

THE CHARACTERISTICS OF ASSESSMENT TOOLS IN THE BUILT ENVIRONMENT: HERITAGE BUILDINGS

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Abstract

An assessment is a technique for evaluating a building's performance or output using a set of criteria or indicators. In the built environment, there are several assessments to conserve heritage buildings that have been started by the government. These evaluations are diverse from one another and serve different purposes during the planning, starting, middle, and end phases of construction or conservation. The value of the building and its performance are evaluated as part of the assessments of the built environment. The objective of the study is to identify the characteristics of assessment tools in the built environment, focusing on heritage buildings. In order to achieve the objective, the data was obtained from previous literature, including journals and theses. The findings reveal that the characteristics of assessments in the built environment focused solely on descriptive assessments rather than numerical assessments. In contrast to descriptive assessments, numerical assessments' parameters produce more precise data on performance value and are easier to control. This study also found that the assessments focus on the threats, significance, or impacts of properties that collectively comprise the 'historic' values, as well as a heavy emphasis on the sustainability, performance, and condition of each individual building unit. The outcome of the study is hoped to be a future reference for organisations or individuals interested in assessment rating tools in the built environment, focusing on heritage buildings.

Keywords: assessment, tool, characteristics, built environment, heritage building

Introduction

An assessment is a method of judging or measuring someone or something's value, quality, or skill to gain formulation of general results through the correlation and interpretation of existing and newly collected information (Letellier, 2007). Steel (2009) defines assessment as related to an action or an instance of making a judgment about something. A tool is a device or implementation used to carry out a particular function or aid in accomplishing a task (Steel, 2009). In short, it can be concluded that an assessment tool is a device evaluation method to evaluate performance or product. This study aims to identify the characteristics of assessment tools in the built environment, with a focus on heritage buildings. The following sections will discuss in detail the assessment tools aligned for this study.

Research Methodology

To obtain the objective, a literature search was used to identify the characteristics of assessment tools in the built environment, with a focus on heritage buildings. A literature review begins with searching and perusing materials related to the field of the study conducted. It involves reading materials related to assessment tools and the characteristics of each assessment tool available from journals and theses. This literature review helps to provide a deep picture and knowledge of the ongoing study. The study's findings are intended to serve as future references for any organisations or people interested in assessment tools in the built environment.

Results and Discussion

In the built environment, there are various assessments to preserve heritage buildings initiated by the government. These assessments can be used from the process of planning, beginning phase, middle phase, and end phase of construction or conservation. These assessments have different functions. The purpose of the assessment of the built environment is to rate the value of the building and analyse how well it performs. The following are the types of existing assessment tools focusing on heritage buildings:

UNESCO's Reactive Monitoring (UNESCO Reactive Monitoring Review Team, 2018)

Reactive Monitoring is a report from World Heritage that describes the state of protection of particular properties at risk. This report is to ensure that action is taken to address the possibility of listing endangered properties on the World Heritage List and remove them from the World Heritage List (UNESCO Reactive Monitoring Review Team, 2018). UNESCO (2018) explained that the assessment is obtained when information is provided by the World Heritage Centre that a registered property has been seriously threatened or that corrective action has not been taken within the given time. When a building is seriously threatened, the data on endangered heritage resources will be withdrawn from the World Heritage List after all documentation has been obtained from the State Party and the Advisory Bodies. However, the tool approach applied here is based on the information received. The Reactive Monitoring would fix the at-risk properties and exclude them from the list of world heritage properties. However, Reactive Monitoring is just to monitor the heritage properties under the risk of multiple buildings or sites rather than assessing individual buildings.

UNESCO's Periodic Reporting (International Council on Monuments and Sites, 2011; UNESCO Reactive Monitoring Review Team, 2018)

Another assessment tool applied was Periodic Reporting. The periodic reporting is a system conducted every six years (International Council on Monuments and Sites, 2011; UNESCO Reactive Monitoring Review Team, 2018). According to UNESCO Review Team (2018), this report is a self-reporting process and should be led by the States Parties in each region. This system acts as a monitoring instrument in determining any threats measured by the Threat Intensity Coefficient (Rodwell, 2002). The States Parties may seek expert advice from the Advisory Bodies and the Secretariat when producing this report. The World Heritage Centre compiles national documents from the collected data, which will be submitted for review and approval to the World Heritage Committee. Next, the World Heritage Committee makes recommendations at the regional level to the State Parties, and action plans are formulated through a collaborative process. The process would last for a period of approximately six years, and before the start of a new cycle, a reflection period is initiated to evaluate the Periodic Reporting mechanism. Similar to Reactive Monitoring, this Periodic Reporting monitoring

instrument focuses only on the inspection and monitoring of activities rather than the full spectrum of the evaluation process (Aziz, Keumala, and Zawawi, 2017).

Heritage Impact Assessment (International Council on Monuments and Sites, 2011)

Another different assessment tool applied was the Heritage Impact Assessment. The Heritage Impact Assessment is a tool developed by International Council on Monuments and Sites (ICOMOS) to identify future consequences of a current or proposed action (Seyedashrafi, Ravankhah, Weidner, and Schmidt, 2017). Heritage Impact Assessment provides a detailed and holistic framework to guide the decision-making process and implement a coherent set of appropriate actions for the conservation of cultural heritage sites (Idid, 2010). According to the George Town World Heritage Incorporated (2012) in the Draft Guidelines for the Preparation of Heritage Impact Assessment World Heritage Cities of Melaka and George Town, the assessment is a report on the impact of a proposed development, restoration or renovation project. The report provides the result of studies on the site of the proposed project and the possible impact it will have on the heritage site. For example, **Table 1** shows the scale or severity of impacts or changes that can be judged, taking into account their direct and indirect effects and whether they are temporary or permanent, reversible or irreversible by the International Council on Monuments and Sites (2011). Nevertheless, the scale or severity of impact is ranked without considering the value of the asset.

Table 1: Scale or severity of impacts or changes in Heritage Impact Assessment report.

VALUE OF HERITAGE ASSET	SCALE & SEVERITY OF CHANGE/IMPACT				
	No Change	Negligible change	Minor change	Moderate change	Major change
For WH properties Very High – attributes which convey OUV	SIGNIFICANCE OF EFFECT OR OVERALL IMPACT (EITHER ADVERSE OR BENEFICIAL)				
	Neutral	Slight	Moderate/ Large	Large/very Large	Very Large

Source: Guidance on Heritage Impact Assessments for Cultural World Heritage Properties by International Council on Monuments and Sites (2011).

Facility Performance Evaluation (Zimring, 2010)

The next assessment tool is the Facility Performance Evaluation. Facility Performance Evaluation is a continuous process of systematically evaluating the performance and/or effectiveness of one or more aspects of buildings in relation to issues such as accessibility, aesthetics, cost-effectiveness, functionality, productivity, safety and security, and sustainability (Zimring, 2010). In addition, according to the California Department of General Services (2018), the purpose of Facility Performance Evaluation is to understand the impact of early design delivery decisions on long-term efficiency, the effectiveness of buildings and the impact of building delivery processes. However, the Facility Performance Evaluation is only intended to ensure that buildings have perfect performance characteristics to achieve ecological and environmental sustainability (Zimring, 2010).

Post Occupancy Evaluation

Post Occupancy Evaluation is one of the Facility Performance Evaluation types. The Post Occupancy Evaluation is the evaluation of the building's performance after it has been

occupied (Khalil, 2008). The core purpose of the Post Occupancy Evaluation in studying buildings is to understand the extent of end users' satisfaction and expectations (Woon, Mohammad, Baba, Mei, Zainol, and Nazri, 2014). According to Husin, Nawawi, Ismail, and Khalil (2014), this evaluation has great potential in analysing a building's performance to achieve the best quality in building services. The Post Occupancy Evaluation assessment integrates the building occupants' behaviours, perceptions, and opinions as building users. The Post Occupancy Evaluation evaluates the functional performance of a building by providing an analysis of how the users' needs are supported through satisfaction surveys (Lawrence and Keime, 2016). The Post Occupancy Evaluation is a cornerstone for the continuous improvement in building procurement and focuses only on reviewing the process of delivering the project as well as the technical and functional performance of the building during the occupation (Blyth, Gilby, and Barlex, 2006). Yet, according to Zimmerman and Martin (2010), currently, there are no agreed indicators which can be used to assess building performance in the Post Occupancy Evaluation.

Building Condition Assessment (BCA)

Finally, the last assessment tool used for the Built Environment is a Building Condition Assessment. The Building Condition Assessment evaluates the condition of a building's envelope performance, structural foundation and superstructure, and mechanical systems, including heating and cooling (Crozier, 2018). This type of assessment focuses more on building defect assessment in order to deliver the best service to the users. Building Condition Assessment may also include the exterior elements of the property, including site grading and drainage, condition of the roadway and servicing infrastructure, and lighting (Wahida, Milton, Hamadan, Lah, and Mohammed, 2012). This assessment provides comprehensive building deficiency information and forecasts possible maintenance or repair requirements. Still, a building inspector requires high skills in detecting defects and being familiar with reporting procedures to ensure that the Building Condition Assessment is accurate and appropriate for different building types (Yacob, Ali, and Peng, 2016).

Conclusion

In summary, after reviewing and analysing all the assessment tools employed by past researchers, it was found that they only focused on descriptive assessments rather than numerical assessments. A description is a pattern of narrative development that aims to create a vivid image of a place, object, character, or group (Svenonius, 1989). Conversely, numerical means that it is represented in numbers or refers to numbers (Cambridge University Press, 2008). As opposed to descriptive assessment, numerical assessment can produce more exact data about performance value and is easier to control. Below is a summary of the characteristics of assessments in the built environment, with a focus on heritage buildings.

Table 2: The list of characteristics of assessment in the built environment with a focus on heritage buildings.

No	Types of assessment	Function	Findings
1.	UNESCO's Reactive Monitoring (RM)	Reports on world heritage properties that are under threat would lead to the inclusion of the List of World Heritage in Danger.	The assessment tools are on a macro scale and have been manipulated to focus on threats,

			significance, or impacts of properties that collectively make up the values of 'heritage.' In other words, the scopes of these instruments are primarily concerned with many buildings or historical sites rather than analysing individual heritage building units.
2.	Periodic Reporting (PR)	The periodic reporting is a system conducted every six years by the State Parties. This system acts as a monitoring instrument, determining any threats as measured by the Threat Intensity Coefficient.	
3.	Cultural Heritage Impact Assessment (HIA)	A tool developed by ICOMOS to identify future consequences of current or proposed action. It provides a detailed and holistic framework for guiding the decision-making process and implementing a coherent set of appropriate actions for the conservation of cultural heritage sites.	
4.	Facility Performance Evaluation (FPE)	A continuous process of systematically evaluating the performance and/or effectiveness of one or more aspects of buildings in relation to issues such as accessibility, aesthetics, cost-effectiveness, functionality, productivity, safety and security, and sustainability.	The scopes strongly focused on factors of the building's sustainability, performance, and condition.
5	Post Occupancy Evaluation (POE)	The evaluation of a building's performance after it has been occupied. It evaluates the building's functional performance by providing an analysis of how user needs are supported through satisfaction surveys.	
6	Building Condition Assessment (BCA)	The assessment focuses more on building defect assessment in order to deliver the best service to the users. This assessment provides comprehensive information on the building's deficiencies and forecasts possible future maintenance or repair requirements.	

Table 2 shows the list of characteristics of assessment in the built environment, with a focus on heritage buildings. It can be summarised that Reactive Monitoring, Periodic Reporting and Heritage Impact Assessment are the assessment tools for macro-scale projects, which were manoeuvred to focus on threats, significance or impacts of properties that collectively make up the values of 'heritage'. In other words, rather than evaluating specific heritage building units individually, the scopes of these techniques rely primarily on a group of buildings or historical sites. Building condition assessment, post occupancy review, and facility performance evaluation all place a strong emphasis on the sustainability, performance, and condition of each individual building unit.

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Conflict of interests

The author declares that this paper has no conflict of interest.

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