



# Adaptive reuse strategies for heritage buildings: A holistic approach



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## ARTICLE INFO

### Article history:

Received 14 March 2016  
Received in revised form 27 May 2016  
Accepted 31 May 2016  
Available online 1 June 2016

### Keywords:

Architectural conservation  
Heritage buildings  
Adaptive reuse strategies  
Decision-making  
Sustainability

## ABSTRACT

Heritage buildings are crucial in terms of transferring the cultural identity for further generations. Where heritage buildings can no longer function with its original use, proposing a new function is inevitable in order to preserve the significance of the heritage building.

The purpose of the research is to provide a comprehensive review of the factors affecting adaptive reuse decision-making and to develop a holistic model for adaptive reuse strategies for heritage buildings. Firstly, the data has been collected through literature survey and content analysis. Then, selected adaptive reuse examples have been investigated in the light of the defined factors. At the end, the model proposal has been developed according to the results.

The model can be used to propose adaptive reuse strategies for the abandoned or disused heritage buildings. On the other hand, it can be used to evaluate the appropriateness of the new use for re-functioned heritage buildings and to define the problems in the decision-making. In order to decide the most appropriate adaptive reuse strategy for the heritage buildings all the factors must be taken into consideration holistically. The model proposes a qualitative approach and the adaptive reuse strategies can be developed according to the decision makers and policy issues of the related context.

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## 1. Introduction and research aims

Heritage buildings are crucial since they symbolize and give glimpses from related past periods in time. Instead of destroying, they should be sustained since they are evidence of the people's lifestyle and culture living in or around it. Conserving heritage buildings and giving new functions according to their location, size, and potential can help to future generations to understand where they are coming from.

If the lifetime of the building stock is longer sustain its function, adaptive reuse with a new function is inevitable. However, the proposed new use must be appropriate in terms of preserving the cultural significance of the historic fabric. When heritage buildings are adapted for different functions, the new use and the interventions should preserve the originality and architectural character of the building in order to not give wrong or missing information for the further generations.

Through the history, different buildings have been used for different functions in different periods. But, today people have become more conscious about architectural conservation of built environ-

ment so selection of new uses for heritage buildings should be done more professionally.

Adaptive reuse poses quite difficult challenges for designers. Changing the function of building introduces new regulatory conditions (Langston & Shen, 2007). Deciding the new use of a heritage building is a difficult problem in decision-making process since there are many factors in the process. Finding the most appropriate function within the context is crucial in order to preserve the cultural significance of the heritage building. All the factors should be taken into consideration in adaptive reuse decision-making process to find the most appropriate function for the buildings, considering the different dimensions of adaptive reuse.

A successful adaptation is one that respects the existing building and its historic context and add a contemporary layer to the heritage building rather than destroying its character (DEH, 2004). Adaptive reuse of a heritage building is a challenging process since the heritage values, physical characteristics and potentials of the heritage building should be well analysed holistically (Günçe & Mısırlısoy, 2014).

The main problem in adaptive reuse projects is the random decision of the new function for heritage buildings without in depth analysis. The decision on the new use should be based an analytic and scientific method in order to find the most appropriate strategy for the adaptive reuse project. Otherwise, after a while, due to

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social and economic problems, heritage buildings may become disused or new use may harm the originality of the heritage building. Great amount of funds are spent for the conservation of heritage buildings, so for a successful adaptive reuse project, heritage building should be economically, socially and physically sustainable. Unfortunately, there is lack of clear methodology for adaptive reuse decision-making of heritage buildings. It is mostly focused on environmental, physical and functional aspects of heritage buildings and there is less support on socio-cultural aspects of heritage buildings.

Accordingly, this research focuses on two objectives. The first objective is to provide a comprehensive review of the factors influencing adaptive reuse of heritage buildings and identify factors in decision-making. Relevant research studies on the adaptive reuse of heritage buildings have been investigated in order to identify the factors that affect adaptive reuse decision making of heritage buildings.

The second objective is to set up a holistic model for determining the most appropriate function for adaptive reuse of heritage buildings in the light of the identified factors. A model, which will be used for developing adaptive reuse strategies for heritage buildings, has been proposed in the light of the identified factors.

The research proposes a model for developing adaptive reuse strategies for heritage buildings that are abandoned, inappropriately functioned or disused. The study presents a holistic approach for identifying factors affecting adaptive reuse decision-making. The model will help decision makers in developing the most appropriate strategy for the future use of heritage buildings by considering all factors together in order to achieve successful adaptive reuse projects.

## 2. Methodology

Firstly, the data has been collected through literature survey and content analysis has been done to identify the factors. Factors that affect decision of appropriate function for adaptive reuse of heritage buildings have been figured out in the light of literature survey analysis. Relevant research studies for each factor have been analysed and factors have been identified.

Secondly, successful examples of reused heritage buildings have been analysed in the light of defined factors. 16 re-functioned heritage buildings from different countries are selected as the field studies. Observations through site surveys have been done and the decision-making process of the heritage buildings has been investigated according to the factors defined. In order to support the observation and investigations, interviews have been conducted with the decision makers of the selected projects. Lastly, the model has been developed in the light of the defined factors and discussions after the investigation of field studies.

## 3. Literature review on adaptive reuse of heritage buildings

Buildings may become redundant for various reasons, such as changing economic and industrial practices, demographic shifts, increasing cost of upkeep or maintenance. Mostly because they are no longer suited for the original function and a new use has not been identified (Orbaşlı, 2008). Adaptive reuse happened in the past simply because demolition and the construction of new buildings would need more time, energy and money than reuse so it is not a recent phenomenon by any means (Velthuis & Spennemann, 2007). Adaptive reuse has been started to discuss architecturally during the 1960s and 1970s due to the growing concern for the environment (Cantell, 2005).

Adaptive reuse strategies assist the promotion of development of sustainable built environment (Conejos, Langston, & Smith,

2012). On the other hand, architectural conservation ensures economic, cultural and social benefits to urban communities. Therefore, the role of architectural conservation has changed from preservation to being part of urban regeneration and sustainability (Bullen & Love, 2011a). Adaptive reuse is an alternative to demolition and replacement of buildings since it requires less energy and waste. It also provides social benefits by revitalizing familiar landmarks and giving them a new life (Conejos, Langston, & Smith, 2011). Giving new life into heritage buildings ensures environmental and social benefits to the communities and also helps to retain our national heritage (Shen & Langston, 2010). Society is becoming more aware of ecological issues and the demolition of heritage buildings is now seen as an ecological waste and also as the disposal of local identity, of cultural heritage and of socio-economic values (Cramer & Breitling, 2007).

An appreciation began to emerge that heritage buildings are precious and should be conserved, starting from the mid nineteenth century until today. Heritage buildings serve as cultural and heritage symbols; thus, they act as a centre of individual and community life (Elsorady, 2014). Building re-use and adaptation have begun to be an increasing trend within the built environment. Increasing the life of a building through adaptive reuse helps to lower material, transport and energy consumption and pollution; also make a significant contribution to sustainability (Bullen & Love, 2009). 40 per cent of construction in Central Europe is adaptation of historic buildings rather than demolishing them and construct the new ones (Schittich, 2003).

Adaptive reuse decision-making comprises a complex set of considerations including location, heritage, architectural assets and market trends (Bullen & Love, 2011a). For a new use, the condition of the historical pattern must first be assessed and a conservation plan must be coordinated with a management plan (Yıldırım, 2012). Adaptive reuse is a complex process which requires participants in the process that have a clear understanding of how to determine the most appropriate future for the building in a particular location and time (Kincaid, 2002).

Adaptive reuse can transform heritage buildings into accessible and useable places; also ensure new spaces to be lived in a sustainable manner. The most successful adaptive reuse projects add a contemporary layer that provides value for the future and also respect and retain a building's heritage significance (DEH, 2004).

## 4. Development of model

Development of model includes two parts: Firstly, factors affecting adaptive reuse decision-making have been defined. There are many factors that affect the decision making process in adaptive reuse projects. Relevant research studies have been investigated and content analysis has been done in order to find out these factors. The factors have been grouped under five categories and relevant research studies on each factor have been presented in Table 1.

Secondly, 16 successfully completed adaptive reuse projects have been selected as the examples in order to help exploring the factors in decision-making and also to put these steps into order. These examples have been deeply investigated in the light of the defined factors in Table 1. The selected adaptive reuse projects that are located in different cultural environment have been observed through site surveys and critically investigated through factors that affect adaptive reuse decision-making. The observations also have been supported by interviews with the actors in decision-making. The approaches in the examples have been compared with the proposed factors that affect adaptive reuse decision-making and then have been applied to the model.

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