Benefits of Adaptive Reuse of Old Buildings

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Received: 01 December 2022
Accepted: 15 April 2023
Date Published Online: 01 June 2023

Abstract: Much effort has been made to reduce, reuse, and recycle waste from almost everything to attain environmental sustainability. When buildings are abandoned and dilapidated, adaptive reuse can be a sustainable way to recycle and breathe new life into an old building. At the same time, appreciation and preservation of the architectural heritage's significance can be sustained. An adaptively reused old building has been modified to manage the conversion of old services and technology to its new purpose or function as a result of development while preserving its original fabric and structure. The objective of this study is to identify the benefits of adaptive reuse. To achieve the objective, the data was obtained from previous literature, including journals and theses. It is believed that this study will assist organisations or individuals in achieving environmental sustainability through the adaptive reuse of old buildings. The study's findings revealed that the adaptive reuse of old buildings benefits the environment and society. The outcome of this study is hoped to be a future reference for organisations or individuals interested in the adaptive reuse of old buildings.

Keywords: Benefits, Adaptive Reuse, Old Building, Heritage Buildings

Introduction

In Malaysia, many old buildings are still in good condition and have attracted the attention of both local and foreign tourists (Masdey and Ramli, 2018). Our country is rich in historic structures, especially those left behind by the colonists. According to Abu Hasan, Yaakob, and Ab. Latif (2004), and Ahmad (2005), the east coast of peninsular Malaysia has been colonised for 446 years and achieved its independence on August 31, 1957. Therefore, the history of the establishment of the Malaysian government has left many heritage buildings from both locals and Europeans. These buildings are also known as heritage buildings. According to *Jabatan Warisan Negara* (2012), the age of a heritage building is less than 100 years, and Feilden (2007) stated that if the building is capable of surviving more than 100 years of age, it is entitled to be gazetted as a historic building. Heritage is defined as having features of a legacy from ancient times that include nature, architecture, language, art, culture of society, and beliefs. Heritage is a thing transmitted by or acquired from a predecessor (Ali, 2007; Baxter, 2014; Harvey, 2009). Old means existed for a long time ago (Holder, 2001). One of the elements of heritage is in the form of a building. Building is a structure with a roof and walls that is used as a place for people to live, work, do activities, and store things (Fitchen, 1999). In short, the definition of a heritage building is a building that possesses unique architectural value where it requires specific care, treatment, and protection because of aesthetic, historic or cultural values (Nizam et al., 2019), while an old building means a structure that was made many years ago with the physical characteristics of age

(Holder, 2001). The old building holds the past of urban development and culture (Alauddin and London, 2012), and the heritage building has significant and non-renewable architectural, cultural, and economic assets (Shipley, Utz, and Parsons, 2006). The old building often has a unique in-built construction, especially in terms of fineness of architecture and detailed manufacturing techniques (Warren, 1999); whether the building is a colonial building, an old Malay house, or a shophouse, each has its uniqueness. Significant efforts have been made to minimise, reuse, and recycle virtually all waste to attain environmental sustainability. Adaptive reuse is a sustainable method to recycle an old building and give it new life when abandoned and in disrepair (Mohd Abdullah, Suratkon, and Syed Mohamad, 2020). At the same time, appreciation and preservation of the architectural heritage's significance can be sustained (Mei and Ahmad, 2017). Adaptive reuse, as defined by Douglas (2006), is a process of converting building which functions in overseeing outdated technology and services to a new building's purpose due to development by injecting new materials and ideas while at the same time retaining its original structure (Mehr and Wilkinson, 2020). Bullen (2007) and Abdulhameed et al. (2019) viewed adaptive reuse as a process that gains the benefit of the embodied energy and quality of the original building dynamically and sustainably, while Harun (2011) pointed out that adaptive reuse can be used as one of the conservation methods because adaptive reuse can protect the fabric of the old building that contributes to sustainable development (Kim, 2018). Using old buildings by changing their appearance to underpin heritage buildings with new development is necessary to sustain development for future generations.

Fig. 1 The old Central Market in 1982, before it was converted from a market to an art and craft centre.

One of Malaysia's earliest and most notable examples of adaptive reuse of old buildings is Central Market, located in Kuala Lumpur. This building was built in 1888 as a wet market, as shown in Figure 1, and it is currently used as a commercial cultural centre dedicated to the preservation and sale of traditional handicrafts from all races in Malaysia, as shown in Figure 2. In summary, adaptive reuse has been utilised for a long time to recycle old buildings for new purposes and conserve buildings. With

more adaptive reuse work in the sustainability industry, this approach has also prompted more researchers to study the adaptive reuse method more deeply.

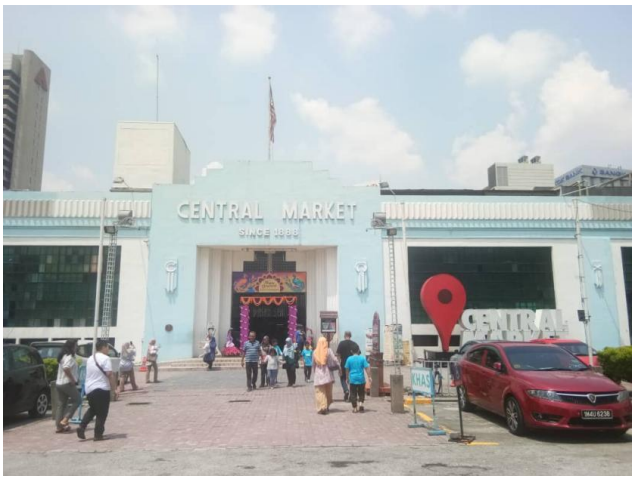

Fig. 2 Central Market Today

Materials and Methods

To obtain the objective, a literature search was carried out to identify the benefits of the adaptive reuse of old buildings. The first stage involved conducting a literature review on adaptive reuse. The literature review began with searching for and perusing materials related to the field of study. This stage entailed reading materials from journals and theses related to adaptive reuse, old buildings, and the benefits of applying adaptive reuse. This literature review may help to provide a deeper picture and knowledge of an ongoing study. The study's findings are intended to serve as future references for any organisations or people interested in Malaysia's adaptive reuse of old buildings.

Result and Discussion

Several researchers claim that the characteristics of adaptive reuse help to restore and enliven a city by evading demolition waste, encouraging recycling of the embodied dynamism, delivering substantial social and economic profits to the world, and covering the building's lifetime (Austin, 1988; Bullen and Love, 2011a; Douglas, 2002; Marks, 1996; Mine, 2013; Yung and Chan, 2012). The process of adaptive reuse involves injecting new materials and ideas into the interior while preserving the basic form of the original fabric of the old building. The process enables people to relate to and learn about the life of their predecessor and the previous building innovations made by observing the quality of the old building. Besides, innovation can be seen in architectural style and design, materials and texture, and building workmanship and construction (Harun, 2011). In addition, as stated by Yung and Chan (2012), adaptive reuse can evade the uneconomical process of demolition and reconstruction.

Bullen and Love (2011b) argue that adapting an old building is more cost-effective than demolishing and rebuilding. The United Nations Environment Programme (2009) shares the same view, claiming that the construction of new buildings would take up significant amounts of raw materials and energy and generate high carbon emissions compared to existing buildings. As asserted by Wilson (2010), older buildings generally consist of more robust materials and can last longer. Thus, reusing the building stock is a realistic alternative to reduce the environmental impacts that may be caused by the construction industry (Munarim and Ghisi, 2016). Tu (2020) added that adaptive reuse is also linked to recreational values, including self-growth, health benefits, and social benefits. In addition, the adaptive reuse of heritage buildings will enable the stakeholders to upgrade the facilities and services in the old buildings, such as disabled access, sound insulation, and fire safety (Douglas, 2006; El-Halafawy and Soliman, 2002). However, Boussaa (2010) asserted that adaptive reuse does not mean that the old building should remain unchanged. Change is also necessary because without the ability to change, the

surrounding area would perish as this building is incapable of accommodating the new development. Aly Shehata (2014) also has a similar view on this. She explained that by conserving the original physical environment with its current or new uses, the current state of harmony and cognitive values will persist for another centuries.

Furthermore, the adaptive reuse of old buildings combined with a contemporary design can highlight vibrant and visually exciting spaces (State Heritage Office Western Australia, 2018). Additionally, the reuse of an old building encourages future generations to appreciate its identity (Burke, 2007; Wan Ismail, 2013), as the old building has its own story due to its unique architectural, aesthetic, political, and social features from a different time (Abdul Rashid, 2016). Therefore, the adaptive reuse approach encourages building designers to respect the past while carefully adding a contemporary layer (Cantacuzino, 1989). Moreover, Melis (2010) claims that the adaptive reuse approach offers a greater understanding of present technical and technological upgrades and serves as a basic intervention in the process of adapting old buildings for reuse.

Although the adaptive reuse of old buildings at World Heritage Sites is a challenging task (UNESCO, 1999), this approach is regarded as one of the best methods to retain heritage buildings because it can be best utilised in parallel with the needs of new development. Besides, it can improve the appearance of old buildings while preserving their identity and story for future generations (Ahmad and Badarulzaman, 2003; Chandler, 1991). In addition, according to the ICOMOS - International Scientific Committee for Theory and Philosophy of Conservation and Restoration (2016) and Omar and Ishak (2009), adaptive reuse prevents old buildings from being threatened by acting as a catalyst for the development and well-being of a town. Furthermore, adaptive reuse is one of the conservation techniques that can save old buildings from being replaced by new buildings and preserve the identity of the place (Douglas, 2006; Shen and Langston, 2010). Ismail (2003) stressed that the adaptive reuse of old buildings involves repurposing them for a new purpose. As aptly put by Alon and Amos (2009), adaptive reuse is also seen as a tourist attraction for old buildings. In relation to that, most property owners and developers have begun to realise the benefits and values inherent in existing old buildings and the need to construct new buildings (Prihatmanti and Bahauddin, 2011).

Prihatmanti and Bahauddin (2014) stated that the adaptive reuse of old buildings may attract tenants to occupy the designated premise while retaining the original building's "embodied energy." As aptly defined by Fuertes (2017), "embodied energy" is the energy consumed in constructing a new building. It includes pre- and post-construction, manufacturing of materials and equipment, transport and administrative functions. The demand for embodied energy is reduced when an old building is reused. Aly Shehata (2014) stated that using adaptive reuse on old buildings will make them look well presented. The process involves the adaptive reuse of old buildings capable of preserving ideas from history, maintaining identity by connecting the two realms of past and present, and ensuring that old buildings continue to provide a sense of place for current and future generations.

Reuse is referred to as the revitalisation of historical values and the rediscovery of history (Yildirim, 2012). However, old building adaptation may threaten the conservation of the authentic pattern that is the core of the heritage principle (Aydin and Yaldiz, 2010). When this happens, the old building may have intentional or unintentional defects (Aly Shehata, 2014; Kamal, 2001). Thus, the best approach is to employ adaptive reuse (Kincaid, 2002). Nonetheless, challenges pertaining to adaptive reuse may occur if no precautionary action is taken (Mei and Ahmad, 2017).

Aydin and Yaldiz (2010) argue that the adaptive reuse of old buildings may also compromise the authenticity of the building in order to meet development needs. However, the intervention can be minimised, and the authenticity of old buildings will be retained if the stakeholder strives to respect, understand, and appreciate the cultural heritage (Harun, 2011). Thus, in ensuring the authenticity of the adaptive reuse of old buildings is retained, the authenticity of conservation is applied. According to the Department of Environment and Heritage (2004), adaptive reuse of an old building should add a contemporary layer that adds value for the future while having minimal impact on the building's heritage significance. Therefore, building functions that have not been significantly altered from their original use are preferred (Harun, 2011). In addition, the conservation of old buildings, as asserted by Hasbollah (2014b), should include meeting the criteria of authenticity in conservation that manage changes to the old building, prolonging its life, and creating a nostalgic context.

Conclusion

To summarise, adaptive reuse for heritage buildings is considered the most practical conservation method. This approach also contributes to current development by facilitating the reuse of old buildings by modifying their functions and efficiencies while preserving their structure. Typically, a minor modification is necessary to ensure that the old building meets the needs of development functions (DesBrisay, 2007). Accordingly, adaptive reuse will lead to sustainable growth by mitigating new building needs, reducing environmental impacts, and growing economic benefits from a life cycle perspective.

Acknowledgement

The author would like to express gratitude to the first supervisor, Dr Lilawati Ab Wahab, the second supervisor, Dr Dzulkarnaen Ismail, and the third supervisor, Dr Puteri Rohani Megat Abdul Rahim, for their continued encouragement and guidance.

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