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Assessment of Priority Options for Preservation of Historic City Centre Buildings Using MCDM (ARAS)

Vladislavas Kutut^a, Edmundas Kazimieras Zavadskas^b, Marius Lazauskas^{c,*}

^{a,b,c}*Dept of Construction Technology and Management, Civil Engineering Faculty, Vilnius Gediminas Technical University, Saulėtekio al. 11,
LT-10223 Vilnius, Lithuania*

Abstract

Numerous countries are trying to find the best method for suitable management of real estate objects that encompass both material value and cultural property. Cultural property can be defined as historical heritage in the form of volumetric and planned spaces of buildings. Yet another problem lurks in utilisation and maintenance of such buildings, which are usually regulated by national legislation thus aggravating certain decision-making processes related to their adjustment to the needs of the public or investors. This article addresses the status of some buildings located in the historic city centre of Vilnius and analyses indicators, on the basis of which such buildings could be assessed in order to identify their need for reconstruction, considering archaeological, historical, architectural, economic, social and other arguments. As experience in reconstruction suggests, such decisions demand for well-reasoned and precise concepts as each hasty conclusion usually results in mistakes that demand for additional work and funds. ARAS method, which is well-known in decision-making, have been chosen to design the algorithm for priority setting.

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1. Introduction

In a number of European cities, the historic city centre has been preserved as an important part of that urban landscape, resisting demolition policies or modernistic and post-modernistic redevelopment. As research suggests, the greatest part of historical and cultural property in historic city centres consists of building architecture, which in some way reflects the evolution of the urban expansion as well as historical and cultural development of the country.

“Old towns” are perceived as urban structures of the past that are revitalised and given new significance in contemporary cities [1]. Today, historical significance, symbolism and economic benefits have turned restoration and preservation of cultural heritage in old towns into an important task. One of the key objectives in management of old towns in accordance to their function is adjustment of architectural buildings to contemporary requirements, which aims to ensure continuance of active inclusion of such monuments into the life of the developing city and historic city centre. Many cities realize the importance of urban conservation in the globalising world, thus trying to develop on the basis of their urban heritage [2-3]. Cultural heritage symbolically corresponds to the systematic organisation of a country and serves as an emblem of culture and tradition [4]. One of the most difficult problems of the modern urbanism dwells in the combined estimation of the old town building renovation according to technical-economic and socioeconomic indicators [5]. This estimation is closely related to social requirements and prospects of urban development [6].

* Corresponding author.
E-mail address: marius.lazauskas@gmail.com

Maintenance and management of heritage assets are part of the political and economic development [7]. Effective conservation policy considers public involvement, public and private initiatives, planning, cultural and economic needs as well as openness to the public during the decision-making process [8], [9], [10]. Extensive and complicated efforts are required in order to turn an old town into an appealing part of the city as well as adjust old buildings and spaces to contemporary requirements, which is not only costly but also time-consuming [11]. In order to avoid damages to the unique and specific development of an old town, complex investigations – archaeological, historical, architectural, economic, social and etc. – have to be undertaken, prior to designing a reconstruction project for any old town building or quarter. The success of urban conservation depends on the ability to grant the historic area a vital role in urban development [2], [12]

Assessing indicators that are used to define most of cultural heritage buildings as well as considering opinions and needs expressed by representatives of the public, the article aims to identify, which of the investigated buildings should be given a priority and investments in the process of cultural property preservation. In order to assess the influence of needs expressed by concerned groups, for selection of the most efficient alternative, the Additive Ratio Assessment (ARAS) method is applied [13].

2. Aspects of improvement pertaining to cultural heritage buildings

The Vilnius Old Town was included into the World Heritage List in 1994. The area of the historic city centre of the Lithuanian capital amounts to 359.5 ha, which encompasses 112 quarters and 3 zones (the territory of Vilnius castles – 82.5 ha; the nucleus of the Old Town surrounded by the defensive wall – 98 ha; and historic outskirts – 179 ha). Defensive, residential, representational and religious buildings with Gothic, Renaissance, Baroque and Classicism attributes adorn the contemporary Vilnius Old Town. One of distinctive features of this particular historic city centre resulted from a merger of several styles into one harmonious aesthetic structure. Eye-catching domes of churches that preserved stylistic distinctiveness typical to the School of Vilnius Baroque, which was formed in the fourth decade of the 18th century, and restrained splendour of Classicistic architecture compose the unique spirit of the site.

Planned structure of old towns merges from a lengthy and complicated process and depends on an evolutionary period (14th–16th centuries), reflecting the major directions of planned development in Lithuanian settlements and towns. The evolution of planned old town structure is closely related to the development of Lithuanian architecture, urbanism and culture in general. The evolutionary analysis of old town development aims to reveal the archaeological, historical, architectural, artistic and urban value as well as define the significance and scale of old town management.

Restoration of old towns may last for decades and should start with a complex investigation of buildings as well as entire quarters. This approach ensures an enhanced functionality of reconstructed or new buildings, preservation of their architecture as well as protection of the specific old town structure. Heritage preservation encourages civil engineers working in the fields of sustainable construction and environmental engineering to study the durability of historic structures and materials (concretes, rocks, steels, wood, etc.), which contributes to local economy in the present for the future benefit [14]. Thus, assessment of the current old town development situation as well as the process of reconstruction should be based on the progress in research and technology.

The investment process should also consider significant temporary economic effects [15]. Conservation, restoration and adaptation projects in historic residences are lengthy and expensive, especially in places with extensive dilapidation [16].

3. Estimation of evaluation criteria and grading of heritage buildings

The lifespan of buildings is composed of a series of interlocking processes, starting from the initial architectural and structural design, through to actual construction, followed by maintenance and control [5]. The Vilnius Old Town, the surrounding landscape, its structure and panorama are in constant transformation driven by continuous construction works and developmental projects. This change is especially determined by incorporation of new contemporary buildings constructed from modern materials

To restore or preserve a cultural heritage object, interests and needs of the majority of stakeholder groups should be considered; thus, assessment of such opinions might benefit from multi-criteria techniques [17]. Success in construction and restoration projects is dependent on the effective organization of multiple specialized teams, each contributing with their own abilities, experience, knowledge and skills towards the completion of the joint project, yet bringing their own objectives, goals and management styles, which may not be entirely complimentary [18].

Ensuring archaeological, historical, architectural, economic, social and other aspects as well as aiming to preserve a unique and specific development of an old town and considering the needs of the public, criteria are selected (Table 1), on the basis of which assessment of cultural heritage buildings is undertaken to decide on a priority ranking for preservation and restoration of heritage objects. Systematic organization of information on cultural heritage buildings does not consider

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