

BUILDING MAINTENANCE POLICY FOR OFFICE HIGH RISE BUILDINGS IN MALAYSIA: A PRELIMINARY STUDY IN KLANG VALLEY

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ABSTRACT

Large high rise building is relatively complicated in maintenance. The value of buildings depends on the quality, safety and service of the maintenance policy standard provided and implemented in them. Building maintenance policy standard involves obtaining maximum benefit from the investment made on the maintenance activities. This paper presents the preliminary finding of a study on the building maintenance policy standard of selected large high rise buildings in Klang Valley, Malaysia. Seven office high rise buildings were investigated. Information on maintenance policy, including the type of maintenance conducted, the existence policy and budget, is collected through unstructured interviews. Maintenance in buildings in Malaysia is on the increase regardless of size, type, location, and ownership. The current maintenance policy procedures in Malaysia are however based on house rule and contract agreement. The weaknesses in the current procedures are the primary problems because they do not explicitly link maintenance needs with building performance with respect to the building users. The building users measure the performance of a building with various criteria. The condition of a building is just one of those criteria. This research establishes the need for a building maintenance policy that is based on the concept of building's value in the effort to lead towards the optimization of building maintenance system. Maintenance policy standard that is value based allows users to be proactively put at the centre of maintenance management during decision making processes and takes into consideration both the objective and subjective requirements of users. The paper concludes that a clear maintenance policy does not exist yet in the maintenance of high rise buildings.

Keywords: maintenance policy, high rise building.

INTRODUCTION

The purpose of this paper is to look at the implementation of a building maintenance policy in maintenance management of buildings in Malaysia. This research aims to improve the value of buildings depends on the quality, safety and service of the maintenance practice in office high rise buildings through a proactive maintenance management system that is based on the concept of building policy standard. Even though this paper serves as a general idea of current study, it intends to establish the rationalization for further research towards the development of a building maintenance policy standard in Malaysia. The proper maintenance of buildings is considered to be basic element of ensuring high-quality service for the commercial building which is relatively complicated in maintenance management. Maintenance could be defined as the preservation of a building so that it can serve its intended purpose (Arditi & Nawakorawit, 1999). British Standard 8210 defined maintenance as the combination of all technical and administrative action planned to keep an item in, or restore it to, a state in which it can execute its obligatory purpose. The earlier edition of the British Standard, BS 3811: 1964, defined maintenance as a combination of any actions carried out to retain an item, or restore it to, an acceptable condition. Wordsworth (2001) interpreted the action affirmed in the standard as the initiation, organization,

and implementation of series of works. Maintenance management refers to how well a building is maintained.

British Standard 3811: 1964 defined maintenance policy as an approach contained by which maintenance decisions are made. According to British Standard BS8210: 1986 Section 2, a maintenance policy should ensure that value for money expended is obtained, in addition to protecting both the asset value and the resource value of the buildings concerned and the building owner against breaches of statutory and legal obligations. It is important to have a well-developed building maintenance management to guarantee the building always in high-quality circumstance. The building maintenance policy is very significant to building owner, tenants, customers, users and maintenance professionals in order to ensure that they are in safety zone all the time and get the benefits. They also need high level of services and awareness since their expectation is generally high. According to Chan *et al* (2001), maintenance management operations in high rise building are more complicated, which leads to advanced maintenance policy. There is a connection between improving maintenance effectiveness and the maintenance policy implementation, the top management constantly requests to recognize further on the efficiency of maintenance performance. Chan *et al* (2001) discover that maintenance services are not obvious and are always unseen by the management. Moreover, there are numerous criticisms, especially, incompetence and below standard of building maintenance is closely related to the maintenance policy and limited financial resources (Hui, 2005).

Coetzee (1999) observes that building maintenance is an operational series to establish maintenance policy and its objectives also providing maintenance policy and maintenance resources. Lee and Scott (2008) identify maintenance policy and strategy, strategic management, facility management and performance management as the four main aspects influencing the management of building maintenance operation processes. It also controls progress of work and monitoring budget expenditure. Madu (2000) found that lack of coordination and implementation of building maintenance goals and contradiction of maintenance policy to organizational direction can cause common problems and deficiencies in the building. Constrain of budget in operational level seems to be the ordinary insufficiency in building maintenance (El-Haram and Horner, 2002; Tse, 2002; Shen, 1997). For the building users, building policy is one of factors for the requirement of maintenance management in order to contribute to business (Amaratunga *et al.*, 2000). According to Lee, H. *et al* (2008), building policy implementation can be an indicator of safety and effectiveness aspect. Facility effectiveness, cleanliness standard, indoor air quality, energy efficiency, lighting standard, thermal comfort, safety and information technology are several factors related to building policy. There is correlation between maintenance management and maintenance policy implementation which can be used as indicator of improvement on building value.

INVESTIGATION METHOD

This study attempts to provide a perspective on the maintenance policy practiced in building maintenance management of randomly selected seven office high rise buildings in Klang Valley, Malaysia. The buildings are Telecom Tower, Maybank Square, Maybank Tower, Petronas Twin Tower, Putra World Trade Centre, Vista Tower and Dayabumi Complex. Information on maintenance policy, including the type of existence policy conducted and its originality is collected through unstructured interviews to building owner representatives, maintenance personnel and outsources. The study consists of two steps. First, to determine the availability of ground rules, and documentation including operation and maintenance manual, maintenance program, maintenance checklist, and monthly maintenance report. Second, to check the practice of annual budget for planned and unplanned maintenance, building services audit as well as space audit.

The interview is based on the following questions:

- i. How buildings were managed?
- ii. Whether or not building maintenance policy is provided in practicing building maintenance operational processes?
- iii. Where is the originality of building maintenance policy?
- iv. Whether building maintenance policy is standardizing?
- v. Whether the record management is systematic?

- vi. Whether the budget is sufficient?
- vii. Whether the maintenance job is conducted in house or outsourced?
- viii. Whether the building maintenance policy complies with statutory requirement?
- ix. Whether they practice the planned and unplanned maintenance?

Telecom Tower

Menara Telekom, means Telecom Tower (also known as Menara TM), is the headquarters of Telekom Malaysia. The 310m (1,017ft) tower has 55 floors, and is shaped to represent a sprouting "bamboo shoot". It is located along the Federal Highway, Sprint Expressway and Jalan Pantai Baru. It was designed by Hijjas Kasturi Associates and was constructed between 1998 and 2001 by PECD Berhad. The state-of-the-art building is rated as a six-star intelligent building by Kuala Lumpur City Hall, which provides infrastructure for multimedia services with high speed connectivity and features an energy-efficient facilities management system. Menara Telekom is equipped with an Integrated Building Management System (IBMS) concept created by Telekom Malaysia's research and development division to provide a productive and cost-effective environment. The IBMS has the ability to integrate 11 key mechanical and engineering sub-systems within the tower - ranging from the air-conditioning and ventilation system, to the lighting control system, and the security management and lift and escalator systems.



Putra World Trade Centre

Putra World Trade Centre (PWTC) was the main convention and exhibition centre in Kuala Lumpur until the construction of PICC Putrajaya. Sprawling over 1.7 million square feet with 253,000 sq feet of exhibition space, PWTC is known for its high levels of personal service and a flexible approach to event management, making it popular with event organisers and meeting planners alike. This 42 storey exhibition centre cum UMNO headquarters combines the best of modern architecture with traditional Malay culture. PWTC has been a venue to a great variety of events ranging from world class conventions, exhibitions, concerts, and corporate functions. Event organisers have more freedom in determining the overall layout of the event via the use of automobile ramps and cargo elevators that swiftly expedite the movement of large and heavy objects.



Petronas Twin Towers

The Petronas Twin Towers were the tallest buildings in the world until Taipei 101, as measured to the top of their structural components (spires, but not antennas), took over the record. Spires are considered integral parts of the architectural design of buildings, to which changes would substantially change the appearance and design of the building, whereas antennas may be added or removed without such consequences. The Petronas Twin Towers remain the tallest twin buildings in the world.



Dataran Maybank

Dataran Maybank consists of three tower blocks, with two tower blocks, each comprising 20 floors and the third tower block comprising 22 floors. Each tower stands independently, but is architecturally planned to adhere to the concept of 'family unity' within the Maybank Group. The design layout of the three towers is enclosed within a circle and shared a common podium at the base of each tower. On the podium roof top an 'eco-friendly garden' square reinforces the unity symbolism of the Maybank Group. The facilities such as food court, retail outlets, surau, crèche and multipurpose hall are located and shared among the three within the podium. The towers are fully air-conditioned and ample seating space is available at the customer service areas.

The Head Office of Mayban Finance and Mayban Assurance occupy each of the 20-floor towers, named *Mayban Finance Tower* and *Mayban Assurance Tower* respectively, while the 22-floor tower is occupied by Mayban Life and is named *MaybanLife Tower*.

Dataran Maybank adopted a concept of sharing lobby and a 'centralized airconditioning and electrical system'. The control room, major components of electrical and airconditioning system were centralised in *MaybanLife Tower*. The major airconditioning systems include cooling tower and chillers. The major electrical system includes the HT room, LV room and genset.



Maybank Tower

Maybank Tower (Menara Maybank) is used as a commercial office building located at Jalan Tun Perak, Pudu, Kuala Lumpur. The construction of 50 floors of Maybank Tower commenced in 1984 on Court Hill, over the site of a colonial era Sessions Court building, and was completed in 1988. The tower with height 243.54 m (799.0 ft) remains a prominent part of the city's skyline. The floor plan of the tower consists of two square-based blocks that interlock each other at one of their corners. Each of the two block features a roof and lower base that slant at a direction opposite its other block, while the mid-section stands in a perpendicular angle. The main access points of the tower are at the two corners of the structure that feature a space formed from the combination of the structure's two blocks, covered by tiered triangular roofs.



Vista Tower

Vista Tower (formerly **Empire Tower**) is used as commercial office building which is part of a world class integrated development known as the inter mark. Prominently it is located on Jalan Tun Razak in Kuala Lumpur city centre. The construction of 62 floors of Vista Tower commenced in 1991 and was completed in 1994. The tower with height 238.1 m (781 ft) and 11,000 sq ft (1,000 m²) of floor area remains as a slim tall building.



Dayabumi Complex

Dayabumi Complex is used as a commercial office building is a major landmark in Kuala Lumpur. The construction of 35 floors of Dayabumi Complex commenced in 1982 and was completed in 1984. The tower with height 157 m (515 ft) and 150,682 m² (1,621,930 sq ft) floor area one of the earliest skyscrapers in the city. It is located near the National Mosque, the Old Kuala Lumpur Railway Station and the Federal House at Jalan Sultan Hishamuddin. It was designed in a modern Islamic style. The facade of the tower is adorned with patterns of eight-pointed stars, and Islamic arches at the top and bottom of the tower.



RESULTS AND DISCUSSION

It was found comprehensive ground rule, operation and maintenance manual, maintenance checklist, maintenance schedule, and monthly maintenance report were available in all buildings. It was also found annual budget for unplanned maintenance and long-term planning for planned maintenance, were practiced at all buildings. Finally, it was found all buildings did not conduct periodic space audit and building services audit.

Most of building maintenance management did not implement the four factors of building maintenance management operation processes in proper manner. It was evident that building maintenance policy standard unavailable in all buildings but strategic management, facilities management and performance management were obviously available in the buildings. However, maintenance policy is mainly based on contract agreement for out sourced contractors while house rules are implemented for building customers, tenants, users and maintenance personnel. It varies each other with different maintenance approaches and resources. Planned maintenance and unplanned maintenance are not practiced in proper way in most of the building maintenance organizations.

Maintenance seems to be implemented 'half cook' basis. In other word, planned and unplanned maintenance is not given a priority. They more concentrated on corrective maintenance rather than preventive maintenance. This can be inferred from the finding of this study that annual budget for unplanned maintenance and long-term planning for planned maintenance are not implemented in four buildings. This argument is supported by other findings that building audit, response time, down time, request for repairs and quality workmanship; the benchmarks for operational processes improvement were also not implemented. It was clear that there are two of the buildings did not conduct periodic space audit and building services audit in the operational level. A sound planned maintenance relies on comprehensive data collection through building audit.

It is recommended to follow the above discussions for further in-depth investigation by looking into the following objectives in maintenance activities:

- i. define and identify the basic terms in the building maintenance operation processes based on 'British Standard Definitions'; the crucial theories in building maintenance management are building maintenance definitions, categories of maintenance types, maintenance policy components, maintenance procedures, maintenance programming and scheduling.
- ii. develop the standard of building maintenance policy; Building maintenance policy is a guideline management framework which can be transformed in a written document and it must be standardized and implemented with all the related factors of building maintenance management operation processes in the buildings.
- iii. understand the objective and justification of planned maintenance and unplanned maintenance;
- iv. identify the list of the priority for planned maintenance and unplanned maintenance in the operation;
- v. identify the categories and problems of maintenance strategy challenges;
- vi. identify the categories of impacts on building maintenance operation processes due to facility management and strategic management;
- vii. improvement of maintenance operation processes through building performance management and building audit.

CONCLUDING REMARK

It is evident from the findings that the originality of building maintenance policy implemented varies from one building to another. This implies the quality of maintenance is not consistent. There is a need to develop a building maintenance standard on maintenance management to be enforced legally to ensure comfort and safety to public. In view of the perspective on the maintenance policy practiced in building maintenance management consideration and the maintenance requirements in office high rise buildings, maintenance policy and strategy, strategic management, facility management and performance management as the four key aspects which significant fundamental for management of building maintenance operation processes. Building maintenance policy is the main aspect that influences building maintenance operation processes radically. Moreover, maintenance strategic management and facility management are greatly influenced by the strategic directions from the top management. So, they can determine and value the cost and quality of the building operational processes improvement through performance management. Maintenance activities are no longer an individual activity but depend very much on the maintenance management strategic directions. It has more expectation from the building owner, maintenance professionals, tenants and occupants. The paper concludes that a clear maintenance policy does not exist yet in the maintenance of high rise buildings.

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