



Elements in Assessing the Architectural Characteristics of Heritage Buildings

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Abstract

Architectural characteristics are one of the crucial aspects of identifying the heritage buildings and carrying its values of significance. It plays an essential role in guiding critical players of the heritage buildings to maintain their buildings. This paper reviews the elements that had been considered by researchers in assessing the architectural characteristics of the heritage buildings on the selected case study to quantify their criteria using the Analytical Hierarchy Principles (AHP) techniques. The result indicates overall visual aspects, and optical character at the close range of the heritage buildings is essential in assessing architectural characteristics of heritage buildings.

Keywords: Architectural characteristics; Architectural elements; Heritage buildings.

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1.0 Introduction

National Heritage Act 2005, Part I Preliminary Section 2 (1) defined “cultural heritage significance” as cultural heritage having aesthetic, archaeological, architectural, cultural, historical, scientific, social, spiritual, linguistic or technological value. Values need to be assessed to ensure any decision for the heritage site, building or monument in the future will consider all the benefits and the needs to retain it. Values too, can have many interpretations and meanings, depending on different yardstick and approach.

Architecture serves as a certificate and from the identity perspective, represents the thoughts of its people, thereby creating distinctive architecture in various periods and locations (Torabi and Brahman, 2013). According to Fitri (2015), almost experts also agreed that the design or architectural or esthetics value states explicitly from age value in considering heritage buildings. Thus, architectural characteristics are the best way to identify or understand the heritage buildings. The assessment on heritage value and significance of Bok House in Jalan Ampang, Kuala Lumpur in 2006 as an example, short after National Heritage Act 2005 been gazette, has raised questions about how heritage is assessed. It is being criticized as to no listing were made for the building although a proposal was submitted. Nonetheless, it does not meet the criteria and has no significant heritage value.

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1.1 Aim and objectives of the study

To review and analyze the current literature surrounding the topic of elements in assessing the architectural characteristics of heritage buildings. The objectives are:

To analyze the aspects that were assessed by other researchers in identifying the architectural characteristics of heritage buildings to develop final finding and conclusion on the results by other researchers and literature review

To quantify essential elements in assessing characteristics of heritage buildings using Analytical Hierarchy Principles (AHP) techniques

1.2 Significance of the study

The architectural character of the heritage buildings is one of the crucial aspects that need to be assessed to maintain the sustainability of the building's preservation and significantly affect the visual perception of the buildings. It is also a vital aspect to guide the heritage building's key players in managing the premises or in any on-going or new use or restoration of the building.

2.0 Identification Of Characteristics and Identity of Heritage Buildings Architecture in Malaysia

In Malaysia, there are many heritage buildings with architectural and historical significance influenced by several architectural styles including the traditional Malay architecture, the Portuguese architecture, the Dutch architecture, and the architecture styles brought by British (e.g. Moorish, Tudor, Neo-Classical and Neo-Gothic) (N. H. Salleh, A.G. Ahmad, 2009). Most of them are worthy of being listed or gazetted as heritage buildings or National Heritage Building under the National Heritage Act 2005 (Act 645).

Each of the architectural styles of the heritage buildings has its content which needs to be protected. It carries the characteristic of the building. Similarly, Feilden (1982) had previously described heritage buildings as irreplaceable sources of life and inspirations which for various reasons society has decided shall be conserved for as long as possible and they differ from modern structures because they are expected to last forever. Maintenance of heritage building is quite different from new buildings because the fabric of a heritage building has a cultural significance which must be retained maximally, and the authenticity of a heritage building depends mainly on the integrity of its fabric. Furthermore, according to Forsyth (2007), a well-maintained heritage building enhances the quality of life for everyone in the community, help to attract investment to the city (tourism), contribute to generation and provide a source of local pride and sense of place. So that, there are needs to know what the architectural characteristics of the heritage building through their elements is; since architectural value or significance is one of the vital aspects that carry the authenticities of the heritage buildings.

According to Nelson (1982), there is a three-step approach that can be used by anyone to identify the architectural character of the heritage buildings which are by identifying the overall visual aspects, the character at close range and style of the interior spaces, features and finishes. The next stage after this identifying is to prepare a statement of significance, which helps in assessing the values of heritage buildings

2.1 Identifying the overall visual aspects

Distinguishing the physical aspects without focusing on its details is the central aspect of identifying the global visual elements of the buildings. According to Nelson (1982), the major contributors to a building's overall character are embodied in the general aspects of;

- a) **Setting:** The element of setting should not be overlooked in the process of identifying the overall visual style even architecturally modest buildings frequently will have a background that contributes to their overall character. Obviously, for an example; the environment of urban row houses differs from that of a mansion with designed landscape such site features as gardens, walks, and fences, which can include their design and materials. As according to Oppong and Sarheng (2018), physical streets serve as a part of the urban realm where people have physical and visual access, as such, they serve as a political space where parades and demonstrations are held. Additionally, according to Warnaby (2009), the historic and architectural character of buildings can create a distinctive urban retail streetscape and, in the process, build character.
- b) **The shape of the buildings:** The form of a building can be an essential aspect of its overall visual character as it is the first physical aspect that presented the image of the building itself. Thus, it should not be assumed that only large or unusual buildings have a shape that is distinctive or identifiable.
- c) **Roof and roof features such as chimneys or cupolas:** Building has many character-defining aspects which include the windows and decorative stonework. The roof and its related elements are visually crucial to its overall visual character; since it is not only highly visible, as an example, a building has elaborate stone dormers. It also has decorative metalwork and slate work which if any changes to this patterned slate work or the other roofing details would damage the visual character of the building.
- d) **Projections on the building such as porches or bay windows:** Many buildings have projecting features such as porches, bay windows, or overhanging roofs, that help define their overall visual character. Although if a building has a projecting porch which is an important feature, almost any other change to the house, such as changes to the window pattern, or changes to the main roof, or changes to the setting, would also change its visual character.
- e) **Trim and secondary features:** Trim on walls or around the projections in the form of decoration or colour or patterning contributes to the character of the building or any secondary characteristics such as shutters, decorative roofs, railings, or exterior wall panels.

- f) **Openings for windows and doorways:** Window and door openings can be important to the overall visual character of historic or heritage buildings. There will be a rhythm or pattern to the arrangement of windows or other openings in the walls.
- g) **Exterior materials:** The materials or combination of materials most likely contribute to the overall character of the building as seen from a distance because of their color; or
- h) **Patterning,** such as broken faced stone, scalloped wall shingling, rounded rock foundation walls, boards and batten, or textured stucco.

Additionally, according to Kiruthiga & Thirumaran (2017), the presence and absence of an architectural element correspond to a significant change in visual perception level.

2.2 Identifying the visual character at close range

Identifying the visual character at close range or arm's length is where it is possible to see all the surface qualities of the materials such as:

- a) **Materials at close range:** There will have one or more materials that have an inherent texture that contributes to the close range character or materials with inherent colors.
- b) **Craft Details:** Almost any evidence of craft details, whether handmade or machine made, will contribute to the character of a building because it is a manifestation of the materials, of the times in which the work was done, and of the tools and processes that were used.

The surface qualities of the materials may be important because they impart the very sense of craftsmanship and age distinguishes heritage or historic buildings from other buildings.

2.3 Identifying the visual character of the interior spaces, features and finishes

Assessing or perceiving the integrity of the interior spaces can be somewhat more complicated than dealing with the exterior part of the buildings since the outer part can be seen at one time and it is possible to grasp its essential character rather quickly. While it is necessary to move through the spaces one at a time to understand the interior style, the visual characters that need to be identified are:

- a) **Individually important areas:** In assessing the visible internal role of any historic or heritage building, it is necessary to ask whether there are spaces that are important to the character of this particular building. Whether the building is architecturally rich or modest, or even if it is a practical or straightforward structure. Some individual rooms or spaces are important to this building because of their size, height, proportion, configuration, or function.
- b) **Related spaces and sequences:** Many buildings have interior spaces that are visually or physically related so that, as you move through them, they are perceived not as separate spaces, but as a sequence of related areas that are important in defining the central character of the building.
- c) **Interior Features:** Interior features are three-dimensional building elements or architectural details that are an integral part of the building as opposed to furniture. Interior features are often necessary in defining the character of an individual room or spaces. In some instances, an internal function, like a broad and ornamental open stairway may dominate the visual style of an entire building.
- d) **Surface finishes:** When identifying the visual character of heritage or historic interior spaces, one should not overlook the importance of those materials and finishes that comprise the surfaces of walls, floors and ceilings. The coatings may have evidence of either hand-craft or machine-made products that are essential contributors to the visual character. It may include patterned or inlaid designs in the wood flooring, decorative painting practices such as stenciling, imitation marble or wood grain, wallpapering, tinwork, tile floors and many more.
- e) **Exposed structures:** There will be some exposed structural elements that define the interior character such as exposed posts, beams, trusses in a church or train shed or factory.

The assessment of the visual character of the interior of the buildings is considered as significant for reasoning of any works that need to be done during or post conservation of the heritage building (Kutut, 2017).

3.0 Research Methodology & Limitation

The method used for this paper is an analytical review from previous researchers related to the elements in assessing the architectural characteristics of heritage buildings that had been assessed in different ways. The reviews of these researchers are very important for on-going research in determining the variables or criteria that should be considered when involving architectural characteristics of heritage buildings. Through this analysis, the issues related to the study have been defined.

The main limitation of this methodology is that the review of other researchers is bounded and constraint by time. In order to facilitate and make do with the time constraints of the research, only several areas are focused. All of the findings were obtained through selected research selected as to find out the elements that been used in assessing the architectural characteristics. Studies

that have been selected are the study focuses on the heritage buildings. At the end of this paper, the criteria weight for each measure that been identified will be derived as it later helps in other future research; which will continue for the case study selected

Each factor is evaluated on its importance with respect to another by applying Saaty's (1980) major scale for pairwise comparison. Scores are given to the cells of a square matrix on one side of the diagonal, and the main diagonal remains 1 (equal importance). On the other hand, the score is filled by reciprocal of the initial value. Consequently, only the upper triangle of the square matrix needs to be completed. Then, normalize the eigenvectors to obtain each of the elements relative weight. The final stage of the AHP is to calculate the consistency of the scores in order to measure the consistency level judgment derived from the expertise. This research only involved eight (8) decision-maker based on the eight selected study that related to the area of research based on the four (4) criteria that have been determined from literature reviews. One of the critical steps of the AHP is to estimate bias and inconsistency of the ratings by the decision-maker.

4.0 Findings

Elements in assessing architectural characteristics of heritage buildings

Some of the research is related to the components used in evaluating the architectural characteristics of heritage buildings have been reviewed in this study. Table 1 below shows the standard acquisition from the findings of each research. Categorization of the criteria in assessing the characteristics falls into four (4) categories which is overall visual aspects (C1), the visual character at close range (C2), visual character of the interior spaces, features and finishes (C3), and others (C4).

From the literature reviewed, an architectural characteristic is stated as one of the essential aspects that guide the critical player of conservation in preserving the heritage buildings. Several elements have been used in order to derive or assess the architectural characteristics of the heritage building which covers all parts of the buildings starting at the overall exterior part until the interior regions and also the close range of the materials. From the selected research, most of them are assessing the architectural characteristics from the overall visual aspects; primarily the exterior physical and the also the visual at the close range.

As an example, Kiruthiga & Thirumaran (2017) in their research, concerned about the overall visual aspect in assessing the architectural characteristics of the heritage buildings in Kumbakonam town such as the entrance gate or door, lean-to roof, cornices, pilasters, arched windows, ornamental parapets and also pot tiles roofing. The visual aspects at close range of the heritage buildings had been assessed as been used by Aciero et al., (2017), which included the construction elements which are divided into complex and simple features. Complex elements are compound parts which may be a vertical or horizontal decoration or finishing items. Meanwhile, simple elements refer to items that are generally the basic components of the structure, such as clay element, stone element, and mortar element. Additionally, Aidatul et a. (2015) in their research, found that community which includes public on the streets and the experts that responded to the survey made; agreed that form or exterior physical state of the building represents aesthetic qualities of each heritage building. It is proven that they mostly react or assessing the architectural character of those buildings through overall visual aspects.

Table 1: List of research related to the elements used in assessing architectural characteristics of heritage buildings

Author / Decision Maker	Title	Criteria			
		C1	C2	C3	C4
K. Kiruthiga, K. Thirumaran, 2016	Visual perception on the architectural elements of the built heritage of a historic temple town: A case study of Kumbakonam, India	/			
Shuhana Shamsuddin, Ahmad Bashri Sulaiman, & Rohayah Che Amat, 2012	Urban landscape factors that influenced the character of George Town, Penang UNESCO World Heritage Site	/			
Teuta Jashari-Kajtazi, Arta Jakupi, 2017	Interpretation of architectural identity through landmark architecture: The case of Prishtina, Kosovo from the 1970s to the 1980s	/			/
Vladislavas Kutut, 2017	Specific Characteristics of real estate development in cultural heritage areas	/	/	/	
Marta Aciermo, Stefano Cursi, Davide Simeone, Donatella Fiorani, 2016	Architectural heritage knowledge modeling: an ontology-based framework for conservation process	/	/	/	
Aidatul Fadzlin Bakri, Norhati Ibrahim, Sabariah Sh Ahmad, Nurulhusna Qamaruz Zaman, 2015	Public perception on the cultural significance of heritage buildings in Kuala Lumpur	/	/		
Aidatul Fadzlin Bakri, Norhati Ibrahim, Sabariah Sh Ahmad, Nurulhusna Qamaruz Zaman, 2015	Valuing built cultural heritage in a Malaysia urban context	/	/		
Isnen Fitri, Yahaya Ahmad, Faizah Ahmad, 2015	Conservation of tangible cultural heritage in Indonesia: A review current national criteria for assessing heritage value	/	/		
Total Score		8	5	2	1

* Overall visual aspects (C1), visual character at close range (C2), visual character of the interior spaces, features and finishes (C3), and others (C4).

In Table 2, the relative scales factors have been obtained from the expert through previous research paper been entered as it represents each variable involved. The variable comparisons are then made in matrices form in order to enhance the weight of the elements of assessing the architectural characteristics of the heritage building. Prior to weightage calculation, every scale factor on each criterion must be converted into a fraction in order to obtain the total column value for every cell. Then, the total scale factor is computed vertically by using this formula:

$$\Sigma = C^1 + C^2 + C^3 + C^4$$

Where;

Σ total value of every column's variable
 C column variables

Table 2: Pairwise comparison matrix of each criterion

	C1	C2	C3	C4
C1	1	0.625	0.250	0.125
C2	1.600	1	0.400	0.200
C3	4	2.500	1	0.500
C4	8	5	2	1

The next step, the criterion matrix or pairwise comparison matrix are normalized. Normalizing the matrix means to divide each element in every column in every column by the sum of that column Σ . The normalized value is obtained as following:

$$N = C / \Sigma C \tag{2}$$

Where;

N Normalize Matrix,
 C Criterion Comparison Matrix
 ΣC Total value of every column's variable

Relative importance or weight (W) is derived through eigenvector normalization process. The process is accomplished by averaging each normalized matrix by the sum of elements in the row. The same way goes to the other relative weight for criteria.

Table 3: Relative weight for each variable

	Normalize Matrix (N)	Criteria Weight (W)
C1	0.374	0.068
C2	0.598	0.110
C3	1.495	0.274
C4	2.991	0.548
	5.458	1.00

5.0 Conclusion

In conclusion, the selected research that been reviewed in this research proved that researchers are comfortable or familiar in using overall visual aspects and visual character at the close range of the heritage buildings as an element used to assess the architectural characteristics of them. These elements carry the most values of the heritage buildings itself and closely related to any of the process or works that are needed or have been done towards the building and been the most significant symbolic reflecting the architectural characteristics of each heritage buildings which distinguished them from common buildings. Besides, the selected research also highlighted the visual character of the interior of the buildings, especially on the interior spaces and sequences of the spaces. These criteria create an important set of variables that could be used in determining the architectural characteristics of other building typology and other related research.

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