

## Analysis of Critical Factors and Difficulties in Maintaining Historical Building - A Current Implementation

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**Abstract.** Historic buildings are one of the highly valuable assets to the country especially in a way that shows its history for the next generation instead of making a profit through the excellent promotion in tourism purpose. The Malaysian Government has allocated a huge amount of financial support in order to conserve and preserve the historic building. However, the majority of the historic building is still in 'poor' condition without any improvement regarding to the pro-active approach. This paper presents part of this research which investigates the key components consisting of issues and difficulties in terms of critical factors. The findings reveal that there are several difficulties in maintaining a historic building. The identification of key components will facilitate the stakeholders to focus on the variable and resources to make the success in maintaining and managing the historic building.

### 1 Introduction

Historic building is actually bringing a significant value to the country especially in a way that shows their history for the next generation instead of making a profit through the excellent promotion in tourism purpose. In the context of Malaysia, the historic building based on Kuala Lumpur City Council (1996) as cited in Aksah [1], shows that the historic building can be classified into six (6) categories which are shop houses, commercial building, religious building, private houses, palaces and institutional buildings. According to Hamirudin and Ghafar [2] most of heritage buildings are enriched with architectural and historic significance by several architecture styles inclusive of traditional Malay architecture, the Portuguese architecture, the Dutch architecture and the British architectures which consist of Moorish, Tudor, Neo-Classical and Neo-Gothic styles. The majority of the buildings are worthy to be listed or gazetted as a Heritage Building under National Heritage Act 2005 [2]. Meanwhile, Bahardin [3] found that there were many buildings that built before World War II (Pre-War building) in Kuala Lumpur. She added the types of the building consist of shop houses and single building which have much quality and uniqueness in architecture styles. Therefore, Idid [4] in his study emphasize that almost 20,787 units of historical building built between 1800 until 1948 in Malaysia which are classified as a 'Pre-War building'. Since historic assets are identified as a National Heritage, it should be undertaken properly either it is tangible and intangible heritage. With regards to this act, the historic building which is listed under National Heritage Building will be governed by Act

645, National Heritage Act, 2005. The provision of this Act will be aid the Ministry in order to ensure the continuous preservation of the building will be successfully done by authority. According to this act, the building has not exceeding 100 years also can be classified into National Heritage act as long as it will bring a cultural significance to the country. The existence of this act can be minimizing the number of building demolished by other parties and more effective [3]. According to Fielden [5], the term of historic building can be simplify as, ‘an historic building is one that gives us a sense of wonder and makes us want to know more about people and culture that produced it’. He added, it has architectural, aesthetic, historic, documentary, archaeological, economic, social and even political and spiritual or symbolic values; but the first impact is always emotional, for it is a symbol of our cultural identity and continuity as a part of our heritage. If it has survived the hazards of 100 years of usefulness, it has a good claim to being called historic’.

It is important to conserve, preserve and maintain the building since it will bring a valuable values and sense of identity in this country. Nevertheless, some of the historic building in Malaysia still in ‘poor’ condition which is at a risk from defects and not properly cared [6]. The high cost of repair and maintenance of the historic building give some restriction and challenging in order to ensure the historic building is in a good condition. The need for regular maintenance is vital for any buildings for both historic and non-historic building in order to prolong the building life and function [7]. Meanwhile, Kerr [8] also emphasized that ‘of all the processes of conserving heritage building, maintenance is the single most important processes’. Based on British Standard, BS: 3811; ‘Maintenance is work undertaken in order to keep or restore every facility, for example every part of a site, building and contents, to an acceptable standard’. The sensitiveness of each element in the historic building elements needs a proper maintenance management approach to be practice as to ensure the originality of the building.

## 2 The Importance of Maintenance for Historic Building

The significance of the building maintenance for the historic building has been established in almost documentation and legislation whether at international and Malaysia level. It is a very importance process since through the appropriate maintenance process; it may prolong the building life and avoid damages on the building elements and components especially for certain elements which have been gazette under National Heritage Act. According to Kerr [8] stated that, maintenance for historic building is a very significance process and ‘as the most important conservation process and whether the building is architectural, mechanical or botanical, preventive is better than cure’. With regards on that, the implementation of the maintenance process will reduce the cost of repair and any side effects especially for the historic building. The best way to maintain the historic building is by using pro active method or preventive method which gives more benefit rather than condition based approach which repair the components or element based on complaint. It strongly agreed by Brereton [9] as cited in Idrus et-al [10], which pointed out that ‘unnecessary replacement of historic building, no matter how carefully the work is done, will have an adverse effect on the quality of the historic building and will seriously diminish its authenticity and reduce its value as a sources of historical information’. It is clear that most of the historic building has a cultural significance which must be retained maximally. In addition, the historic buildings also have a significance attraction to the foreign tourist. Most of the foreign tourists are attracted to these building due to the cultural uniqueness coupled with high historical and architectural value [10]. With considering a huge revenues being generated from foreign tourist visit to Malaysia combined that these heritage building provide a sense of identity and continuity for future generation, it can be strongly recommend that the country historic building deserve the best concept of maintenance as to prolong the building life and generated more income to the government in line with the concepts ‘Heritage Buildings as a Tourism Booster’.

According to Forsyth [11] maintenance is regarded to be the most realistic and philosophically appropriate for conservation method. It was strongly agreed by Idrus et-al [10] which stated that regular maintenance is critical to the survival of any building regardless it was a historic or non-historic building. In general, the survival of any building is depends on its maintenance which have been executed earlier by the building owner and responsible body. Therefore, maintenance is the process by which the building are kept viable for the benefit to the user and with the properly executed, it will avoid and prevent the historic building deteriorate [5]. Maintenance for historic building is very important procedure in a way to preserve and conserve the historic building. With referring to Dann and Cantell [12] as cited in Foster and Brit [13], pointed 'maintenance is still accepted as the best suitable way and sustainable to conserve the historic building'. The Venice Charter in International Council on Monuments and Sites (ICOMOS), 1964 also pointed out the same opinion which stated that, 'it is essential to the conservation of monuments that they be maintained on a permanent basis'. Thus, English Heritage as cited in Foster and Brit [13] suggests that the best means of ensuring the continued preservation of a building is to carry out regular maintenance. With referring on the scholar's and writers earlier, it can be summarized that the effective way to ensure the historic building are well taken and conserved, the maintenance approach are strongly encouraged to be implemented. Therefore, Maintain Our Heritage (MOH), 2004, as cited in Foster and Brit [13] indicating that 'much of the need for capital expenditure on the historic environments is the result of poor maintenance'

Maintain Our Heritage, 2004 also claimed that the maintenance is 'all too often responsive, not pro active, not systematic, a low, not a high priority and in many cases, in not happen at all'. Thus, with referring to the graph, it can be concluded that, the reactive maintenance or condition based maintenance is not cost effective rather than implementing a pro active or preventive maintenance. It should be a pro active maintenance in order to ensure the historic buildings are well maintained and preserved. In the context of Malaysia perspective, the government through the responsible authority and their agency should be alert with this situation and need to increase the awareness amongst the owner of the building and their caretaker to changes the emphasis in maintenance which from condition based to the preventive maintenance.

## **2.1 The Principle of Maintenance for Historic Building**

According to Fielden [5] stated that maintenance and preservation of historic building is very skilled and needs responsible and competent craftsmen or any specialist to manage and control the process. The historic building which have a lot of significance value to the country are need to be preserve appropriately in aligned with the tool or principle for maintenance which is 'minimal intervention'. It is clear that retaining historic building elements are leads to the retention of cultural significance with the most suitably method to achieve and undertake maintenance on a minimal intervention basis [13]. They added, the primary objective of minimal intervention is to restrain decay without damaging the building character and prevention on the unnecessary disruption. It was agreed by Brereton [9], which stated that minimal intervention also can be considered as 'as much as necessary' and 'as little as possible' by Feilden [5]. In other hand, the maintenance principle according to English Heritage as cited in Bahardin [3] includes the purpose of repair, the need of repair, avoiding unnecessary damage, analyzing historic development, adopting proven techniques, truth to material, removal of damaging previous alteration, restoration of lost features and safeguarding the future. This principle should be treated as a compulsory guideline and procedure as to ensure the uniqueness and quality of the building will be assured.

## **2.2 The Implementation of Maintenance for Historic Building**

According to Chambers (2) in his book, Cyclical Maintenance for Historic Building as cited in Fielden [5] stated that the scientific building maintenance is starting with daily routines and working upwards. His books are deals with maintenance survey, supervision, work records, staffing, all matter

relating to organizing a maintenance programme for building to ensure it will keep in acceptable standard. He suggested that, the maintenance techniques should be based upon the preparation of a maintenance manual which is sophisticated document as to guide a maintenance work. The implementation of maintenance approach should be based on the maintenance programme. By having a good maintenance, it will ensure the successful maintenance work for historic building. According Fielden [5] pointed out; the maintenance department should carry out the maintenance survey as to seek as much as more valuable information in the historic building. He added, the maintenance for historic building should be ideally be tackled by routines of daily, weekly, monthly, quarterly, semi-annual, annual and quinquennial inspections, followed by the reports since its building is a ‘special case’ and should have its own checklist and schedules based on the content and specific environmental and structural problems. Then, based on the report which has been provided at the initial stage, the maintenance supervisor should investigate and analyze the report especially in terms cost of repair that may indicate which items are deteriorating rapidly. He added, the whole maintenance operation is thus based on the survey assessment of frequencies of workloads and on responsible feedback from the staff. With regards on this initiative, the systematic maintenance will be established and the maintenance work will facilitates the initiation of major repairs, reconstruction and restoration and the most significance things is to prepare a planned preventive maintenance for the historic building. In establishing a maintenance strategy, it is desirable to have categories of repair work as defined for the log books, so that the performance of the historic building of similar types can be compared on a statistical basis.

### 2.3 The ‘Best Practice Approach’ for Historical Building Maintenance

Maintenance management process for historic building is very significance especially to maintain and preserve the built heritage with properly manner. With regards on that, RICS [14,15,16] has outlined a several ideas which can be used as a key ideas as to implement the best practice of maintenance approach for historic building as been shown in Table 1.

**Table 1:** Maintenance of Best Practice Approach [14,15,16]

Maintenance Management Area	Characteristic of Best Approach
1) Corporate objectives and maintenance strategy / policy	<ul style="list-style-type: none"> <li>- Conservation principles should be the overarching intellectual framework which informs the culture an implementation of maintenance. Maintenance should primarily be concerned with the protection and enhancement of cultural significance.</li> <li>- Maintenance management goals and the purpose of the maintenance management function should be explicitly integrated with wider corporate goals.</li> </ul>
2) Management processes, conservation plans and management plans.	<ul style="list-style-type: none"> <li>- Assessments of cultural significance are fundamental to the appropriate management of Listed Building (including their maintenance) and should be implemented through appropriate Management Plans. The principle of minimal intervention should inform and be reinforced by such Management Plans.</li> </ul>
3) Programmes and Prioritization	<ul style="list-style-type: none"> <li>- Maintenance programming should place the emphasis on cyclical preventive maintenance tasks and be driven by the overarching goal of minimal intervention.</li> <li>- Assessments of cultural significance should be central to the prioritization of maintenance activity.</li> </ul>
4) Condition surveys, inspection and stock data.	<ul style="list-style-type: none"> <li>- A range of inspection at varying frequencies should be carried out. These should be tailored to the significance and vulnerability of the element or material.</li> </ul>

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	<ul style="list-style-type: none"><li>- Condition surveys should provide an assessment of condition, identify the optimum moment for intervention, and aid the prioritization of actions and planning for the future.</li></ul>
5) Information Management	<ul style="list-style-type: none"><li>- Information on building condition should be stored on an integrated database. It should be easily retrievable and easy to handle for both tactical and strategic purposes.</li><li>- System should be in place which enable information about building condition provided by users other than those directly related to the maintenance department (e.g. visitors) to be incorporated into maintenance information database.</li></ul>
6) Financial management and performance measurement	<ul style="list-style-type: none"><li>- Budgets should reflect and be informed by the maintenance policy.</li><li>- A mechanism for feeding back information about maintenance performance to managers and other interested parties should be in place.</li></ul>

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Generally, this document will be used as a guidance document in order to investigate a critical factors and difficulties at the implementation stage.

### 3 Problems and Issues

The survival of any building especially historic building is underpinned by regular maintenance. According to Morris [7], regular maintenance is critical to the survival of any building, whether it heritage and non heritage building. He added, regular maintenance is essential and ‘the most practical and economic form of conserving heritage building’. Kerr [8] also emphasized that ‘of all the processes of conserving heritage building, maintenance is the single most important processes’. Historic building are considered as an asset to country and need to give special intervention in a way to ensure a cultural significance and ‘historic value’ on the building are still preserve. This is why the best maintenance concept for historic building would be as a critical factors and key element as to keep the building at acceptable standard. Recently, some of the building are well maintained by the authority while the rest, are still in a dilapidated condition. Ghafar [17] as cited in Kamarudin [18] said that, Malaysia faces several problems in dealing with historic building, which is lack of technical knowledge in dealing with repairing and maintenance at historic building. Moreover, Kamal et-al [6] reported in the research conservation of heritage building in Malaysia which is focus on the building condition, found that, out of 209 historic building that has been surveyed in the research at Kuala Lumpur, Ipoh, Georgetown, and Banda Hilir, Melaka indicated that 39% of the historic building surveyed was in poor condition, 83% of the historic building surveyed has signs of building defects and 74% of the historic buildings surveyed has not being conserved and maintained properly which would be attributed by other factors for instance lack of effective and efficient maintenance for historic building. In addition, there are insufficient guidelines and rules to guide focus on maintenance management at historic building. At the moment, there is no specific approach; guidelines, procedures and regulation that have been listed in order to keep maintain the historic building in Malaysia. There is crucial need to manage the critical factors and difficulties in order to preserve and ensuring the best maintenance concept for historic building. The critical factor is defined as the factors which contribute the ineffective result and achievement towards successful building performance. Therefore, with considering on the situation, the critical factors should be overcome as to ensure the successful of maintenance program for historic building.

### 4 Research Methodology

This research is to determine the key components in maintaining historic building in the context of pre-war building in Kuala Lumpur. The objectives of this research are firstly, to identify the factors

that contribute to success in maintaining historic building, secondly, to investigate the current implementation of maintenance management level for historic building among their caretaker and thirdly, to analyze the critical factors and difficulties in the context of current implementation of maintenance management level for historic building. For this paper, the second and third objective is discussed. A total of eleven(11) respondent were interviewed out of twenty three (23) numbersof building were selected under National Heritage Act 2005 Act 645 which is located in Kuala Lumpur. With regards on this research, the numbers of building have been identified based on the updated list which has been gazette by National Heritage Department on 10<sup>th</sup> May 2012.The twelve (12) historic building was excluded in this research since this building did not meet the criteria and requirement in this research for instance the changing in ownership status and others. This research are more focusing on the building was erected before 1939 and also called ‘pre-war buildings’ rather than the fairly new one historical building such as Parliament of Malaysia building which was built in 1962. According to Kamaruddin [18], the selection of the pre-war building bring more challenges and problems since this building was getting old and face a lot of difficulty in terms of defects, maintenance, conservation and structure of the building itself. The selection of the respondent to be interviewed as to acquire information would be the ‘person in charge’ or ‘responsible person’ for the maintenance operation in the selected building as to acquire more relevant data for this research. Therefore, the person in charge would be interview based on the formulated question which was prepared earlier in a way to gain a primary data or sources.

## 5 Findings and Discussions

### 5.1 Demographic Profile of Respondents

In general mostof the respondents who are person in charge on that particular buildingcan be categorized into two categories which are technical and non-technical background. Normally, most of the caretaker for the historic building does not have any technical knowledge regarding to the maintenance for historic building. Therefore, most of the historic building did not manage by appropriate person which has widely knowledge and experience in maintenance for historic building. As a result, the majority of the buildings are still in obsolete without any improvement especially in their maintenance programme and planning. The significance of well understanding the nature and cultural significance of the historic building is vital before any action be taken such as building inspection, specification and intervention to the building. Table 2 shows the demographic profile tabulation.

**Table 2:** Demographic Profile Tabulation

<b>Buildings</b>	<b>Current Respondents</b>	<b>Academic Background</b>	<b>Experiences</b>
Former KL Municipal Building and Town Hall (PangungBandarayaya)	Architect (DBKL)	Architect	11-15 years
KL Railway Headquarters Building	Act as H.O.D Facilities Maintenance	Civil Engineering	>15 year
KL Railway Station	Act as H.O.D Facilities Maintenance	Civil Engineering	>15 year
KL Textile Museum ( Former PWD Building)	Curator	Anthropology & Sociology	6-10 years
General Post Office Building	Technical Assistant (T.A)/Building	Event Management	1-5 year
Residency Building	Charge man (Maintenance Manager)	Electrical	>15 year
Selangor Chinese Assembly Hall	Chief Executive Officer (C.E.O)	Historic Studies	1-5 year
Sultan AbdSamad Building	Technical Assistant (T.A)/Building	Event Management	6-10 years
St John Secondary School	Teacher	Non-Technical	1-5 year
Rubber Research Institute Malaysia	Chief Executive Officer (C.E.O)	Civil Engineer	6-10 years
KL Library (PejabatPengawalPos Wilayah K.L)	Chief Executive Officer	Historic Studies	6-10 years

## 5.2 Heritage Building Profile

Recently, most of the heritage buildings are still used by the government and private organization. The utilization of the historic building will bring a significance value to the country especially in a way to support a government initiative which is 'tourism booster' among the visitors [19]. As stated previously, the criteria of the case study selected in this building is more focusing on the pre-war building which is erected before 1939 since this building will bring a significance value towards this research. Table 3 shows the heritage building profile

**Table 3:** Heritage Building Profile

Buildings	Year of Built	Gazetted Date	Current Use
Former KL Municipal Building and Town Hall (PangungBandarayaya)	1896	2007	City Hall Theatre
KL Railway Headquarters Building	1914	2007	KTM Office
KL Railway Station	1892	2007	KTM Railway
KL Textile Museum ( Former PWD Building)	1893	2007	Textile Museum
General Post Office Building	1904	2007	MOTAC Office
Residency Building	1888	2007	Memorial TAR
Selangor Chinese Assembly Hall	1910	2007	Chinese Society
Sultan AbdSamad Building	1894	2007	MOTAC Office
St John Secondary School	1904	2012	Secondary School
Rubber Research Institute Malaysia	1936	2012	Office
KL Library (PejabatPengawalPos Wilayah K.L)	1899	2012	KL Library

## 5.3 Establishment of Maintenance Strategy & Policy

Based on the interview that have been done eight (8) out of eleven (11) respondent interviewed reported that their organization have a maintenance strategy and organization goals for the building. With regards on this section, the respondents had referred to different reason. Two interviewees from Sultan Abdul Samad building and Old General Post Office building claimed that, they have a maintenance strategy as to improve a maintenance aspect in particular building by creation a development units which responsible to manage the numbers of complaints by the user. In addition, six (6) numbers of respondents which are Textile Museum, Town Hall, KTM Railway, KTM Headquarters, Rubber Research Institute and KL Library stated that, they also have a maintenance goal through execution of planned maintenance programme which are believed to reduce the cost of repair especially for old building. Meanwhile, three (3) other interviewees which are Residency building, Selangor Chinese Assembly Hall and St John Secondary School disclosed that they implement rectification and ad-hoc approach in a way to manage the building condition. With regards on the analysis, it can be simplified that most of the respondents have a better understanding in the context of maintenance purpose since the maintenance goal and strategy is vital especially in a way to sustain a current condition of the building. However, all the respondents agreed that maintenance for historic building is more difficult in the context of establishment of maintenance strategy rather than other building.

## 5.4 Management Process & Planning

The consensus of the respondents stated that there is no general guidelines and regulation which prepared by responsible authorities regarding to the maintenance for historic building. Most of them added, the National Heritage Department only established a conservation plans and guidelines which involve all the custodian of historical building are not allowed to renovate and upgrading the existing building without permission. This is very worrying considering the fact that maintenance for historic building is crucial aspect in a way to prolong the building life as well as to care the significance value to the country. In fact, based on the interview with National Heritage Department, there is still no a guideline or procedures regarding to management process and planning in the context of maintenance aspects for historic building in Malaysia.

## 5.5 Maintenance Planning, Programme and Prioritization

A total of six (6) respondents disclose that they have developed a maintenance planning and programme by focusing on the certain element which are mechanical, electrical and civil works. Nevertheless, the respondents reveal that there is lack of maintenance programme and planning undertake to the historic building especially to manage with the certain sensitive element on that particular building. Meanwhile the rest of the respondents claimed that they do not have any maintenance planning, programme and prioritization since most of the maintenance works was delegates to the out sourcing contractor. In addition the consensus of respondents also agreed that the maintenance planning concept will develop based on the data information obtained from the previous inspection. They also agreed that 'financial issues' is the most important element when dealing with historic building. With regards on the analysis, most of the respondents should be trained properly and well understanding on the maintenance for historical building principle which in line with the concept of 'minimal intervention' as to assured the quality and continuity of the significance element. Recently, only four (4) respondents reveal that they have been implementing the concept by appointing the specialist contractor for cleaning aspect which has experienced in maintaining historic building. As been informed, they have a special methodology and 'special treatment' when cleaning a significance features such as decorative element as to give a maximum protection for the building.

## 5.6 The Execution of Building Evaluation and Inspection

The consensus of the respondents agreed that the primary objective execution of building evaluation and building inspection is vital in maintaining historic building by giving a several reason. A total of five (5) respondents which are KTM Railway, KTM Headquarters, Textile Museum, St John Secondary School and KL City Gallery give a justification is due to the most important aspect which is safety and health issues while the rest which are Sultan Abdul Samad, Old General Post Office, Town Hall, Rubber Research Institute stated that the rationale of performing building evaluation and inspection is for discover the current building condition status. However, while referring to the two (2) respondents which responsible for Residency and Selangor Chinese Assembly Hall they explained that the primary objective is to make a necessary correction for that particular defects. With regards on the analysis, it was found that most of respondents aware with the importance of building evaluation and inspection in a way to manage the historic building but it are subject to the functional of the building. In that case, a total of five (5) respondents give a similar justification based on the current use of the building which been transform into museum since they are dealing with the public as well as visitors. According to Maintenance Best Practice Approach by RICS [14][15][16], person in charge should have an initiative as to implementing the a range of building inspection at varying frequencies as to monitor closely the performance of the historic building since it is highly valuable asset to the countries.

## 5.7 Maintenance Information System

According to the interview, a total of seven (7) respondents which are KTM Railway, KTM Headquarters, Textile Museum, Sultan Abdul Samad, Old General Post Office, Town Hall, Rubber Research Institute revealed that they have take an initiative to keep maintenance record for that particular building as to monitored the general building condition while the rest of respondents stated they did not implement any efforts to keep the maintenance record. Disclosed further, the rest of the respondents explain that they will store information regarding to major conservation and refurbishment works in the historic building. With regards on analysis, it can be concluded that the majority of the respondents well informed the benefit of having the good maintenance record. Nevertheless, as been informed by the majority of respondents, the maintenance information or 'data storage' data is still on the manual arrangement by using 'filing' system. Based on the interview by KTM Railway and KTM Headquarters person in charge, the way of the 'filing' system had resulted

unsystematic approach in a way to manage the historic building. Most of the file is missing and unarranged due to several reason such as change of responsible person that manage the file or else. Based on the RICS [14][15][16], the requirement of having good information management that inclusive of ‘maintenance database’ for each particular historical building is crucial since the maintenance record will aid the National Heritage Department to identifying the authenticity of each material and element. In addition, the implementation of installation the integrated software which linked with the e-complaint system will bring a systematic approach for the new era of maintenance field.

## 5.8 Financial Factors

Recently, the consensus of the respondents disclosed that there is no funding allocation by the government solely for the maintaining and managing historic building. Meanwhile, with referring to the respondents of Sultan Abdul Samad, Old General Post Office, Textile Museum, Rubber Research Institute and Residency, most of budget allocation is coming from the ‘PerbelanjaanMengurus’ which is the ‘typical terms’ for managing the government assets. In other hand, Selangor Chinese Assembly Hall, Town Hall, KTM Railway, KTM Headquarters, St John Secondary School and KL City Gallery disclosed that financial support in maintaining the operation of this particular building has been manage by their own initiative without any contribution by government especially from National Heritage Department. With regards on the analysis, the provision of financial support especially allocation for ‘Special Project’ such as heritage building should be give as a main concern since the policy by the government as to embracing the cultural significance of the countries. In fact, based on RICS [14][15][16] stated that the budget should reflect with the maintenance policy for each building. Ultimately, the government through responsible authority should concern with this scenario and the necessary action should be taken in a way to enhancing the good maintenance approach for historic building. In other hand, the terms of ‘maintenance’ and ‘repairing’ purpose also should be distinguished since it will bring a different perception. According to Dann and Worthing [20], ‘Maintenance’ works is important in protecting cultural significance in the building and if it is properly implemented, it will be minimize the cost of repairs while ‘repair’ works defined as to prolong the life and element of the building and therefore very significance for the long term protection for the building. In practice, most of the maintenance organization does not aware between the both terms. This is why the maintenance planning should be in line with the financial support as to give more impact towards maintaining in historical building.

## 6 Conclusion

As a conclusion, this paper summarizes the findings on the second and third objectives which are to investigate the current implementation of maintenance management level for historic building among their caretaker and to analyze the critical factors and difficulties in the context of current implementation of maintenance management level for historic building. In general, the current implementation revealed that there several difficulties and critical factors that contribute to unsuccessful maintenance management for historical building in Malaysia. Based on this research, it was found that the most critical factors and difficulties in maintaining historic building consist of;

### a) Lack of Maintenance Staff Training & Expertise

It was found that, the maintenance staff training and expertise is the most important component in the maintenance management for historic building. As observed previously, most of the respondents do not have any technical knowledge in order to manage and plan the inspection strategy towards this particular building. Furthermore, the lack of maintenance staff training and expertise also noted that the majority of the historic building had been outsourcing their maintenance tasks to the contractor. More so, there is less of maintenance organization formed at each of the historic building. As to improve the maintenance performance, the maintenance

organization is crucial to be formed as to ensure the maintenance activities will be running smoothly and efficiently.

**b) 'Just in Time' or Unplanned Approach**

It was noted that, the unplanned approach is the main approach adopted in the most of historic buildings interviewed. In addition, the majority of the historic building respondents only take an action whilst the elements of the building become failure and malfunction. There is lack of planned maintenance approach adopted for the historic building unless for the certain criteria which are mechanical and electrical works. It also found that, there is lack of strategic plans implemented in the maintenance approach for historic building. The majority of respondents do not know the importance of strategic planning in a way to achieve the 'value for money' concept.

**c) The Absence of Guidelines regarding to Maintenance for Historic Building**

It was found that, there are no specific guidelines, procedures, method and system established by National Heritage Department or any authorities regarding to this issues. The consensus of the respondents interviewed stated that they do not know and experienced to maintain and manage the historic building with the specific procedure.

**d) Lack of Financial Support**

It was noted that, the main issues of the maintenance for historic building is financial support. All the respondents stated that, the financial support is fundamental element in order to ensure the cultural significance will be preserve and conserve appropriately. In addition, the allocation for financial budget is only distribute to the selected historical building only (3).

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