The most common problem facing by the maintenance department: A case Study between Universiti Tun Hussein Onn Malaysia (UTHM) and Universiti Teknologi Malaysia (UTM)

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Abstract. From time to time, the maintenance works become more challenging due to construction of new building and also aging of the existing buildings. University buildings without any exception require proper maintenance services to support their function requirements and this can be considered as major responsibilities to be fulfilled by the maintenance department in the universities. Maintenance department specifically will face various kinds of problems in their operation works and thus this might influence the maintenance work operations itself. This study purposely to identify the common problem facing by the maintenance department and also to examine the current status of the maintenance department. In addition, this study would also propose any suitable approach that could be implemented to overcome the problem facing by the maintenance department. To achieve the objectives of this study, a combination of deep literature study and carrying out a survey is necessary. Literature study aimed to obtain deeper information about this study, meanwhile a survey aimed at identifying the common problem facing by the maintenance department and also to provide the information of the maintenance department’s organization. Several methods will be used in analyzing the data obtained through the survey, including Microsoft Office Excel and also using mean index formula. This study has identified three categories of problem in the maintenance department, which are management problems, human resource problem, and technical problems. Following the findings, several solutions being proposed which can be implemented as the solution to the problem facing. These suggestions have the potential to improve the maintenance department work efficiency, thus could help to increase the department productivity.

1. Introduction

Nowadays, it’s become a great challenge for a developing country to ensure that all the building’s condition and quality are at the top so that their serviceability could be maintained and can fulfil their function requirements [1]. It is obviously necessary to adopt a good protection method or can be said as a building maintenance method. Building maintenance is a sector that most closely related to the building construction industry. Building maintenance practically been adopted after the completion of a construction project. In general, building maintenance can be defined as any practice that could
assist in extending the lifespan of a building so that it could fulfil its function [2]. However the maintenance work for every building is not the same for each of the buildings has different kind of function. Determination of maintenance works is being influenced by the types of material used in construction and also the type of the structure itself. Obviously, the existence of buildings plays many important roles in human life nowadays. Regarding to this, it is vital to adopt the necessary maintenance for the building itself. It can be concluded that building maintenance as the ‘support’ for the construction industry. Good or bad condition of university building could describe the quality of maintenance service that being received. The responsibility of building maintenance is fully under the maintenance department. The effectiveness of maintenance management is closely related to the organization in the maintenance department itself [3]. From time to time, the maintenance work become more challenging since the public university keep expanding and developing rapidly. There would be problem or issues arising in the maintenance department, which could make the implementation of maintenance works become more difficult. This would likely influence the work performed by the department itself.

2. What is Maintenance?

Maintenance is defined as “the combination of all technical and administrative actions, including supervision actions, intended to retain an item, or restore it to, a state in which it can perform a required action [4]. Another definition of maintenance also being offered by the Chartered Institute of Building, which is “work undertaken in order to keep, restore or improve every facility, every part of the building, its services and surrounds, to an agreed standard, determined by the balance between need and available resources”. Meanwhile The Committee of Building Maintenance recommended the adoption of the maintenance definition as follows, “Work undertaken in order to keep, restore or improve every facility, every part of the building, its services and surrounds to a currently acceptable standard and to sustain the utility and value of the facility” [5].

3. Maintenance Organization

Organization can be defined as a group of people who must coordinate their activities in order to meet organizational objectives [6]. Meanwhile, other definition for organizing is the process of arranging resources include peoples, materials and technology together to achieve the organisation’s strategic and goals [7]. By the way, organization structure is referred as the way in which the various parts of an organization are formally arranged. The structure of the organization is determined by various factors such as technology and its rate of change, complexity, resource availability, product and/or services, competition, and decision making requirements.

4. Methodology

This study is continues with deeper information search through literature study. This information was gathered from two main sources. Firstly, through the external references such as internet, books, articles, and also journals. The questionnaire was built from two objectives of this study. Before that pilot survey and expert pilot was done to validate the questionnaire by interviewing selected industry professionals and academic staffs. A total of respondents were participated in this research. The questionnaire was developed and distributed among the targeted respondents.

4.1. Pilot Survey

Pilot study was performed just before the final draft of questionnaire draft had been approved. It is important because the questionnaire need to be tested on how long it takes to complete the questionnaire, ensuring all the questions and instructions are clear and also to review the suitability of the question.
4.2. Expert Pilot
This part is necessary where the questionnaire draft is presented to the expert in the building maintenance field such as professional engineers and lecturer. This is to gain their opinion and advice in improving the questionnaire form. There were two professional engineers and two lecturer whom experts in building maintenance selected for the validation of questionnaire draft. This is vital in identifying any error and also any unsuitable parameter in the questionnaire form.

4.3. Site Visit
During this phase, it is crucial to gain as much information as can. Through the site visit, a brief description of the organization can be obtained besides interviews and questionnaire distribution could be done at the same time. In this study the site visit was carried out at two selected public university campuses in Johor which comprise of UTHM and UTM.

4.4. Questionnaire
A set of questionnaires to be prepared in advance, in which it aims is to make the collection of data necessary. This form is designed based on the information obtained from the study of literature and also based on the research objectives. Views from various urgently needed, especially supervisors who had guided so that the data obtained will help in realizing the objectives of the study. The questionnaire was created and is broken down into three parts which is section A, B and C. Before the questionnaires were distributed, a pilot study was carried out and also expert pilot. Two lecturers were asked to validate the questionnaire during the expert pilot. Then, the questionnaire was distributed to 80 respondents.

4.5. Data Analysis
The mean index will apply because it presents the frequency and percentage of results in tabular form of Likert scale.

5. Results and Discussions

5.1. The current practice of maintenance department.
This could be achieved by gaining the information through the observations to maintenance department. Among the information that need to be gathered are organization structure, standard operation procedure (SOP) in maintenance works, mission and vision, objective of department and also the scope of work. There are a few discussions that have been conducted with the top management from both universities maintenance department.

5.2. The most common problem facing by the maintenance department.
Figure 1 shows that maintenance department at UTHM facing a serious problem in human resource. The mean index value of elements in sub-section of the human resource problem are higher than other sub-section. Based on the figure, the highest mean index value is 3.76. The respondent agreed that the employees always been given the job/task that are not suitable with their skill and lack of training provided by management. These two element are closely related where the employee skill can be influenced by the training that being received. Due to lack of training provided, the employee’s skill cannot be enhanced and developed.
Table 1. Comparison between maintenance departments at UTHM and UTM.

| Element                             | UTHM                                      | UTM                                      |
|-------------------------------------|-------------------------------------------|------------------------------------------|
| Organization Structure              | Of line and staff                         | Of line and staff                        |
| Mission, vision, and objective      | Provide efficient maintenance management  | Manage facilities efficiently to provide | |
|                                     | and best service in maintenance works     | excellent and sustainable facilities     | |
| Staff Population                    | 43                                        | 134                                      |
| Scope of Work                       | Civil                                     | Civil                                    |
|                                     | Electrical                                 | Electrical                               |
|                                     | Mechanical                                 | Mechanical                               |
| Work Area                           | Approximate 600 acres                     | 2400 acres                               |
| Contract                            | In house & outsourcing                     | 100% In house                            |

Figure 1. The most common problem facing by the maintenance department at UTHM.

Figure 2. The most common problem facing by the maintenance department at UTM.
Based on figure 2, maintenance department at UTM facing a serious problem in technical problem. Elements in the sub-section of technical problem have the highest mean index value which is 3.44. The tools and materials were not proper and outdated and lack in quality performances of the maintenance work. Besides that, maintenance department at UTM also faces the management problem since the mean index value in the sub-section of management problem also high which is 3.36. Respondent agreed that the top management failed in planning the maintenance department budget wisely.

5.3. The solution for the common problem facing by the maintenance department.

From the figure 3, respondent at UTHM agreed that for the management problem, the organization must be led or managed by the expert in the maintenance operation. Meanwhile, in human resource problem, where the respondent agreed that the maintenance organization should provide the adequate facilities to give training suitable with the employee scope of work. Both elements obtained the highest mean index value which is 4.08. This two solutions will perceive the best to give a good work performance of maintenance at UTHM.

![Figure 3. The solution for maintenance department at UTHM.](image)

From figure 4, the respondent in UTM agreed that for managing problem, the maintenance organization should be led or managed by the expert in maintenance operation. For human resource problem, the respondent agreed that it is vital for the employees to be clearly explained about their scope of work and also prepared the work instructions for them. Meanwhile, for technical problems, the respondent agreed that in identifying any external resources of materials, proper planning needs to be done if emergency maintenance is highly recommended. Those elements obtained the highest mean index value which is 4.00.
6. Conclusion
A study was conducted through two public university maintenance department, which are UTHM and UTM to identify the common problem facing by the maintenance department. A site visit and observations were conducted to obtain the information about current practice of the maintenance department. A deeper literature study was also conducted to understand the building maintenance operation and also about the maintenance organization. Through the study the common problem facing by the maintenance department can be divided into management problem, human resource problem, and technical problem. Based on the data results obtained, the objectives of this study managed to be fulfilled. The common problem in maintenance department is important in identifying the critical factor of the problem arising in the maintenance department. The result of this study can be used by the concerned parties to identify any lacking in their organization.

7. References
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