The needs of having a paradigm shift from public sector to private sector on funding digitizing management work of historical buildings in Malaysia

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Abstract. In Malaysia, the government agencies that handle the management of historical buildings are finding themselves facing a shortage of funds to provide the necessary work on digitalising management works. Due to the rising cost of management, which also covers maintenance and infrastructure works, there is a need for a paradigm shift from public sector to private sector provision on infrastructure and management works. Therefore the government agencies need to find the suitable mechanism to encourage private sector especially the private property and developers to take part in it. This scenario has encouraged the authorities to look new ways of entering into partnership and collaboration with the private sector to secure the continuity of provision and funding. The paper first reviews the different approach to facilitate off-site local management system of historical buildings and then examines options for both private and public funding in digitalising the historical buildings management works by interviewing government officer, conservator and member of non-government agencies. It then explores how the current system of management may adopt the shift to avoid any vulnerability and threat to the existing historical buildings. This paper concludes with a short summary of key issues in management works of historical buildings and recommendations.

1. Introduction

The identity of a community and country can be defined by their heritage which is something that be pass down from one to another [1]. Malaysia heritage and history basically represented by its architectural fabric, language, traditional music, foods as well as arts and crafts. Kamal and Harun [2] defined historical building as building that was build the past that has high architecture and historical values, has it’s own artistic characteristic and human messages through out the complexity of ideas, craftsman and workmanship starts from planning process until the completion of the building.

An inventory study was conducted in 1992 and 1993 by the Heritage Trust Malaysia found out that there are almost 39,000 historical buildings in Malaysia that was build between 1800 and 1948 through out the country such as in George Town, Ipoh, Malacca, Kuching and Kuala Lumpur which are worthy for preservation and conservation therefore there were classified as ‘pre-wars buildings’ [3]. The historical buildings in Malaysia can be categories into several types such as traditional architecture (the traditional timber Malay houses), Straits Eclectic Style or the Art Deco shop houses of inimitable architectural style, religious buildings (traditional and Moorish-influence mosque, churches and temples and the Early Permanent Style that has influenced by the colonial such as railway stations, old government offices, mansions, and courthouses [4].

Historical Buildings are very important to country economy since it brings revenue from tourism activities [5–8]. Ahmad [3] stated, heritage conservation is important for historical evidence,
architectural values, education, local price and tourism. Tourism sector is the 2nd most important sector in Malaysia after petroleum and it can be seen from the revenue that it brings the nation. In 2008 there were 22.5 million tourists visited Malaysia bringing in MYR 49.1 billion (USD 16.1 billion) and in 2011 there were significant increase of another 1.5 million tourists and it brings up to the total revenue of MYR 58.6 billion (USD 19.2 billion). Tourism sector in Malaysia is expected to generate MYR 106.3 billion (USD 34.8 billion) to the national revenue (KDNK) from 36 million tourists towards 2020 [9].

2. Preservation and conservation of historical buildings
Throughout the years, several historical buildings have been demolished due to the perception of high maintenance cost [10]. That is why some owners have sold their building to property developer, while some have allowed the government and local authority to take over their building or to bring it down especially the shop houses type, as they could not afford the cost of maintenance. Therefore, many of these buildings were left vacant and will deteriorate from weathering condition and insects attacks.

Preservation and conservation is amongst the most common maintenance works that has been done on historical buildings [11]. Preservation is described as a process of maintaining the buildings based on its original looks when it was first built. It may include restoration process whereby the non-original materials will be replaced by the original or similar material that was used before [12]. Therefore the buildings will be undergoing a very precise treatment process in order to restore to its original looks. Conservation can be defined as any works that has been done in order to conserve the building to its best condition [13]. This could involved restoration, adaptive reuse and reconstruction [14].

3. Management works of historical buildings in Malaysia
Based on the interview sessions with government officer, conservator and member of non-government agencies, the management works of historical buildings in Malaysia can be categorised into 3 main divisions, which are the technical, document and archive as well as research and development (R&D). The technical division basically is the main anchor whereby they will work closely with the historical buildings and the community. These division activities focused on the preservation and conservation works, starting for planning, selection on technique of construction works, selection of materials, Heritage Impact Assessment (HIA), Social Impact Assessment (SIA) and post-preservation or conservation assessment.

The document and archive division managed the collection of buildings plans and historical evidence of the buildings such as photos, manuscript and films. This information is very important to ensure that before any preservation or construction works could be done on the historical buildings, assessments should be made first, to avoid any damage or externalities on the buildings as well as to avoid any unforeseen accidents.

The research and development (R&D) division majorly handles all the necessary laboratory testing required, such as salt test in order determine the most suitable material for coating, structure testing and material testing. This division is also responsible to find and develop any new methods, technology or product that can be use in preserving or conserving the historical buildings. They are also responsible on educating the community on the importance of managing the historical buildings with the most suitable and ideal approach base on the characteristic and condition of the historical buildings.

The Department of National Heritage, Ministry of Tourism and Culture Malaysia provides funding and worked closely with management team that was authorised on executing management works of historical building that were listed as the National Heritage Building and Heritage Buildings, under the National Heritage Act 2005. There are also participations from private sectors and non-government agencies on the management works of historical buildings, such as on monitory aspect and sharing expertise services. However their involvements are very limited. Non-government agencies such as the Heritage Trust of Malaysia and Penang Heritage Trust contribute their expertise services, which came from their wide range of professional members including architects, engineers, surveyors, conservators and academicians. Government link companies (GLC) and private sector player such as Khazanah Nasional (GLC) and YTL has been channelling funds via to their own company foundation to promote preservation and conservation works on historical buildings, aside
from running an awareness program and campaign on educating the community about heritage. Unfortunately, the allocation of funds is only limited for certain types of building, area, and management works [15].

The main problems and issues raised up in managing the historical buildings are mainly the lack of funding and insufficient budget. Comparing to the number of historical buildings in Malaysia, there are also inadequate information about the historical buildings and there are low understanding of managing historical buildings from the community. Therefore, there is a need of having a paradigm shift from public sector to private sector on funding digitalising management works of historical buildings in Malaysia.

4. Private Funding Initiative (PFI) on historical buildings management

The monetary issue on management works of historical buildings could be improved, by having enough and excellent cooperative works between the government and private sector. The government agencies should create specific initiatives to attract involvement from the private sector to join venture with the government agencies such as, by introducing Private Funding Initiative (PFI) specifically for management works of historical buildings as one way to create Public-Private Partnership (PPP). PFI is meant to gain financial support from private sectors on government projects such as hospital, school, universities and military camp [16]. The financial supports are then used to provide infrastructure or services for the project such as roads for transportation and buildings for headquarters as well as digitalising technical works. The private sectors that were involved in this project get benefit from the government in the form of incentive such as tax reduction, loans, grant or bond. As result, both parties received positive results from PFI.

PFI on management works of historical buildings may take a different route compared to the normal scheme of PFI. In managing the historical buildings, PFI can be used to enhance the quality and effectiveness of the overall process on management works. As an example, PFI can be used to fund new mechanism for preservation or conservation works in technical division, such as by using new machines or new instrumentation that can smoothen the process of preservation or conservation works. Thus reducing any unwanted change and damage to the historical buildings. Computerise gadgets or tools could also be used on site to help in-situ decision-making, for example materials or specimens testing such as fungus could be done on site without having to send it back to laboratory. This will help to reduce operating cost. The process of transforming the technical works on managing historical buildings from manual to sub-digital or fully digital need large amount of money [17]. Therefore, PFI could be an option to reduce the burden of funding from only the government sector by opening investment opportunity to the private sectors.

5. Digitalising management works of historical buildings

Digital drafting, parametric, modeller, visualisation, rendering and 3D modelling software such as CAD, Rhino, 3D Max as well as digital information modelling tools such as Building Information Modelling (BIM) and Adaptive Reuse Potential (ARP) could be used to support decision making process from the earliest conceptual stages, design, construction and throughout its operational life or eventually when it comes to demolition or reconstruction stage. It can be used in management works of historical buildings, by involving digital representation of physical and functional characteristic of a particular building [18]. Apart from that, adaptSTAR rating tool could also be used for assessing future adaptive reuse potential on historical buildings [19]. This helps to determine the new function or usage for historical buildings as well as identify the economic prospect of the historical buildings.

The documenting and archiving process, which involves transferring one media to another media should also shift from using paper documentation type to a paperless and digitise type. Words Document, JPG, PDF, E-book or E-journal are examples of digital media that is more reliable, mobile, easy to use, easy to transfer and can be used with other digital gadgets such as mobile phone, tablets and can be integrated with another suitable software for image processing purpose [20]. By digitising documents and manuscripts, the process of handling and analysing the sources and management works could be done in a shorter period of time compared to a normal paper type of document. It could also be shared easily with others via email, web, or mobile application (Apps). Therefore the transparency of data from the verified sources could be fully utilise by anyone who are interested in historical buildings especially conservator, researcher, student and tourist.
Research and development activities should adapt new high technology that incorporated few other technologies (hybrid approach, HA) in order to plan, to execute and to determine the best solution for any questions, problems or opportunities in the future. R & D labs must also be able to form integrations between various technical and social fields [21]. As result it will be able to bridge the gap of past problems and create new opportunities in the future. Cooperation and exploration beyond the original field might produce new theory, new fundamental, new mechanism, new material, and new approach on preservation or conservation on historical buildings, such as cooperation between build environment and economics as well as between build environment and chemical engineering.

Geographic Information System (GIS) can be use as an example that incorporates land use data (topography) with ortho-rectified imagery (from satellite and aerial images). The heads-up digitising is becoming the main avenue through which geographical data were extracted. It involves transferring the geography data into CAD, then tracing the data directly on top of aerial images compared to traditional method (heads down digitising) whereby the geographic data were trace on a separate digitising tablet [22]. GIS may also be applied with historical buildings management works [23]. By using GIS, the geographical data from the historical building can be capture, store, manipulate, manage and present in a proper manner and easily understand by others with informative diagrams [24]. GIS could also help to determine the most suitable site if the historical buildings needed to be transferred or relocated to a new location due to externalities or threat that it might face from the surroundings. The zoning process of historical buildings in Malaysia can easily be achieved by using GIS and Global Positioning System (GPS). Hence, zoning map can be produce and use to determine suitable sites for any development activities in the future as well as creating mitigation plans if the development activities causing defect on the historical buildings.

It is time that the R&D division to shift from passive interaction to an active and interactive interaction for their promotions and educational campaigns. Interactive interaction should intentionally imply the interpretation process that begins with the information chose to be presented by the management and the experience from the interpretation must be able to comprehending the visitors and community [25]. Therefore the education programs and campaigns should incorporated new media such as music, video and digital animation in order to attract interests from the community. It would then be easier for the management team to deliver messages to the community, which they may come from various background and age. Any feedback from the community must be heard and take into consideration by the management team, so that from the responses, actions could be taken next. Consequently, two-ways communications and understanding relationship could be created between both parties and the main purpose within the message from the campaigns could be accomplished as planned.

6. Conclusion

As conclusion, with the help from private sector in PFI on management works especially on preservation and conservation works of the historical buildings, the management works of historical building could be enhanced and improved by using suitable technology and gadgets on the technical works and by digitising the source and results. PFI will become an ideal mechanism to tergiversate any shortage of funding from the government and automatically enhancing PPP. The embellishments and ameliorations on historical building will bring positive effect on the building itself as well as to the community and environment. There should be an exploration between inter-field knowledge in order to be able to understand future needs, demand and supply. Heritage need and must be preserving, as it symbolises the history, social, culture and civilization of past generation. With the assistance of digital technology, the age of historical buildings in Malaysia could be extended while still preserving the identity and uniqueness of its fabric. Finally, the involvement and participation from community could be enriched by helping them to understand better by listening to their point of view, ideas and needs as well as involving them in any activities or programs that has relations to the management works of historical buildings in Malaysia.
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