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# A STUDY ON MAINTENANCE MANAGEMENT OF SCHOOL BUILDING IN PERAK TENGAH DISTRICT

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## **Abstract :**

Building maintenance is a collection of a lot of activities. In order to carry out the maintenance job we may require some approvals for the work to proceed, which may vary depending on size, characteristics of the project, management style, work environment and the cooperation of all parties involved. In an ideal maintenance operation, the important parties involved in the execution of the work are the owner or the client, the contractor and the user. This study about the challenges and problem related to maintenance management of school building, identifying a current practice and issues faced by school administrator for maintaining school building and also to propose the best practice model for maintenance management of school building. Aim of this research is to propose the best possible model for maintenance management on Malaysian school building. Two main objectives to achieve the aim of this study is to identify a factor that contributed to the challenges and problem related to maintenance management of school building and a current maintenance management practice and to evaluate the level of satisfaction among end user. There are three stages in the methodology which consists of literature review in stage 1, identification of issues in stage 2, and data collection survey using questionnaire in stage 3.

**Keywords:** Building maintenance; Building management; Management style; Challenges of maintenance; Problem of maintenance

## **1.0 INTRODUCTION**

Building management is considered as a matter of the larger unit the Facilities Management. Building maintenance is a collection of a lot of activities. In order to carry out the maintenance job we may require some approvals for the work to proceed, which may vary depending on size, characteristics of the project, management style, work environment and the cooperation of all parties involved. In an ideal maintenance operation, the important parties involved in the execution of the work are the owner or the client, the contractor and the user (Alsheri,2015). According to research done by Ropi and Tabassi (2014), most schools do not have their own maintenance planning but depend more on emergency planning. the maintenance for public school is inefficient because there is no person in charge of maintenance. The parties who are assigned to this section do not have sufficient knowledge of maintenance (Ropi and Tabassi,2014). This shows that buildings in Malaysia are not effectively maintained. In fact, there are many buildings in Malaysia that require maintenance and care as the backlogs of building maintenance seems to be endless.

Therefore, the main aim of this research is to propose the best possible model for maintenance management on Malaysian school building. In order to achieve the aim, there are four objectives of study which are to identify a factor that contributed to the challenges, problem related to maintenance management of school building, identify a current maintenance management practice and evaluate the level of satisfaction among end user. Regarding several issues that were addressed in this study, this research will identify a factor that contributed to the challenges and problem related to maintenance management of school building and propose the best possible model for maintenance management on Malaysian school building.



## 2.0 LITERATURE REVIEW

Maintenance is a continuous operation to keep building, infrastructure, and equipment in the best form for normal use (Akasah, 2009a). It is also to ensure the facilities are in a good condition for a life time. In achieving the sustainability of facilities condition, maintenance management required the efficiency and effectiveness for strategic planning. There are many existing theories, models and framework related to maintenance management. Maintenance is work undertaken in order to keep or restore all facilities, for example, every part of a site, building and contents, to an acceptable standard.

### 2.1 *Challenges and problems in managing and maintaining new building*

Maintenance of building received little attention from the users, designers and contractors. It should be noted that the maintenance objective is to preserve buildings in their initial functional, structural and aesthetic states. According to Alsheri (2015) there are many challenge and problems in building maintenance. The common problem would happen in the maintenance process are as follows: -

- Lack of Maintenance
- Poor Management of Maintenance Team
- Financial Issues
- Unqualified Maintenance Contractor
- Lack of Supervision from Maintenance Team
- Lack of Engineers and Specialist
- Unclear Job Description and Department Structure
- Lack of Awareness
- Shortage of spare parts
- Failure of Preventive Maintenance

According to Alsheri (2015), maintenance is often based on the provisions of the estimate of the previous year plus a percentage. And very often the technical difficulty in assessing the quantities, as well as problems in the implementation of the maintenance costs of the exact cost, resulting in overruns and underestimated. It also noted that many client's facilities consider maintenance costs a fraction of the total cost, they do not allocate enough money to. Therefore, the budget for keeping is considered to be a secondary obligation allocated and not enough provisions.

Alsheri (2015) also stated that most of maintenance contractors operate and maintain the public building through foreign worker ranged from the highly skilled to unskilled. However, the unskilled worker represented the majority. They were paid low wages and came from high- unemployment countries. Sometimes the contractors do not provide excellent team and skilled technicians so they are rejected and replaced with another contractor, this also cause waste time and effort. Sometimes, the building maintenance organizations are also not clear and have different names such as support services, service management and the service centre.

## 3.0 METHODOLOGY

Several methods are executed to achieve the objectives of this research. By obtaining as much as required information to propose the best possible model for maintenance management on Malaysian school building This chapter is going to review the methods that are being used in completing this research. The objectives of this research are;

- i. To understand the research process
- ii. To identify the method of data collection
- iii. To determine the consideration's method of valid factor

There are 5 stages applied in this research to its completion which involves the process of intensive Literature Reading, Interview, Development of Conceptual Framework and Hypothesis, Survey Questionnaire, Testing and Analysis, and Conclusion of the research. Figure 1 shown the flow and framework of this research methodology used in order to achieve the research objective which is to

identify a factor that contributed to the challenges and problems related to maintenance management of school building and to identify a current maintenance management practice and evaluate the level of satisfaction among end user.

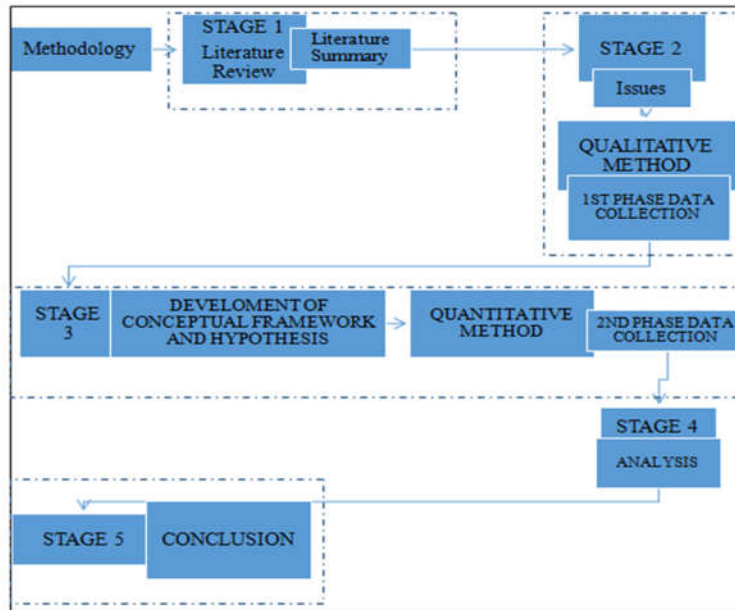


Figure 1: Research Methodology Framework

First phase data collection using qualitative method. The method of data collection using interview will be divide by two section which are respondent’s demographic (Section A) and identification challenges and problems in managing and maintaining new building (Section B). The answer from the respondent will be presented in the interview finding. The structured interview will be conducted to the building management as respondent to get clear information regarding to discussion’s topic.

Second phase data collection is quantitative data collection method. This quantitative data collection method is using questionnaire to find out the level of satisfaction among end user. The questionnaire will be distribute to the students at the school as the respondent. The answering technique used is based on the likert scale which is divided by five scale rating categories.

- 1= Strongly Disagree      2= Disagree      3= Neither Agree or Disagree  
4= Agree      5= Strongly Agree

Table 1 : Questionnaire survey form

No.	Question	Scale				
		1	2	3	4	5
1	Restrooms are stocked and clean	1	2	3	4	5
2	Hallways and stairwells are stocked and clean	1	2	3	4	5
3	Maintenance (lights, HVAC, Plumbing) requests are resolved in a timely manner	1	2	3	4	5
4	Occupational safety, health and indoor air quality conditions in the building are satisfactory	1	2	3	4	5
5	Top management fully aware of the importance of maintenance	1	2	3	4	5
6	Top management fully aware of the consequences of neglecting maintenance	1	2	3	4	5

7	Quality of maintenance work done is acceptable	1	2	3	4	5
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Therefore, the calculation of mean index was done by total of the factor evaluate from all of the respondents. The mean technique was used to calculate the average degree of satisfaction level among the end user. The degree of satisfaction level was determined by the frequency of the respondents agreed with each of the question in questionnaire. For instance, if the mean value is under 1.5-1 it means the satisfaction level of end user is very dissatisfied.

Rating	Rating Scale and Classification	
1	1.00 – 1.50	Very dissatisfied
2	1.51 – 2.50	Dissatisfied
3	2.51 – 3.50	Neutral
4	3.51 – 4.50	Satisfied
5	4.51 – 5.00	Very satisfied

After the data is completed, analysis was performed using two different computer packages: Statistical Package for the Social Sciences and Microsoft Excel.

#### 4.0 ANALYSIS AND FINDINGS

The data collection for section A is only based on the demographic information by respondent. A Total of 100 questionnaire is given and exactly 100 numbers of respondent is given the cooperation. It is enough to ensure that the finding are valid and can fully achieve the objective.

Table 2 : Demographic (Sekolah Menengah Kebangsaan Seri Iskandar)

Characteristic		Percentages
Gender	Male	57%
	Famale	43%
Age	15-18	100%
Race	Malay	97%
	Indian	2%
	Chinese	1%
	Others	0

Table 3 : Demographic (SK Seri Iskandar)

Characteristic		Percentages
Gender	Male	57%
	Famale	43%
Age	11-12	100%
Race	Malay	100%
	Indian	0%
	Chinese	0%
	Others	0%

Table 4 : Demographic (SMK Seri Keledang)

Characteristic		Percentages
Gender	Male	38%
	Famale	62%
Age	15-18	100%
Race	Malay	67%
	Indian	22%
	Chinese	11%
	Others	0

Table 5: Demographic (Management)

Characteristic		Percentages
Gender	Male	100%%
	Famale	
Working Experiences	1-5	33%
	6-10	66%
	11-15	
	16-20	
	>20	

In Section B, respondents were asked in terms of challenges and problems in managing and maintaining new building. The result is shown in Table 6.

Table 6: Structured interviewed findings

Respondent	Q1		Q2		Q3		Q4		Q5		Q6		Q7		Q8		Q9		Q10	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b	a	b
1	x	x	✓	x	x	x	x	x	✓	x	✓	x	x	x	✓	✓	x	x	x	x
2	x	x	x	x	x	x	x	x	✓	x	✓	x	x	✓	✓	✓	x	x	x	✓
3	x	x	✓	x	x	x	x	x	✓	✓	x	x	x	✓	✓	✓	x	x	x	✓

- Q1- Lack of Maintenance
- Q2- Poor Management of Maintenance Team
- Q3- Financial Issues
- Q4- Unqualified Maintenance Contractor
- Q5- Lack of Supervision from Maintenance Team
- Q6- Lack of Engineers and Specialist
- Q7- Unclear Job Description and Department Structure
- Q8- Lack of Awareness
- Q9- Shortage of spare parts
- Q10- Failure of Preventive Maintenance

For a clearer understanding and visual presentation, Figure 2 shows the result chart on the major challenges in maintenance

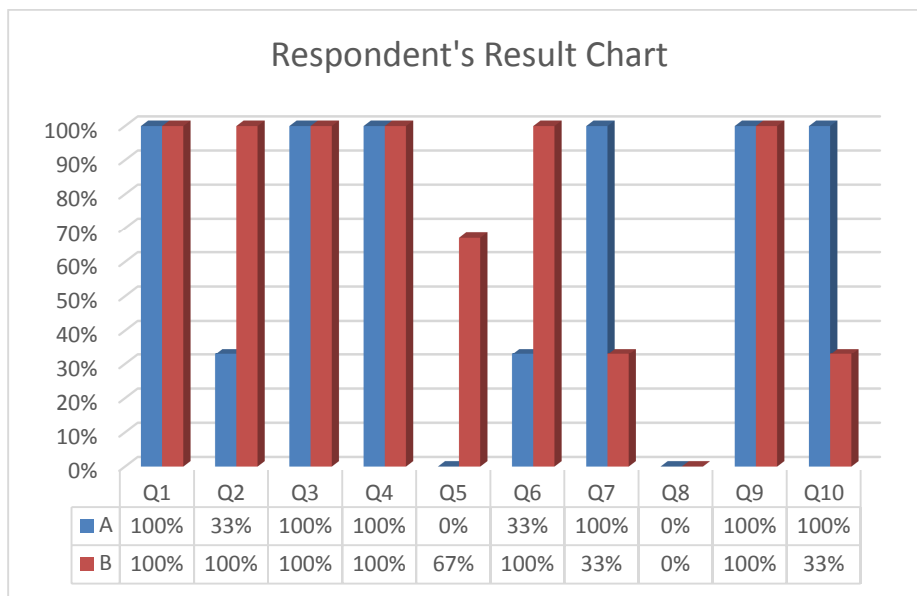


Figure 2: Result Chart on the Major Challenges in Maintenance

Both respondent is fully agree that (Q1), (Q3),(Q4) and (Q9) is the major challenges and problems in maintaining and managing new bulding. While for other issue is only happen in certain building. Next in Section C, the respondents were asked in terms of their level of satisfaction among end user.

Table 7: Major challenges and problems in maintaining and managing new bulding

No.	Question	Scale in frequency				
		Strongly Disagree	Disagree	Neither Agree Or Disagree	Agree	Strongly Agree
1	Restrooms are stocked and clean	5	5	35	45	10
2	Hallways and stairwells are stocked and clean		15		40	45
3	Maintenance (lights, HVAC, Plumbing) requests are resolved in a timely manner	20		30	15	35
4	Occupational safety, health and indoor air quality conditions in the building are satisfactory	5	5	10	30	50
5	Top management fully aware of the importance of maintenance	20		15	65	
6	Top management fully aware of the consequences of neglecting maintenance	30		15	35	10
7	Quality of mainteanance work done is acceptable	15	5	20	50	10
Cumulative frequency		95	30	125	280	160
Cumulative in percentage		14%	5%	17.9%	40%	23%

From the cumulative in percentage, the overall average mean score index based on the respondent's agreement in likert scale for the level of satisfaction among end user is 3.53 and classified and satisfied based on the rating scale and classification table.

## 5.0 CONCLUSION

In completing this study on maintenance management of school building in Perak Tengah district is to reach the main aim of this research which is to propose the best possible model for maintenance management on Malaysian school building. The study was succeeding with the achievement of several objective in identify challenges and problems in managing and maintaining new building by intensive literature review and by using the interview session. The study have found out that lack of maintenance,financial issues,unqualified maintenance contractor,shortage of spare parts is the main challenges and problems in managing and maintaining school building in perak tengah district. The study also found that the level of satisfaction among the end user is in range of satisfied based on the finding using the questionnaire method. Further research is needed by increase the number of respondent so that the data obtained through questionnaire will be more accurate and the development of questionnaire form must be including detailed explanation of the element as it will ease the respondent to have deep understanding about it.

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