

Benefit of Retrofitting on Historical Buildings in Malaysia from Social and Economic Aspects

Manfaat Retrofit pada Bangunan Bersejarah di Malaysia dari Aspek Sosial dan Ekonomi

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Abstract

This research paper indicates the importance and the benefit of retrofitting on historical buildings especially in Malaysia as Malaysia has large number of them left either still being used until today, left vacant or decayed. The historical building basically brings out the symbols of history, memories, social and culture of a place as well as representing the economic standard of the local people. It can be seen from the architecture style of the building, size and material used. Hence, it is very important to preserve the historical buildings, so it can be passed down to the next generations. The effort on restoring historical buildings will not only preserve the county's heritage and legacy but also to be the focal point of tourist attraction. Kuala Lumpur Performing art Centre and Shah Alam Royal Theater was chosen as case study. As well as interview and questionnaire surveys that was handed over to targeted group (architecture students). Data were then analyzed by using comparison studies for social response and Cost Benefit analysis from the economic perspective. In addition to that, the needs for retrofitting knowledge also have been touched. The other reason for retrofitting is that, the vacant historical building can be reused for new purpose such as an office or theater that can be used to generate income, minimizing the cost of construction compared to building up a new building, as well as maintaining the historical, architecture and heritage value of the original building. Practically this method brings benefit not only to the building, but also attracts more tourists to come and visit. In addition, it also minimized the negative impact to the environment by lowering the needs and demand of new materials for the new development of spaces and facade since it reused 40% of the original structure. Historical buildings resemble the ideology, status, knowledge and culture of a place and its people, there for it needs to be maintained for the historical and economic value for the country.

Keywords

Retrofitting, historical buildings, preserve, maintain, reused

Abstrak

Kajian ini menekankan kepentingan dan manfaat retrofitting pada bangunan bersejarah terutama di Malaysia kerana di Malaysia sebilangan besar daripada bangunan tersebut sama ada masih digunakan sehingga hari ini, dibiarkan kosong atau telah reput. Bangunan bersejarah pada dasarnya merupakan simbol sejarah, kenangan, sosial dan budaya tempat dan juga mewakili taraf ekonomi penduduk tempatan. Ia boleh dilihat dari gaya seni bina bangunan, saiz dan bahan yang digunakan. Oleh itu, adalah sangat penting untuk mengekalkan bangunan-bangunan bersejarah, supaya ia boleh mewariskan kepada generasi akan datang. Usaha memulihkan bangunan-bangunan bersejarah bukan sahaja akan mengekalkan warisan dan legasi tetapi juga sebagai pusat tumpuan tarikan pelancong. Kuala Lumpur Performing Pusat seni dan Shah Alam Teater Diraja telah dipilih sebagai kajian kes. Temu bual dan soal selidik kajian yang telah dijalankan kepada kumpulan sasaran (pelajar seni bina). Data dianalisis dengan menggunakan kajian perbandingan, untuk tindak balas sosial dan analisis Faedah Kos dari perspektif ekonomi. Di samping itu, keperluan pengetahuan retrofit juga telah disentuh. Sebab lain untuk retrofitting ialah bangunan bersejarah yang kosong boleh digunakan semula untuk tujuan baru seperti pejabat atau teater yang boleh digunakan untuk menjana pendapatan, mengurangkan kos pembinaan berbanding dengan membina sebuah bangunan baru serta mengekalkan sejarah, seni bina dan warisan nilai bangunan asal. Kaedah ini membawa manfaat bukan sahaja kepada bangunan, tetapi juga menarik lebih ramai pelancong untuk datang dan melawat. Selain itu, ia juga meminimalkan kesan negatif kepada alam sekitar dengan mengurangkan keperluan dan permintaan bahan-bahan baru untuk pembangunan baru ruang dan muka bangunan kerana ia digunakan semula sebanyak 40% daripada struktur asal. Bangunan bersejarah menyerupai ideologi, status, pengetahuan dan budaya sesuatu tempat dan rakyatnya. Oleh itu, ia perlu dikekalkan untuk nilai sejarah dan ekonomi negara ini.

Kata kunci

Retrofitting, bangunan bersejarah, pulihara, kekal, guna semula

Introduction

The identity of a people and nation is largely defined by their heritage. Heritage is something, which can be passed down from one generation to another (Prentice, 1994). Malaysia heritage and history largely represent by its architecture, social, fabrics, language, foods and architecture fabric is apparently the most abide. Kamal & Harun (2002) defined historical building as building that was built in the past, which have high architecture and historical value. It has its own artistic, value and human messages through the complexity of ideas starting from the first phase of construction which is planning until the completion of the building its self as well as the years it remain still until this present day.

Malaysia is highly rich with historical building legacy that reflects effort of past man works, politics, status and wealth. It can be categorized into several types such as traditional architecture (the traditional timber Malay houses), Straits Eclectic Style or the Art Deco) shop houses of inimitable architectural styles (the Early Permanent Style, colonial influence (railway stations, old government buildings, mansions and courthouses) and religious buildings (traditional and Moorish-influence mosques, churches and temples) (Ahmad, 1997).

An inventory study conducted in 1992 and 1993 by the Heritage Trust of Malaysia in collaboration with The Housing and Local Government Ministry and Faculty of Built Environment, University Technology Malaysia (UTM) and the National Museum of Malaysia announced that there are almost 39,000 historic buildings built between 1800 and 1948 throughout the country such as in George Town, Ipoh, Malacca, Kuching and Kuala Lumpur which are worthy for preservation and conservation (Kamarul Syahril Kamal *et al.*, 2008). They are classified as ‘pre-war buildings’ since they had be build ranging from 1800 to 1948. Most historical building was demolished due to perception of high maintenance cost (Blengini, 2009; Chau, 2008; Fels, 2002; Lee, 1996; Zhang, Zhu, Jones & Zhang, 2009). That’s is why some owner sold their building to property developer, while some allow the government and local authority to bring down their building especially shop houses because they could not afford or bear the cost of maintenance.

Historical buildings are very important to the country economy in terms of revenue from tourism activities (Caton & Santos, 2007; Chai, 2011; Jenkins, 2012; Lynch, Duinker, Sheehan & Chute, 2011). Therefore, preservation of historical building not only plays an important role in preserving the history and culture but also for economic purpose. According to Ahmad (2009), heritage conservation is important for historical evidence, architectural values, education, local pride and tourism. He said tourism is the second most important sector in Malaysia’s economy, with 22.5 million foreign tourists visiting Malaysia in 2008, bringing in RM49.1 billion (USD16.2 billion) in revenue.

Retrofitting is one of the methods that can be done in order to restore back the historical building into new building with its original looks based on its function and purpose according to the characteristic of the building such as the facade, exterior, interior and materials used. It is also a way to avoid historical building from being demolished or left vacant. Retrofitting is basically ‘fitting in’ new spaces in the historical building incorporated with new constructions method and material not fitted during original construction (Oxford Dictionaries, 2012). As result there will be enhancement to the original building majorly from its façade (exterior and interior) together with new mechanical and electrical system but still remaining some part of the original historical building.

Restoration, conservation and maintenance of historical buildings are becoming popular method in the country since its one of ways that we can pass down one of our valuable historical culture to the next generations. Restoration and conservation can

also be define as actions taken to restrain deterioration by undergo several methods and approach that can extend the life of the building from exterior and interior part as well as the basic function of it (Godwin, 2011; Harun, 2011; Huseynov, 2011).

For the past few years, some historical buildings have been preserved and conserved, while some has been demolished or left vacant as well as converted from their original function to become restaurant, bank, museum, and shop. Historical buildings that's has been left vacant will lost its heritage value and cultural significant as well as decreasing the economic value of the historical building. Less information and awareness in maintaining, restoring and preserving historical building is also an issue that affected the overall procedure on conserving historical building from deterioration and serious building defects. It is through participatory processes that a city develops visions and plans, monitors the implementation of its plans and adjusts to changing circumstances (Hanson, 2012; Oberlander, 2009; Li, Thomas Ng, & Skitmore, 2012; Sarvarzadeh & Abidin, 2012; Yung & Chan, 2011).

Retrofitting not only restoring back the historical building but it also preserve, conserve and maintain the historical value, culture and legacy. There for it is very important for us to know the benefit of retrofitting in order to not only saves the historical building but also to indicate other significant impact that it brings to the environment aside from economic and social aspects.

For this research, several approach was used in order to get the data such as site visit which includes detail observation on a selected retrofitted historical buildings, selected deteriorate historical buildings and a selected building that undergo normal construction method but has the same function as the selected retrofitted historical buildings. Pictures were taken as records whereby it shows the condition of the buildings. Data collected were then compared in order to find the differences between retrofitted historical buildings with the one which not and also the impact that it brings to the social and economics setting of an area.

Social Benefits of Retrofitting the Historical Buildings

Retrofitting of existing buildings is one of the most environmentally friendly and efficient solutions to optimize the energy performance of building. As a matter of fact, when compared to new buildings construction, this kind of intervention reduces the consumption of land energy and could be applied to a large building stock (Andrea Boeri *et al.*, 2011). Retrofit construction implemented new technology and new type of material into its construction process in order to strengthen up the original structure of the historical building, adding up spaces or enhancing the facade.

There is one historical building that can be a good example of historical building that has been retrofitted. Since the start of operation in 2005, Kuala Lumpur Performing Art Centre (KLPAC) has been popular venue for many private local and international productions encompassing dance, drama, comedy, music and other genre. This building was chosen due to the location of KLPAC which is located near Kuala

Lumpur city center, peaceful surrounding whereby this building is surround by private park and a lake which works as buffer zone (Figure 1), thus avoid any noise pollution from come into theater hall during shows, it also has a unique architecture style with a beautiful landscape. It also been used as venue for products launching such as car by Peugeot under Nasim Sdn Bhd in 2011. This building was restored and refurbished to its new function as performance center by using retrofitting method and was under construction for 7 months with total cost of MYR 30 million. 40% of the previous building remain the same especially the façade of brick walls and the new 60% were mainly from new structure, including the new roof structures (Figure 2) additions of floors (from 2nd– 4th floor) and for new spaces such as 9 new studios, set construction workshop, recording studio, food and beverage outlet, proscenium theater (*Pentas 1*) with 504 seats (Figure 3 and 4) and experimental theater (*Pentas 2*) with 200 seats.



Figure 1 View of KLPAC from Sentul Park



Figure 2 View of KLPAC entrance from ticket box counter that has a modern façade (large glass panel and long span concrete column)



Figure 3 View of *Pentas 1* theater seating



Figure 4 View of the stage from theater seating in *Pentas 1*

From observations and site visit, steel structure was used for the new part of the building as well as other raw material such as unpolished cement rendered for flooring and clay bricks for walls. This material was chosen based on the original building and it has been integrated with modern material such as long span steel structure and double coating glass panel (Figure 2). Other than that, new mechanical and electrical system was installed in order to achieve optimum comfort for the end users. The additional spaces above the actual floor which is the 2nd and 3rd floor has been using for art classes such as dance, music and acting as well as the location of the main theater that took 1/3 of the total space. The transformation of this building has brought some significant impact especially on social and economic.

From a warehouse transformed into a performing art center, this building managed to gather people from different background and walks of life in the name of art, education and business. This building is also an office to 40 people that runs the operation of KLPAC. There are few departments that are working in KLPAC such as marketing, public relationship, stage performance and maintenance. One of the busiest

department in KLPAC is public relations which handles and dealing with customers, tourist, students and public. They are not just dealing with the core business of KLPAC which is an art performing center but also answering questions regarding this building especially on the history of the building and the construction method that was used to it since this building was the first building that was retrofitted in Malaysia in term of historical building.

KLPAC managed to keep their business in operation with help from generous sponsors such as Mercedes Benz Malaysia Sdn. Bhd and Budi Penyayang Trusty Foundation. In addition to that, they were able to maintain this historical building although in its new look and functions thus they were awarded few architectural awards such as PAM 2006 Award (adaptive Re-use Category by Malaysian Institute of Architects) and from Malaysia Property Award 2007 (Special Award for National Contribution category) by FIABCI (International Real Estate Federation) Malaysia. The history is still alive and has attract more crowds from year to year for example in 2007 there was significant increase of 29% in term of student intake for art classes programs compared to 2006 as well as increasing of studios usage in 2006 from 1566.5 hours to 2029.5 hours which marked increasing of 30% in total.

The customers and audience of KLPAC was not only from Kuala Lumpur, they also came from outside of Kuala Lumpur such as Selangor and international tourist from China, Hong Kong as well as from Europe. They were there not only to enjoy the performance but also to study and to know more about the construction method of KLPAC, which has the modern look (from glass and steel structure) while still preserve the historical look of the original building which has clay bricks, wooden doors and air vents (Figure 5).



Figure 5 Exterior façade of KLPAC (original structure)

The surrounding development can be increased since the historical building become alive, functional and attracts more people to the surrounding context. It can be seen from KLPAC scenario, where by the surrounding of it has been developed after KLPAC opens its door in 2005. There are now high-end apartments, offices, parks, transportation terminal (train) and SOHO that can be seen from KLPAC as well as a Japanese Restaurant (Figure 6) located 100 meters from KLPAC, Sentul Park Koi Centre and an office belongs to YTL Communication Sdn Bhd that accommodate 600 professional workers in internet networking business line. Retrofitting project also provide opportunity for future development and transformation of surrounding area and the city (Andrea Boeri *et al.*, 2011).



Figure 6 Japanese Restaurant near KLPAC

Furthermore, implementation of retrofitting the historical building also can introduce our local heritage and culture to the tourist especially from local and international. This occurred since every building has its own unique concept and idea before it can be build. It basically derives from many elements such as the background of the owner/project proponent, the culture of local people, religion, economy and politics. These elements will be represented in the building by its façade, interior finishes, location of spaces as well as the usage of that particular building. Fieldan (2000) said that heritage building will make us wonder and wanted to know more about the culture and people who made it. The adaptation of the retrofit concept, not only save the building from being destroyed but also expanding the life of historical building and mainting the historical value that it has. Arazi Idrus *et al.*, (2010) also discussed that by maintaining the building fabric as well as the services mechanism, it can actually prolong the life of the whole building.

Economic Benefits of Retrofitting the Historical Buildings

Retrofitting the historical building can increase the architecture and historical value of the building. By maintaining and restoring some parts of the building as well as adding in more suitable space according to the new usage and planning scheme, the historical building basically can be save and reuse back. People will be more impressed on the positive outcome from the retrofitted building and it can be the significant node, attraction and icon in that particular area. KLPAC has now become the landmark for theatre and performance activities in Malaysia especially in Kuala Lumpur other than National Theatre (Istana Budaya) and The Actor Studio which is situated on roof top of a shopping complex, Lot 10. Heritage building in the city can also become the urban identity (Ismail *et al.*, 2006). With the unique shape of a warehouse with large doors and window, raw material for its façade without any fine treatment shows that the building was basically used for commercial/ heavy industries activity. After retrofitting construction was done, the identity of that original building remains the same although it undergoes internal and external treatment in order to add in more space for certain activities or purpose and strengthen up the original structure such as wall, column and beams. The morphological regeneration by retrofitting can make the building more outstanding and attractive as well as recognizable to tourist and users (Andrea Boeri *et al.*, 2011).

In addition, it also helps the government in promoting our country to international especially from tourisms sector. By implementing the Retrofit Architecture, it can attract more people especially tourists that come from various country, thus it can automatically promote the historic value from architecture perspective on buildings. Furthermore, people nowadays started to aware about sustainability concept and its application by implementing it in their daily life such as reduce, reuse and recycle on certain products. Thus, by converting such abandoned and historical building into a new functional building, it can promote the sustainability concept from an architecture view as well as promoting our historical building in Malaysia with the significant culture that it has to the international tourists. Heritage building can be classify as assets to the tourism industry for that particular area and for the country in a wide scale (Ahmad, 2009; Chai, 2011; Hassan & Harun, 2013; Su, 2010).

The other case study was Royal Theater of Shah Alam that was build in December 2004 and officially completed in 2011 with the total cost of MYR 44 million. This building was built using normal construction method whereby 100% of this building was built in a piece of an empty land. It can accommodate 800 people in a time with its six-storey theater block, exhibition halls, cafeteria, musolla, multipurpose halls, conference rooms and toilets. Royal Theater of Shah Alam basically a venue for local theater productions and constructed based on popular Malay-Bugis concept. Precast concrete has been chosen as the main material for the structure and the interior basically using paint as wall treatment and composite product used for cladding as

well as for the roofing. Shah Alam City Council (MBSA) has been appointed as the management consultant for this theater since 2008 (The Star, 2009).

An economic evaluation can be conducted by calculating the costs of a project and the payback time (Annarita, 2011). There is significant difference between the total costs of construction between these 2 buildings although they have the same function as a theater. The major differences came from the method used for the construction of these 2 buildings. Since KLPAC reuse back 40% of the original structures, there for they were able to reduce the need of construction material by 40%.

As result, other implication or externalities cost regarding on the material can also be reducing such as cost from manufacturing process, cost of transportation and cost of handling. Therefore total cost of retrofitting KLPAC only used MYR 30 million including all the electrical and mechanical equipment's compared to Shah Alam Royal Theater, whereby it used MYR 44 million. There is significant difference of MYR 14 million between these two building (Figure 7) and shows that KLPAC (retrofitted) saves 19% from the total cost.

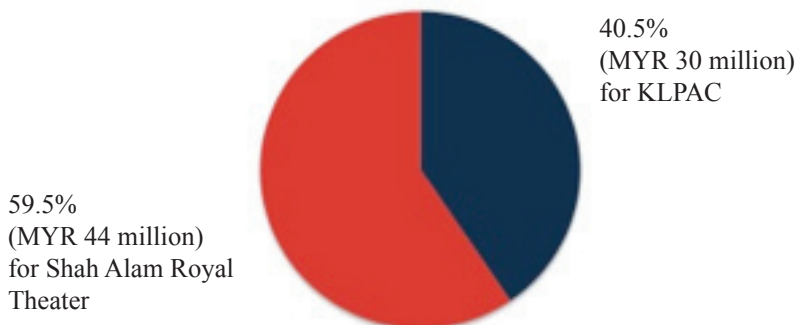


Figure 7 Distribution of construction cost between KLPAC and Shah Alam Royal Theater

In addition to that, KLPAC only undergo construction process in 7 months compared to Shah Alam Royal Theater, which took 7 years to be completed (77 months more than KLPAC construction period). In a normal construction process, the longer time take to complete a project, the more money is needed. This happened due to several factor and condition such as payment of labors, payment to other consultant and also increasing of construction material price from time to time. Not only that, the developer must bare other externalities that came from workers if longer time were needed for example, health insurance, duties from government on foreign workers as well as renewing passport of the foreign workers.

Conclusion

M. Surat *et al.*, (2010) said that students should also be taught the importance of having good built environment, appreciate good architecture and human development is tied

in directly with architectural development so that they can voice out their interest, idea and concern on the buildings as well as the environment. Low understanding on the importance of preserving the historical buildings might cause our next generation lose their possibilities to learn more about the culture and history especially on architectural aspect from buildings. Economic value of a historic building will also decrease from time to time if it left vacant or did not manage and maintains in a proper way as it suppose to be as an old building that has sentimental value (Arazi Idrus *et al.*, 2010). This happened to some of the building in Malaysia such as Goh Chan Lau (Figure 8), which means 5-Storey bungalow that was built in 1880 by a Chinese tycoon in Penang. It was used as private residence until Second World War and was occupied by a Chinese school until 1990 before it was sold out for new development since the location of the building was on prime real estate.



Figure 8 Goh Chan Lau, Penang

In addition, Balai Zaharah, Johor Bahru (Figure 9) also faced the same scenario (Arazi Idrus *et al.*, 2010). This building was built in 1858 as venue for royal ceremonies by Johor Royal families such as wedding of previous Sultan of Johor, inauguration of the sultan until they moved to their new palace upon its completion. This building then used as religious school from 1970-1980s and then was left abandoned until today. These two example shows that, without preservation, we will lost the historical building them forever especially when they had been demolished for new development. Heritage building must never be demolished but must be conserve as demolishing them is like erasing the country's historical memories (Arazi Idrus *et al.*, 2010). As result, young generation will only get to know these building by photos, manuscript from books or Internet sources and also stories from local people.



Figure 9 Balai Zaharah, Johor Baharu was built in 1858 but was left vacant from 1980 until today

It is basically normal as building aged, it will be exposed to deterioration and other building defects since it is truism nowadays that there is no building without maintenance-free. Therefore for heritage and historical building, there must be efficient maintenance mechanism and management in order to extend the life span of the building as well as minimizing cost of repair works and avoiding damage on the building heritage value since some of the historical building was left vacant or has been demolished. It will be a huge loss for the local people if the historical building were torn down since they will not only lose the building but also lose the historical and architecture value of it. While for the country, it may lose one of the attractions for tourist to visit since Malaysia income also depending on tourism sector. Therefore it is very crucial for Malaysian to take extra initiatives on preserving the heritage and historical building by implementing more modern method such as retrofitting. By doing retrofitting, the vacant historical built can be reused back for new purpose such as an office or theater that can be use to generate income, minimizing the cost of construction compared to building up a new building, as well as maintaining the historical, architecture and heritage value of the original building. Practically this method brings benefit not only to the building, but also attracts more tourists to visit and generate more jobs if it were use back as an office. In addition to that, it may save other historical building from being destroyed due to unprofitable feedback from previous usage.

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