

A Study on The Critical Barriers of The Effectiveness in Building Maintenance for Government School in Batu Pahat, Johor, Malaysia

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Abstract

In Malaysia, responsibility for managing public property, including public schools, is divided among various government departments, and is frequently administered reactively. This will be owing to a lack of clear property goals. The objective for this case study is to center on critical barriers of the effectiveness in building maintenance, to determine the regular practice of building maintenance for public school, to access the classes of the barriers and the potential solution strategic planning for public school. Literature research is required to meet the defined objectives, after which data is collected via questionnaires and analyses. According to research, many of the school buildings lack their own maintenance management procedures, less cost satisfaction, and less experience of managers. Furthermore, as from this case study the critical barrier can be classified to ensure the effectiveness of the building maintenance can be achieved the standard regulation. New strategic of good building management can be made and can focus an action to critical issues that need fast action and cost that need to be spent more specific for those maintenance work only.

1. Introduction

Building maintenance is costly, therefore even if it is properly planned and defined, if the financing provided is insufficient, the building will eventually fail. Buildings can fail for a variety of causes, including poor design, poor construction, poor maintenance, poor materials, and poor use. Maintenance is the procedures to watch over the buildings after completion in order to run and function as expected [1]. Stop spending fund to maintenance works are the silly way to reduce the cost. Although this method is straightforward, the long-term consequences are generally highly costly. As a result, the goal of the new method is to do as little maintenance as possible, as infrequently as possible, while preserving the availability of services, building elements, and the overall structure. Furthermore, maintenance should only be done when it is essential to maintain the building's continuous, safe, and profitable usage at acceptable levels of satisfaction, or when the elements of the building's useful life may be extended. Building maintenance management has gained traction as a result of a limited maintenance budget and growing construction and maintenance costs, and one of the most essential responsibilities is to reduce operational costs. Consequently, optimal budget allocation may be achieved by selecting the most cost-effective and appropriate maintenance solutions. It can also reduce the degradation of buildings' performance across their whole life cycle (design, construction, use and demolition).

This case study is to determine the critical barriers of the effectiveness in building maintenance for government school Batu Pahat, Johor, Malaysia. Most of the studies focus in maintenance management of building; however, either of the studies clarify the critical barriers to ensure fast action will overtake to the problems. This

case study focus on public school with fast action and good decision-making can be done instantly as the barrier have been identify to enable a building to perform a building to perform efficiently and effectively to the users. Maintenance is a constant process that ensures that the school facilities, furnishings, and equipment are in good working order for routine use. Maintenance of the school facility is one of the institution's and its workers' daily activities. It is an important part of the educational system's overall delivery of teaching and learning.

One of the most major problems faced facility managers today is how to full fill maximum building performance requirements without taking all aspects into consideration, as opposed to the facility manager (i.e. the dilapidated condition of the building, design weaknesses, etc.). It will be more difficult if the approach maintenance work is not done in a standardized manner, with actions conducted at different times and in different methods, rather than properly planned from the beginning [2].

1.1 Problem Statement

The government distribute to the maintenance problem form each school with billion fund shaves be prepared to handle it. One of mega project than be handle directly order from Ministry of Education special project that is "Projek Sekolah Da'if" where the school with ages more than 10 years and with high level point for system scale determination of school buildings (worst) and very critical in building maintenance issues, leak of facilities, not comfortable to be use and safety issues. This project is emergency or need to be done as soon as possible because of the safety of the school community. The effect of not proper handling from the early stage that make the small issues become worst and cost to repair the defect will increase drastically if the problems are not tackle up fast. On the other hand, poor condition of school facilities negatively affects the teachers' performance hence will decrease the academic performance of students in the class [3]. Identifying components for a particular problem has long been considered as the most effective method of fixing a problem. The other issue arise is there were lack of maintenance of the facilities provided in the school. Generally, public schools continue to suffer from the lack of regular maintenance of the school facilities [4]. Along with increasing public awareness about the consequences of a lack of attention for maintenance, it will also potentially reason to the advantages of practicing building maintenance.

2. Methodology

To begin, this research methodology ensured that required procedures were observed. For the literature review, the researchers investigated issues surrounding school building maintenance methods by searching for relevant journal papers. Second, the researchers developed objectives that would serve as a guide for the investigation. Additionally, in the final analysis, a hypothesis was proposed for approval.

Two categories of data were used in this study: secondary data and primary data. Secondary data were gleaned from relevant publications and articles, as well as any information and authorized documents collected from relevant agencies. The information was acquired from the Ministry of Education, the District Education Office, and the Public Works Department (JKR) and will be transmitted to the next level of analysis. Primary data, on the other hand, were gathered from site observations. Selected elementary and secondary public schools were the target resources for the site observations. In this study, site observation was used to gather relevant information about the current state of the studied area.

2.1 Site Observation

Selected elementary and secondary public schools were the focus of the site inspections. In this study, site observations were used to gather information about the current state of the research area. The findings from these site observations were meticulously recorded in checklists. Both school components and the school environment were taken into consideration in this study. Every flaw was evaluated in terms of its condition and priority according to this process. On-site, all problems were evaluated and documented with photos and plan tags. The level of defects or conditions of components was determined by the score acquired from the scoring method, which ranged from good to fair to deteriorated. Additionally, the likely source of the flaws was identified. The visual inspections of the school buildings assisted in conducting a more thorough analysis and provided evidence to support the study's results [5].



Fig. 1 Rotting wall and column



Fig. 2 Old wooden window frame

2.2 Interview Sessions

This method was done to gain data and understand how the procedures of building maintenance management were applied in different stages and departments. The information was acquired from the Ministry of Education, the District Education Office, and the Public Works Department (JKR). The research goal was presented to the school officials at a meeting conducted at the school, whether with school administrators, senior assistants, or teachers. An interview with school authorities was conducted prior to the site inspection to acquire information about the school's facilities from their perspective. Following the interview, a site inspection was conducted. Before being used in the study, the data and information acquired during the site visit were evaluated and validated.

3. Results and Discussion

The maintenance department is understaffed, and the employees are not as well. Professionals like as architects and quantity surveyors are likely to be hired to provide advice on matters related to their areas of expertise. While the architect is in command of the construction works, a quantity surveyor could provide professional advice on alternative procurement techniques and make contractual judgments. Building projects are currently classified as civil engineering projects. The individual in charge has a civil engineering background. During the interview, he claimed to have the necessary knowledge and experience to oversee building maintenance. Despite his

professional expertise, however, this may not be totally accurate. However, the majority of the maintenance complaints about building upkeep rather than civil engineering work. Rather of being driven by demands, maintenance is driven by budget. Maintenance is undertaken based on the availability of funds, and cycle maintenance is frequently postponed until funds are available to complete the duties.

3.1 The Regular Practice of Building Maintenance for Public School

- Maintenance fund

It's too complicated to comprehend, and it takes a long time to approve. As an alternative, 70 percent of Malaysian pupils perform maintenance tasks on their own, without relying on maintenance funds. The government have put the limit of RM 150,000.00 of overall maintenance cost for the government to take over and made are tender for maintenance work. The estimate cost that will be issues as suggestion by the school administration and then be submitted to District Education Office. All of the provident of the fund that will be release to PPD are direct from Ministry of Education.

- Long time to solve the maintenance problems.

More than 1 month period that will be taken if the fund is direct from the government. The school itself take their own action as hire other contractor to repair the defect and prevent the damage from worse. Other's school have technical team to handle the defect but leaks of skill to solve the problems.

- Leak of technical knowledge

The school did not have any information on the type of defects and how to handle it well for short term and long term. For defect that event that there are classify as damage that could danger the users of the building like teachers and students.

- Poor management of technical team

Unexperienced or not someone who qualify to lead the technical as to advice, manage and do the work well with knowledge on that field. Most of the people how responsible to lead the team are the senior among them.

- Unqualified contractor

This case happens based on 2 condition, either the contractor are rewarded based on selection tender and other part is the school administration/management hired contractor to repair the defect. The contractor that be hire mostly based on the cost of work and easy to communicate.

- Shortage of material

Some of the material that have broken, or damage are expensive and not easy to get. The replace of the material need time as the costs and quantity of the material will be the issues of it.

- Low to Preventive Maintenance

Overestimated the cost of work and material are the reason for this situation. The material that be order are not suitable/ not exactly for that job and over supply material need to be highlight to preventive the maintenance work.

3.2 The Factor of Barriers to Implementation Effectiveness in Building Maintenance

Most of the schools in this study did not have their own maintenance plans, let alone preventive maintenance. Scheduled maintenance was deemed unnecessary, and instead, they relied on emergency plans, which ultimately depended on the government for resolution. When defects occurred, school authorities would report the issue, and the government would handle the remedy, often by awarding a contract to fix the problem. Additionally, school administrations lacked sufficient funding for maintenance and could only rely on government-allocated funds to address these issues. Maintenance was not overseen by anyone at the schools. If an issue arose, it was reported to the headmaster or principal, who would either contact someone to resolve it or report it to the appropriate government department. The lack of planned maintenance was due to their unawareness of its advantages, such as cost savings, preserving the structure, and extending its useful life.

4. Conclusion

The Malaysian school maintenance team has been dealing with a number of issues. The maintenance crew had to deal with two issues sides that are related to school upkeep Malaysian Department of Education and the Malaysian community Education. They are dealing with their own issues. To get the stunning result, you'll need to work together to solve it solution. Malaysian studies on school structures have identified a number of construction flaws

that need to be addressed. Fungus stain, deterioration of the teeth, and other common occurrences mortar joints, flaking paint, and faulty plastered surfaces renderings, wall cracking, faulty rainwater, Defective roofs and shaky foundations. latest info and detailed facility condition information is crucial for successful facilities maintenance planning, according to a review of the literature. The majority of schools do not have this information because their procedures for gathering facility condition data are ineffective.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

References

- [1] Lateef, O. A. (2009). Building maintenance management in Malaysia. *Journal of Building Appraisal*, 4(3), 207–214. <https://doi.org/10.1057/jba.2008.27>
- [2] Mong, S. G., Mohamed, S. F., & Misnan, M. S. (2019). Current issues and barriers of maintenance management practices for public facilities in Malaysia. *International Journal of Engineering and Advanced Technology*, 8(5), 119–125. <https://doi.org/10.35940/ijeat.E1017.0585C19>
- [3] McKoy, D., Vincent, J. M., & Makarewicz, C. (2008). Integrating Infrastructure Planning: The Role of Schools. *ACCESS Magazine*, 1(33). <https://escholarship.org/uc/item/1cq2q7fp>
- [4] Ornstein, S. W., Moreira, N. S., Ono, R., Franca, A. J. G. L., & Nogueira, R. A. M. F. (2009). Improving the Quality of School Facilities through Building Performance Assessment: Educational Reform and School Building Quality in Sao Paulo, Brazil. *Journal of Educational Administration*, 47(3), 350-m67. <https://doi.org/https://doi.org/10.1108/09578230910955782>
- [5] Mohammad Ropi, R., & Tabassi, A. A. (2014). Study on maintenance practices for school buildings in Terengganu and Kedah, Malaysia. *MATEC Web of Conferences*, 10. <https://doi.org/10.1051/mateconf/20141003003>