

Building Condition Assessment and Preventive Maintenance of the Old Shophouses in Raub, Pahang

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Abstract: The survival of any building is underpinned by regular maintenance. On the other hand, regular maintenance is critical to any building, whether it's heritage or non-heritage. There is crucial need to manage and ensuring the best maintenance of old shophouses. Therefore, maintenance has been identified as a key intervention in protecting old shophouses structure by prolonging a building lifespan. If there is no systematic and correct maintenance method, the old shophouses will deteriorate and will not be able to function as well. This study aims to identify the building maintenance and problems faced by old shophouses and to analyse the current preventive action on maintaining the old shophouses located in Raub, Pahang. Qualitative approach adopted for this research couple with the survey methodology for data gathering. In addition, data collection was obtained by observation and through interview with tenants of old shophouses. The study has found that the way to reduce defects of old shophouses and the impact of preventive maintenance are crucial. The results were examined by Building Condition Assessment (BCA) and it has provided a basis for the best maintenance plan for the old shophouses. Consequently, this study proposes a method to ensure high-quality of maintenance with regards to old shophouses conservation.

Keywords: Old shophouses, Building Condition Assessment (BCA), Maintenance, Conservation

1. Introduction

Old buildings particularly old shophouses act as an important component that contributes in shaping the identity of a town. A shophouse can be a two-storey townhouse with a ground floor shop to the street and upstairs living quarters. Most importantly, old shop houses represent historically significant features to the local communities especially the buildings uniqueness (Wan Ismail & Shamsuddin, 2005). According to Khalid & Mydin (2012) defects and damages to buildings is a

common phenomenon for buildings especially in tropical climate. Moreover, that is something detracts from perfection, while building damage can be seen when any structure, material, equipment and even building elements are not functioning properly.

1.1 Research Background

Maintenance of building is vital so as to sustain and preserve the building to its proper condition. Proper standards mean to sustain the maintenance of utilities and the value of the facility. The purpose of building maintenance is to retain the value of investment, keep the building in a good condition so as to give it full functionality and good appearance (Hassanain *et al.*, 2014). Maintaining an old shophouses are vital for local economic development especially within the tourism sector. Therefore, it is essential to make sure the quality or standard of the old shophouses continues to be emphasized. In addition, policies set by the relevant authorities in the employment and maintenance management also play an important role in providing guidance to the authorities in determining maintenance work.

1.2 Problem Statements

As the threat of modern development is currently unstoppable, it is crucial to take some potential measures to preserve the priceless historic environment of old shophouses and its features as pointed out by Wan Ismail & Shamsuddin (2005). The authors further highlighted that old shophouses essentially strengthening the identity of the town and could bring a pride for the nations and the country. Moreover, people awareness on preserving the old buildings are still lacking in this country (Ismail, 2005).

The viability of any building especially the old shophouses must be supported by regular maintenance. Regular maintenance is crucial to the survival of any building, whether it is a heritage building or a non- heritage building. Regular maintenance is that the most practical and economic variety of old shophouses. Old shophouses are considered as a national asset and special treatments are needed to ensure the cultural significance and the historic value of the building is preserved (Baharuddin *et al.*, 2014). There is crucial need to manage the critical factors and difficulties in order to preserve and ensuring the best maintenance concept for old shop houses. Moreover, there are crucial needs in order to preserve and ensuring the best maintenance approach for old shophouses.

1.3 Research Questions

- (i) What are the real issues and problems faced by old shophouses in Raub, Pahang?
- (ii) How the current preventive action works on maintaining old shophouses in Raub, Pahang?

1.4 Research Objectives

- (i) To identify the building maintenance issues faced by the old shophouses in Raub, Pahang.
- (ii) To analyze the current preventive action adopted by the owners of the selected buildings in maintaining their old shophouses in Raub town, Pahang.

1.5 Significance of the Study

Old shophouses is the continuity of the relationship with the past, which is very important because it represents the identity and culture of the people. Old shophouses reflecting the physical appearance of the past cultural and social identity and conservation of the properties are crucial for future generations to appreciate their distinctive history. The main goal of this research is to study the preservation of old shophouses in Jalan Tun Razak situated in the center of the Raub town and to analyse the preventive action in maintaining the unique historic properties. Consequently, modern buildings have replaced some of the old shophouses and some has been demolished including the

original facade. If there were no proper maintenance taken by the owners, the devaluation of the property price would be the potential impacts given the complexity of maintaining the old shophouses.

1.6 Scope of the Study

The scope of the study focuses on the respondents of the old shophouses along Jalan Tun Razak, in the heart of Raub town (Figure 1). The area is selected simply because of its' deeply immersed oriental culture and the town is visualised by its unique architectural heritage. Old shophouses in this street is one of the oldest groups of shophouses in Raub town. The multiple sources of data were derived based on the observation and interviews with the respondents in Raub town. The researcher managed to interviewed 5 shophouse owners and tenants in amid of Covid-19 pandemic in 2020.



Figure 1: View of Jalan Tun Razak in the centre of Raub town, Pahang

2. Literature Review

This section focuses on the fundamental of building conditions with the type of building defects, type and the importance of building maintenance. The related information in this chapter are recruited from various reliable sources including books, journal articles, internet and dissertations, conference, proceedings, reports and others secondary sources.

2.1 Building Condition Assessment

According to Yacob *et al.* (2016), building condition assessment is very important to support decision making and also important for building management to achieve the standard of service maintenance. Reliable and accurate awareness of the physical condition of the buildings would allow owners to develop appropriate strategies and action plans for maintenance, repair, replacements, refurbishment and investments (Dejaco *et al.*, 2017). In order to indicate the quality of the building, the assessed of the building must be rated (Ani *et al.*, 2014).

2.2 Condition Assessment Process

The condition assessment process is used to assess the actual condition of building components and services, and to determine the technical inspections required for maintenance of the building (Ani

et al., 2014). The objectives of the systems for monitoring the condition and performance of assets are as below:

- Identify assets that are underperforming
- Predict when the asset may not be able to provide the requires level of service
- Determine the cause of insufficient performance
- Determine what precautions need to be taken and when (maintenance, rehabilitation and renewal)
- Record asset failures in the use of advanced technology

According to Wahida *et al.* (2012), condition assessment is a process for predicting the maintenance strategies and repair purpose and intent for current building components, fittings and physical components. It is also useful for raking the amount of repair and the cost required. Ahluwalia (2008) pointed out that the four main steps involved in the condition assessment are as shown in Figure 2 below.

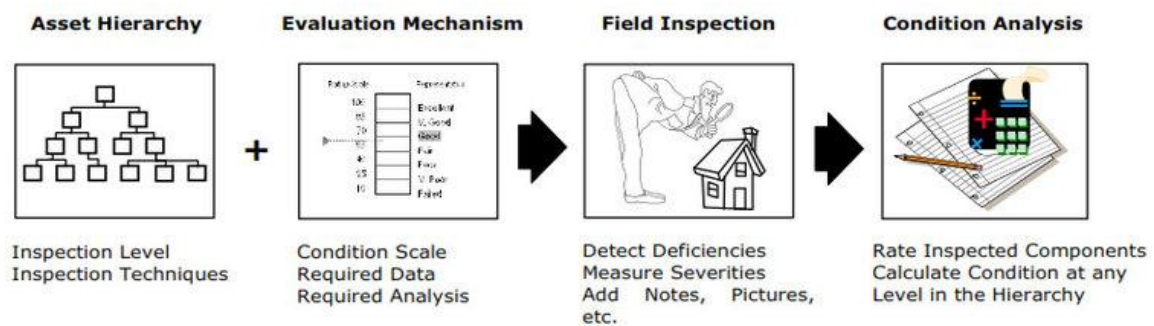


Figure 2: Main Steps in The Condition Assessment Process (Ahluwalia, 2008)

As an important step of condition assessment, the building must be hierarchically decomposed into its main components. The hierarchy is intended as a means for these components to be classified and cluster into different categories. The main advantage of the proposed hierarchy is to promote the process of revising the assessed components, to evaluate the efficiency of each department in retaining its components in a secure and satisfactory condition and to allow the company to coordinate the distribution of funds according to organisational priorities between different structures.

In the next step, the condition scale will be used as an evaluation mechanism. Data collected from scaling of conditions will be used as data and then will be analysed. The values of the condition indexes of every system include the means to compare the status of different components. For building components, the condition index usually ranges from 0 to 100, where 0 represents a severe (failure) condition and 100 represents a new condition.

The third phases include field inspection to identify defects and to assess the severity of the building’s materials and layout, fittings and physical components. The purpose of the inspection phase is to collect the required data for output assessment and estimation or evaluation of the situation. Inspection should be conducted routinely, specifically and as objectively as possible. To standardize the process, it should be developed checklists and deficiency lists.

Lastly, the inspection conditions will be evaluated and calculated based on the inspection level and asset hierarchy. Analyse the inspection data according to the type of evaluation method. Once the

condition of a component is calculated, that value can be used to calculate the condition at any level in the asset hierarchy.

2.4 Building Condition Assessment Ratings

The condition rating that follows building assessment is used to objectively determine the current condition of building. It is repeatable and can be accurately utilised to predict future conditions with a rating system that minimises subjective assessment (Abbott *et al.*, 2007). Table 1 shows the proposed five-point Lickert scale condition assessment that will be used for measuring buiding condition in this research.

Table 1: Building condition assessment rating (Abbott *et al.*, 2007)

Condition rating	Condition	Action needed
5	Very Good	Planned Preventive Maintenance
4	Good	Condition-based Maintenance
3	Fair	Repairs
2	Bad	Rehabilitation
1	Very bad	Replacement

2.5 Types of Old Shophouses Defects

The tropical climatic condition, such as in Malaysia is one of the problems that can significantly affect building damage (Wahab & Hamid, 2011). Building imperfections jumps out at either the new building or the old ones. Buildings defects are one of the main components of a building problem that needs attention on it (Bakri & Mydin, 2014). Table 2 shows types of defects that can be seen in old shophouses.

Table 2: Types of defects in old shophouses (Khalid & Mydin, 2012)

Types of Defects in Old Shophouses	Description
Walls and Partitions	The wall surface on the ground floor was found in a poor condition, with various areas damaged by flake of plasterwork.
Roof	The roofs condition on the old shophouses can be classified as poor condition when there are slipped and broken
Floors	Termite attack and timber decay are the most common defects can be seen on wooden floors on an old shophouses. Hence, it has categorized as poor condition.
Dampness	The dampness of the existing old shophouses is one of the most damaged failures that must be take care of. If there is any dampness in old shophouses, the value of the building might be affected.
Electricity	Electricity meter is located in front of the old shophouses. On the other hands, it can be seen that the electricity wire looks messy and will bring danger to the people.

2.6 Type of Maintenance for Building

Maintenance is defined in as the combination of technical and administrative actions to ensure that the items and elements of the building are in an acceptable standard in order to perform the function required (Kans M., 2008). The main purpose of carrying out maintenance work is to protect

the function, the value of the asset and its appearance (Rashid & Ahmad 2011). Maintenance of building can be classified as following:

(a) Planned Maintenance

Planned maintenance refers to situations in which repair or replacement take place without any particular defect having occurred (Lind & Muyingo 2012). The purpose of planned maintenance is to develop and sustain optimal equipment and process conditions. The purpose of planned maintenance is to develop and sustain optimal equipment and process conditions (Jasiulewics-Kaczmarek, 2016). Planned maintenance consists of preventive maintenance, corrective maintenance and condition-based maintenance as describe in Table 3.

Table 3: Types of Planned Maintenance
(Olanrewaju & Abdul-Aziz, 2014; Fielden & Jokilehto, 1993; Prajapati *et al.*, 2012)

Types of Maintenance	Description
Preventive maintenance	Preventive maintenance is a form of physical inspection of the equipment or machinery to prevent from being breakdown and to extend the service of the equipment or machinery. It is a type of maintenance that is carried out at a predetermined interval or in accordance with the prescribed criteria in order to reduce the risk of failure and the deterioration of the functionality of the item.
Corrective maintenance	Corrective maintenance is the maintenance policies by which maintenance actions such as repairs or replacements are carried out on a machine to maintain it to its correct service after it has was unable. It covers all activities, including the replacement, repair and renovation of a building components that has failed to perform its required function or is unable to perform its services.
Condition-based maintenance	Condition-based maintenance can be described as a combination of maintenance processes and capabilities extracted from a real-time assessment of the condition of the system obtained from embedded sensors or external monitoring and measurements using portable equipment. The objective of condition-based maintenance is to perform maintenance only on the real evidence of need.

(b) Unplanned Maintenance

Unplanned maintenance is the opposite of direct maintenance. There is no plan or forethought whatsoever to this type of maintenance (Olanrewaju & Abdul-Aziz, 2014). Moreover, it is a type of maintenance that does not carry predetermined plan. Unplanned maintenance helps to solve the problems that have already occurred (Table 4). It consists of all unscheduled actions that result from the failure of the product or system. Normally, this type of maintenance focus on restoring the failure of a product or system to a specified condition where it can function properly. For example, the activities involved in unplanned maintenance include restoring electricity or repairing broken windows.

Table 4: Type of Unplanned Maintenance
(Olanrewaju & Abdul-Aziz, 2014)

Types of Maintenance	Description
Emergency maintenance	These may be day-to-day actions arising from accidents as will occur. For example, a drainage pipe breach will entail an emergency repair that, if left unattended could lead to a significant lack of water or a breach in a building that could to an outbreak if there is no immediate action were taken to repair it.

2.7 Factors Affecting Old Shophouses Maintenance Cost

It is highly desirable, but not feasible to produce buildings that are maintenance free (El-Haram *et al.*, 2002). The building must be maintained to an acceptable standard in order to ensure that the structure is safe for use. Also, to solve the problems of rising building maintenance costs, the building management team should adapt several strategies by reducing or minimizing the number of maintenance activities (Ali *et al.*, 2010). On the other hand, the cost of building maintenance can increase and decrease due to different factors.

(a) Building Characteristics

Building characteristics such as height of building, type of structure, location, size, function, age, finishes, services, construction materials and method of construction may have an effect on maintenance costs (El-Haram & Horner., 2002). When the age of the building increases, the cost of maintenance will also increase accordingly. It is because every building component also have their expected life.

(b) Availability of Funding

The budget allocation is the most direct constraint from the design point of view (Ali., 2009). In particular, sufficient resources are needed to fund maintenance activities in order to provide effective maintenance actions and to retain the required standard of building functions (Lee & Scott, 2009).

(c) Behaviour and Attitudes of Users

Vandalism by users is often discussed as a factor that affects the cost of maintenance (Ali, 2009). Bad attitudes of building users are often misused by building equipment and services and vandalism by building users will cause damage and defects on building equipment or components.

(d) Climatic and Environmental Factors

Some building materials will have chemical reactions as the climate changes. These relate to the effect of soil types, climatic conditions and vegetation on the maintenance of buildings (Okosun & Olagunju., 2017). For example, acid rain will speed up the deterioration of some building materials.

(e) The Importance of Maintenance

English Heritage as cited by Foster and Brit (2009) recommended that the best way to ensure the continued maintenance of building is through regular maintenance. Regular maintenance is crucial to the survival of any building, regardless of whether it was historic or not (Idrus *et al.*, 2010). In fact, maintenance also should ensure the safety of the building or of an individual. On the other hand, the repair of buildings shall be carried out in order to obtain the following:

- To increase workplace of productivity
- To retain value of investment
- To ensure functionality of buildings
- To optimize the useful life of the facilities
- To meet appropriate requirements for safety and health purposes
- To enhance the safety of the manpower
- To minimize the total production cost
- To reduce the level of disruption of output by reducing breakdowns

3. Research Methodology

The research methodology applied for this research including the data collection process and systematic procedures used to address the objectives of the study. The discussion in this section will highlights the research approaches, data collection and data analysis in conducting the study.

3.1 Research Approach

Research approach in nature is divided into four approaches which is quantitative, qualitative, pragmatic approach (mixed method) and lastly advocacy/participatory approach. However, for the purpose of this study, qualitative method approach were adopted to achieve the objectives of study. This research started with a preliminary study using the survey method to analyse in detail the research questions and problems that enabled the achievement of the research objectives (Cresswell, 2013). The first stage of the preliminary study began with a site survey, which has taken place in the small town of Raub. The site survey contains a visual observation and photography documentation of the old shophouses. A literature review is a process of identifying, evaluating and synthesizing existing work created by researchers, scholars and practitioners in the field related to the issues to be studied (Easterby-Smith *et al.*, 2004). It helps to sharpen the focus of research by understanding research gaps through limitations and the research areas that need to be concentrated.

3.2 Data Collection

In order to obtain information needed in this research, the researcher had interviewed 5 respondents, including 4 owners and 1 tenant (Table 6). Interview is an essential source for case studies and involve human affairs perceptions and values (Yin & Robert, 1989). Interview are also part of the interpretative philosophy and phenomenological approach (Mason, 2002). Table 5 shows the list of respondents participated in the interview session held in their premises.

Table 5: List of respondents participated in the interview

Code	Respondents Role	Name of the Premise	Working Experience
R1	Owner	CHJ Enterprise Sdn.Bhd	20 Years
R2	Owner	Syarikat Chin Fatt	25 Years
R3	Tenant	Zarin Bazir Enterprise	8 Years
R4	Owner	Kedai Basikal Ming Ming	10 Years
R5	Owner	Kedai Kopi Tong Nam Bee	17 Years

Semi-structured interviews were conducted to ensure the research questions has been answered accordingly (Silverman & David., 2000). In this regards, the researcher had asked the fundamental questions to the respondents "*How the preventive action has been undertaken on maintaining the old shophouses in Raub?*".

3.3 Data Analysis

Data analysis in qualitative research can be developed using various ways including recordings, transcripts and notes. In this study, audio recording was used during the interviews. Throughout the interviews, face-to-face interview were conducted with the respondents of selected shophouses using semi-structured interview questions.

4. Results and Discussion

This section discusses the findings of interview questions raised for the entire research. It tries to analyse the respondents' opinions on the subject matter and the issues highlighted in this research. The relevant methods are used for data collection and interview has been identified as the most appropriate method in achieving the research goals.

4.1 Causes of Old Shophouses Defects

According to the responses, condition of most old shophouses began to decline because they were activated due to external factors such as weather or internal factors such as insufficient maintenance along with wear and tear. Moreover, physical condition and working environment change over time. There is a complicated interrelationship between the various structural materials and structures which influences on the design of the old shophouses as a whole. In the case of the old shophouses or its components or part of the system installed, it can also affect the overall condition of the old shophouses

(a) Type of Structure

Building structure is another factor that always contribute causes of old shophouses defect. Old shophouses that switched the usage and spaces should acknowledged the effects of the new use on the existing structure. One of the respondents has mentioned that when old shophouses have been turned into another tenant, the need to add air-conditioning systems to fulfil new tenant requirement seems necessary. This is not only affecting the appearance of the buildings but especially when the ducts are in full view on the ceiling. In this phenomenon, the structures require financial support for review, renovation, restoration, reconstruction and replacement. To ensure the safety of the occupants, the structural integrity of the building must be inspected and maintained from time to time (Chan Kim Fu, personal communication, September 25 2020).

(b) Climatic Condition

It is important to consider Malaysia's climatic conditions and the effect on building materials. As several other tropical countries, Malaysia has heavy rainfall and warm sunshine all around year. The safety and health of building users are affected by the failure of building components. The design of the building will control the connection between the building element and the whole building. CHJ Enterprise owner's has stated that the sunshade on the outside has a multi-function to provide shade to prevent rainwater from splashing straight to the windows. If it is damaged or broken, it may cause excessive sunlight in the space and also affects the comfort of the owner or tenant. The same broken sunshade during the rain will cause rainwater to spill within the windows or create dampness in the walls. Water leakage through walls can cause corrosion of steel reinforcement within concrete walls, which can affect the strength of the walls (Ong Eng Meng, personal communication, September 25, 2020).

(c) Building Age

An environmental assessment of the performance of a building or any other properly spans the entire life cycle. The age of a building is closely related to the cost of maintenance. Therefore, as the age of the building increases, maintenance costs increase. Building damaged by age can suffer physical deterioration, leading to functional and external obsolescence, which then affects the functionality of a building. Some maintenance works, such as painting works, replacing of new roof

tiles and other works, are important to ensure the sustainability of building as the age of a building increases. Therefore, long-term planning and maintenance management are quite important. For example, using the life cycle of existing building of Syarikat Chin Fatt as an operational stage, maintenance and renovation costs which rise with the age of the building, but there are no regular budgets for maintenance and renovation that can be used as a reference (Kenny Liew Poh Fa, personal communication, September 25, 2020).

(d) Failure Maintenance of Building

In order to avoid old shophouses defects, building maintenance plays a major role through an accurate programme. Buildings that neglect building maintenance may fall into several defects, which may cause structural failures. To maintain a building's general structural stability and life. It is necessary to regularly inspect not only the main structural components such as foundations, walls and roofs, but also other common building problems. It is important that the buildings continue to ensure that they can operate safely efficiently and that the provision of various services can be well managed. At the same time, the deterioration of buildings due to lack of maintenance may contribute to future financial pressures and other concerns about the old shophouses. Therefore, the maintenance of buildings is critical to the overall management of resources (Tong Nam Bee, personal communication, October 6, 2020).

4.2 Precautions to Reduce Defects of Old Shophouses

All shophouse owners are responsible for ensuring that their old shophouses are kept safe for workers or tenants and any additions and alterations are in compliance with the planning and building regulations of the day. The owner of the old shophouses also responsible for the future generations to maintain its structure, materials and heritage integrity. In most cases, the old shophouses are built with different materials from the current buildings, using different methods, technology and developing building characteristics and performances (Zarin, personal communication, October 6, 2020).

(a) Day to Day Care

Day to day care is the first line of defence to prevent deterioration. An old shophouse that are in use generally experiencing wear and tear on a daily basis. Old shophouses that can be damaged by weather, pollution, improper maintenance and so on. Focused and attentive care can prevent long-term deterioration, saving time and money in the long run. Mr. Kenny Liew Poh Fa said that birds' droppings may look harmless but are actually acidic in nature and it will be damaged to the paint and plasterwork. Such damaged can be avoided with regular maintenance. Old shophouses owner should do acquaint with proper maintenance methods and material for property. Keep the old shophouses clean and make sure the surface finishes are in good condition to ensure they are protected from the elements (Kenny Liew Poh Fa, personal communication, September 25 2020).

(b) Preventive Maintenance

Preventive maintenance is an important part of any form of asset management, leading to improve in the lifespan of facilities, a reduction in unplanned downtime and eventually, a decrease in the expense of long-term maintenance. Preventive maintenance is usually the object being inspected on a regular basis and the object being serviced or replaced when a particular condition is observed. This can include oiling door and window hardware, clearing drains and gutters and having wiring and plumbing checked. Moreover, the owner should repaint the exterior walls every few years to keep appearance of the old shophouses fresh, as long as the paint type is suitable for the old shophouses and its materials (Chan Kim Fu, personal communication, September 25 2020).

(c) Conservation and Restoration

Conservation refers to preserving historical buildings and protecting their integrity and significance, while the purpose of restoration is to restore damaged buildings to their former glory. The old shophouse is not about stopping time, but about managing the inevitable changes in the architectural experience. It is necessary to understand the value of the old shophouse and conduct an in-dept study or its history, architectural and materials. Conservation is an active rather than passive process and the greatest conservation efforts focus on the future of the building. Restoration is a broad term which refers to the repair, reinstatement and reconstruction of historic buildings to recover key attributes that have been destroyed. A good restoration project can restore dilapidated functions through careful restoration or sensitive modification, while celebrating its own features, value and characteristics (Ong Eng Meng, personal communication, October 6, 2020).

(d) Repairs

The main purpose of the repairs is to preserve the architectural form of the old shophouses so that all services can start running and the operation of the old shophouses can be restored easily. Repair does not pretend to enhance the old shophouses' structural strength and even with the best maintenance regime, old shophouses suffer damage over time. For example, cracks in walls. Cracks are a sign of compression of structural and non-structural components. These defects are caused by the separation of joints, the generation of cracks, shearing and the separation of components made of different materials. Again, inspecting old shophouse regularly will help to spot problems early on and address issues as soon as possible. But do not rush repairs, careful planning of repairs can help simplify the on-site workflow. This is an old shophouses worth setting aside some budget for repairs. Damage to the old shophouses may happen unexpectedly, so funds can be allocated at any time (Zarin, personal communication, October 6, 2020).

4.3 Impact of Preventive Maintenance

Failure of equipment and emergency maintenance can be very costly nowadays. If maintenance and downtime of facilities are important aspects of the management of an old shophouse, preventive maintenance must be included in the maintenance strategies. It is related with predictive maintenance, since it is built to prevent unplanned downtime and to prevent damage to critical components beyond repair. Moreover, it is requiring a series of maintenance tasks to ensure that no hidden defects or crack will cause equipment failures. All equipment in an old shophouse must be maintained regularly to keep it in optimum operational conditions.

(a) Efficiency

Maintenance is the largest fixed expense in an old shophouse. In overall business performance, maintenance productivity of the workers has a significant impact on that expense. On the other hand, increase in equipment efficiency is one of the most significant impact of preventive maintenance. To accomplish the same amount of work, inefficient maintenance operations would spend exponentially more on maintenance labour than the most successful operations. Scheduling regular maintenance such as general checks or adjustment in new components will keep the machinery or equipment running smoothly. As maximum productivity is achieved, the business will benefit from improved in fuel and energy savings. This will ensure more money in wallet because the old equipment stays working like the same day it was installed.

(b) Cost Reduction

Sustaining the efficiency of an old shophouse over the long term is key to profitability. Well-maintained old shophouses contribute to organizational productivity, ensuring the required equipment continues to operate and increase net profits by ensuring its operating performance. A preventive maintenance eliminates most issues before they emerge, which results in long term reliability of equipment at a significantly reduced price. This cost reduction happens when attempts will be placed on avoid equipment failure rather than to adapt to critical emergencies. Cost savings from not having to endure expensive spur of time maintenance enable to adequately fund routine service repairs. In reality, preventive maintenance procedures save time, which can decrease expensive operation in a business.

(c) Reliability

In the execution of a preventive maintenance strategy, old shophouses also experience an improvement in reliability. A preventive maintenance strategy helps any old shophouses to perform optimum without skipping a beat. If any equipment has to endure major unexpected repairs because general maintenance was ignored, an old shophouse reputation reliability will be hit. Scheduled and maintenance plans will go a long way and benefit from a variety of ways, such as: reducing equipment wear, repairing and replacing parts. Save money and extending the overall life of equipment.

4.4 Assessing the Condition of Old Shophouses

An old shophouse defect is one of the major building issues that requires considerable attention. We have to seek determination immediately if a building does not work as it should. In current old shophouse's structure, defects and deterioration are common issues. Different buildings or structures create various forms of defects which involve different levels and quality types that depend on the building functions, construction and maintenance structures as well as material used.

5. Conclusion

The performance of a building represents the ability of the building, so the condition assessment is needed because it must be the basis for performance assessment. Meanwhile, condition assessment is one of the main functions of asset management. In addition, there is a positive relationship between building conditions and user performance. By assessing the condition of the old shophouses, it is easier to make maintenance plans and strategic decisions. The performance of the old shophouses needs to be continuously evaluated to ensure sustainability. Conventional methods of managing maintenance services are being questioned. Currently, the purpose of maintenance is to extend the service life of the building without having to correlate the performance of the building with the performance of the old shophouses with the user's experience and activities. In case of critical value, maintenance must be prepared positively, carefully, coordinated and proactively handled. In order to provide better services, it is essential to change the way of old shophouses and their maintenance are managed. The management of old shophouses needs to be considered as an investment rather than an object of individual pride.

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