masjid Abdullah Fahim, lighting, sound system, and electricity obtained the highest mean score of 4.96, reflecting higher satisfaction, while the drainage facility had the lowest mean value of 4.52, indicatingsomewhat lower satisfaction.

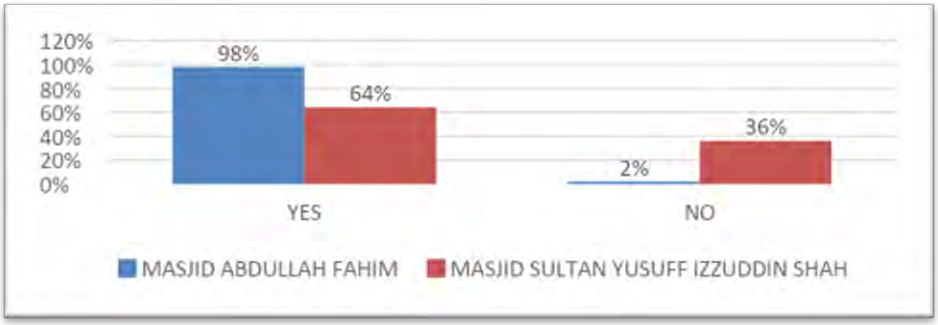


Figure 1: Does the Users Feel That the Mosque Management is Proactive in Identifying and Addressing Maintenance Issues

Based on the questionnaire responses as shown in Figure 1, it is evident that most users perceive the mosque management as proactive in identifying and addressing maintenance issues, with 98% of respondents at Masjid Abdullah Fahimexpressing a positive perception and 2% having a different opinion. At Masjid Sultan Yusuff Izzuddin Shah, 64% of respondents felt that the management is proactive, while 36% had a different viewpoint. Despite the lower percentage compared to Masjid Abdullah Fahim, a significant majority still perceive the management as proactive in addressing maintenance issues.

Table 3: Summary of selected case studies

Case Study	Masjid Abdullah Fahim	Masjid Sultan Yusuff Izzuddin Shah
Type of maintenance management	Planned maintenance: Preventive maintenance Corrective maintenance - Routine maintenance	Planned maintenance: - Corrective maintenance - Routine maintenance
Level satisfaction of facilities provided	Mean Value Range: 4.96 – 4.56 Std. Value Range: 0.198 – 0.577	Mean Value Range: 3.82 – 3.20 Std. Value Range: 1.024 – 0.935
Building condition	Very good	Poor

The summary of selected case studies is as shown in Table 3 above. Mosque A has a more comprehensive maintenance management system, including preventive maintenance, which may contribute to higher satisfaction levels among visitors. This mosque's building condition being reported as very good suggests that its maintenance practices are effective in preserving the structure's condition. Mosque B lacks preventive maintenance, which could potentially lead to lower satisfaction

levels due to a higher likelihood of unexpected issues. This mosque is in poor building condition could indicate a need for improvements in maintenance management to address existing issues and prevent further deterioration.

CONCLUSION

In conclusion, the information emphasizes how crucial it is to construct mosques in accordance with their intended uses. A crucial element in extending mosque lifespans and ensuring they stay in excellent condition is defined as building maintenance. This chapter presents recommendations to improve the effectiveness of the current maintenance management practices in mosques, summarizes the research findings, highlights the achievement of objectives, and discusses the study findings. Future study can improve mosque maintenance procedures further by considering these findings and suggestions, which will ultimately increase mosques' usefulness and lifetime. The chapter is divided into three main areas, which are the research findings, the achievement of the objectives, and recommendations for further study. Overall, this chapter is an invaluable resource for comprehending the importance of building care and provides recommendations for enhancing mosque maintenance management processes.

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