



## CHALLENGES IN MANAGING MAINTENANCE COST BY LOCAL AUTHORITIES IN MALAYSIA

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## Research Highlights

Local authorities in Malaysia are facing enormous challenges in satisfying the needs of the public while providing the facilities for various stakeholders. Previous studies show numerous criticisms and complaints regarding the incapability of the local authorities in managing and maintaining the public facilities (Adnan et al., 2012). Several barriers affected the uncertainty of maintenance cost which results in the insufficient allocation of funds. The study identified several barriers impacting the maintenance cost encountered by the local authorities while maintaining the public facilities. The barriers are classified into six related issues which are building characteristics, maintenance processes, people, economical and cost, regulatory and others. Based on the findings, the building characteristics-related shows the highest severity index followed by maintenance process-related issues. The results demonstrates that the local authorities need to focus more on their maintenance management practices to resolve the problems through continuous improvement.

## Research Objectives

The emergent complexity of the obligations by the local authority is demonstrating more challenges for managers all over Malaysia (Majid et al., 2014). The local authority is the giant holders of the assets which means they are accountable to ensure that the facilities and assets are in the excellent condition. As the service provider, local authorities are accountable for managing and maintaining the public facilities to fulfil and satisfy the general needs. Additionally, to achieve sustainable and cost-effective maintenance, the local authorities must be able to implement the best practices of maintenance management (Mkilania, 2016). In the present context of sustainability, maintenance management is very crucial to ensure the asset and facilities able to serve its intended purposes (Chiang et al., 2016). Many organisations are confronting various problems in their maintenance management. Consequently, the objective of this paper is to empirically examine the leading barriers faced by local authorities in maintenance management and before rank them for effective maintenance approaches. The discoveries will be greatly valuable for the maintenance department of the local authority in implementing effective maintenance management by improving the understanding of its practices and value.

## Methodology

The literature review and questionnaire survey were adopted in the study to achieve the research objective. Firstly, the barriers were identified through the extensive literature review and classified into six related issues namely building characteristics, maintenance processes, people, economical and cost, regulatory and others. All barriers were included as the variables and examined through the dissemination of the questionnaire. The questionnaire survey was conducted involving 149 local authorities in Malaysia. The respondents required to answers two sections; demographic background and barriers impacting the maintenance cost faced by the local authorities. The respondents need to indicate the level of severity of the barriers during the execution of maintenance management from 1 (Not Severe at all) to 5 (Very Severe). The data collected were analysed utilizing frequency, mean scores and severity index. Severity Index's formula is used to rank the barriers during the maintenance implementation based on severity level indicated by the respondents. Notably, the ranking allows the researcher to rank the highest potential barriers based on its severity level (Marzouk and El-Rasas, 2014).

Severity Index (S.I) (%) =  $\sum a (n/N) * 100/5$





Where  $a$  = constant weight given to the responses (ranges from 1 to 5),  $n$  = frequency of responses,  $N$  = total number of responses.

## Results

The response rate of 51.7% was recorded for the questionnaire survey. Majority of the respondents are working in the tactical level with 51.9% which demonstrates they are very relevant and appropriate as they work closely in the maintenance management, followed by strategic level with 26% and operational level with 22.1%. From the analysis, the barriers faced by the maintenance department resulting in the highest mean score of 4.22 and the lowest mean score of 3.38. There are two barriers with mean of very critical ( $M > 4.20$ ) which are building age and building finishes and materials (both 4.22). Furthermore, the barriers were ranked to show the most severe barriers impacting the maintenance cost. Building age (84.74%) and building finishes and materials (84.47%) ranked top as per agreed by most researchers in the same field. Vandalism ranked third with 82.63% followed by insufficient funds to support the maintenance activities and budget constraint (82.11%), lack of experts's involvement in developing maintenance plan (78.95%), inadequate training and skills development (78.16%), building element and services (77.89%), lack of clear policies, standards and guidelines (77.64%), undefined maintenance goals (76.58%) and lack of maintenance culture (76.05%).

## Findings

Analysis and findings have shown that most of the barriers are from the building characteristics-related issues and maintenance process-related matters. This indicates that these barriers have triggered the unsuccessful maintenance management within the local authorities organisation. The barriers able to be controlled through the motivation from the maintenance department which wants to minimize the problems and reduce the impacts on maintenance cost (Djurović et al., 2015). The organisation must address these barriers essentially to attain positive effect on maintenance management on the cost and quality performance (Mansour Ghazi, 2016). Moreover, these results will benefit the local authority in formulating maintenance strategies integrated with continuous improvement as the solution towards successful maintenance management.

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