

**A Values-Based Model for Decision Making in
Priority of Conservation of Cultural Heritage: UNDP
Projects in Cyprus as a Case Study**

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ABSTRACT

Architectural heritage possesses a high variety of tangible and intangible values which are attached to heritage buildings and sites. Detailed consideration and understanding of these values can help the decision makers to make a healthy conservation decision in heritage management by the inclusion of stakeholders. Although all of the built heritage have a significance, very often, prioritizing them, is a necessary action in conservation, especially in the case of limited financial resources. In the process of decision-making, absence of full understanding of heritage values, might have a negative impact for conservation of cultural heritage.

In this respect this study explores different terminologies of cultural heritage values by collecting a comprehensive data set of values from international literature; and categorises them into different typologies so that these categories are used to develop a values-based framework for prioritisation of built heritage.

Weighting of heritage values are done by heritage experts through AHP (Analytical Hierarchy Process) method and then the extracted weights are used in the proposed framework by different stakeholders to evaluate values of similar groups of heritage buildings through TOPSIS method. This assessment helps decision makers to prioritise the heritage buildings in conservation management.

Content analysis is applied as a qualitative research methodology, on a broad literature on heritage values. The collected definitions of values are reviewed, and the ones with similar and close meaning are considered as a common value. As a

quantitative method, the weight of each value typology has been extracted, based on frequency of being mentioned by different authors in different sources.

This categorisation created the basis for the calculation of weights of heritage values by the experts. In order to extract the weight of values from experts' point of view MCDM (Multi-Criteria Decision-Making Model) is applied. At the same time, the rank of each case in comparison to others, is determined by another survey filled by various groups of stakeholders including experts from public and private sectors and users such as tourists and local people.

The conservation projects from Famagusta Walled-City in Cyprus, funded by UNDP, have been selected as case studies to verify the framework that has the ability of calibration and can be adapted to different contexts.

Keywords: Heritage value, Cultural heritage, Architectural heritage, Heritage conservation, Decision-making.

ÖZ

Mimari miras, miras alanlarının ve binalarının taşıdığı çok çeşitli somut ve soyut değerlere sahiptir. Bu somut ve soyut değerlerin kapsamlı bir şekilde anlaşılması, karar vericilerin miras alanlarının yönetimi alanında paydaşların katılımıyla koruma konusunda sağlıklı karar almalarına yardımcı olabilir. Miras binalarının tümü önemli olmasına rağmen, çoğu zaman, özellikle sınırlı finansal kaynaklar söz konusu olduğunda, koruma eylemlerinde, bunlar arasında öncelik belirlenmesi esastır. Değerlerin kapsamlı olarak anlaşılmasındaki eksiklik, kültürel miras koruma kararlarında olumsuz bir etkiye sahip olabilir.

Bu bağlamda, bu çalışma kapsamlı bir şekilde veri toplayarak miras değerlerine yönelik farklı terminolojileri keşfeder; bunları farklı tipolojiler altında kategorize eder; böylece bu kategoriler, kültürel miras yapılarının önceliklendirilmesi için değerlere dayalı bir çerçeve geliştirmek için kullanılır.

Miras değerlerinin ağırlıklarının belirlenmesi, miras uzmanları tarafından AHP (Analitik Hiyerarşi Prosesi) yöntemi ile yapılır; ve daha sonra hesaplanarak çıkarılan ağırlıklar, önerilen çerçevede farklı paydaşlar tarafından TOPSIS (İdeal Çözümeye Yakınlığa Göre Tercih Sıralama Tekniği) yöntemi ile benzer miras yapı gruplarının değerlerini değerlendirmek için kullanılır. Bu değerlendirme, karar vericilerin koruma yönetiminde miras binalarını önceliklendirmelerine yardımcı olur.

Miras değerleri üzerinde yazılmış geniş bir literatüre, nitel bir araştırma yöntemi olan 'içerik analizi' yöntemi uygulanmıştır. Toplanan değer tanımları gözden geçirilmiş ve yakın anlamlı olanlar ortak bir referans noktası üzerinden kategorize edilmiştir.

Nicel bir yöntem olarak, farklı yazarlar tarafından bahsedilme sıklığına göre her bir değer tipolojisinin ağırlığı hesaplanmıştır.

Bu sınıflandırma, uzmanlar tarafından miras değerlerinin ağırlıklarının hesaplanmasına temel oluşturmuştur. Değerlerin ağırlığını uzmanların bakış açısıyla çıkarmak için MCDM (Çok Kriterli Karar Verme Modeli) uygulanmaktadır. Aynı zamanda, kamu ve özel sektörden uzmanlar ile turistler ve yerel halk gibi kullanıcıları içeren çeşitli paydaş grupları tarafından doldurulan başka bir anket ile her bir örneğin diğerlerine göre öncelik sıralaması belirlenir.

kalibrasyon yeteneğine sahip olan ve farklı bağlamlara uyarlanabilecek olan çerçeveyi doğrulamak için UNDP (Birleşmiş Milletler Kalkınma Programı) tarafından finanse edilen Kıbrıs'taki Mağusa Surlar-İçi'ndeki koruma projeleri alan çalışmaları olarak seçilmişlerdir.

Anahtar Kelimeler: Miras değeri, Kültürel miras, Mimari miras, miras koruma, Karar-verme.

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LIST OF ABBREVIATIONS

AHP	Analytical Hierarchy Process
CI	Consistency Index
CR	Consistency Ration
DL	Deterioration Level
EX	Experts
HV	Heritage Value
MCDM	Multicriteria Decision-Making
MCDA	Multicriteria Decision Analysis
TOPSIS	Technique for Order Preference by Similarity to Ideal Solution
TCCHC	Technical Committee on Cultural Heritage of Cyprus
UNDP	United Nations Development Programme

Chapter 1

INTRODUCTION

This chapter starts with the explanation of the background to the study, the research problem, the research questions, and then presents the aim of the study. Following this, the methodology and the limitations, as well as the structure of this thesis are explained.

1.1 Background of Cultural Heritage Management

Urban, rural or architectural heritage are the physical representation of a community identity. The term 'built heritage' refers to immovable, groups of building and sites of historical, aesthetic, archaeological, scientific, ethnological or anthropological values. Historical building preservation is becoming increasingly important world-wide, due to the emphasis on cultural heritage and its potential benefits.

Management of cultural built heritage is an important issue which require participation of different group of stakeholders for decision-making process to have a sustainable management plan (Heras et al., 2018) and also importance of including stakeholders from different backgrounds in the identification of heritage values, is emphasised by different authors (Poulios, 2010).

Today's conservation of cultural heritage is an important task because of its significance, and because these are part of the heritage of all humankind, and therefore their protection is a shared responsibility.

All conservation decisions require prioritizing multiple values. However, very few tools are available to appropriately determine the conservation priorities for the diverse typology of heritages, perhaps because of a lack of systematized decision-making aids. These decisions are generally neither objective nor neutral.

Individuals in charge of conserving the sites have a strong influence on which buildings will be given priority. Heritage professionals can be open to the opinions of different stakeholders and they may favour particular values. In this environment, it has been recognized that:

“Conservation is not an impartial process of discerning some sort of intrinsic value. Rather, it is a creative process of valorising a given resource or element within the built environment for the purpose of perpetuating a particular idea or narrative about a place or people” (KC, Karuppannan & Sivam, 2019, p. 44).

The statement that “conservation preserves significance” seems to imply that significance is static, and that conservation actions do not change the meaning of the place or any of its values. However, it is evident that in the conservation process, “values are always modified and interpreted, and in some cases, new values are created” (Avrami, Mason, & de la Torre, 2000, p. 9).

“Decisions about how to conserve a resource are influenced by economic and political developments, and cultural beliefs, and thus, reflect the very complex ways in which places are significant to different people at different times” (Avrami 2009:

180). Parallel to this argument above, for the conservation of cultural heritage, understanding the value of heritage buildings and sites is a fundamental challenge, since the values shape the decisions for conservation. Assessing the heritage values assists to recognise the values attached to the built heritage (KC, Karuppannan, & Sivam, 2019). To have a sustainable cultural heritage conservation, participation of heritage stakeholders is an important issue within the management of heritage buildings (Landorf, 2009). Moreover, participation of community is known as a fundamental issue in practice of heritage management (Li, Roders & Van Wesemael, 2020). In conservation of cultural heritage, there is a lot of discussion about variety of stakeholders, and there are guidelines that emphasise the participation of local community besides the government and experts.

Management requires an intellectual shift from making decisions about the past, that were only dependent on the specific knowledge of the historian, to one that incorporates a more open examination and diagnosis process. In the end, values-based management is more than just a procedure; it represents new perspective on cultural heritage. When considering values, it became obvious that safeguarding cultural assets may have positive economic effects. However, it is also crucial to look beyond significance, in order to comprehend additional ways in which cultural heritage can add value. Even if individual locations or collections may have significance or purpose in and of themselves, maintaining those locations or collections can also have larger societal benefits. The preservation or improvement of heritage can produce advantages for the economy, environment, and society (Clark, 2014).

The decision-makers must be aware of specific characteristics of value-based management in order to distinguish it from more conventional conservation management approaches. Major research and educational organizations like the Getty Conservation Institute, as well as other organizations and institutions like English Heritage, UNESCO, the Heritage Lottery Fund, and others, have adopted and championed value-based heritage management (Silva and Roders, 2012).

1.2 The Research Problem

There are different kinds of approaches for conservation of cultural heritage, but a comprehensive and appropriate methodology, framework or model in decision-making for priority of conserving the heritage, is an important issue that should be considered due to limitation of financial, human, and material sources.

Decisions on priorities for conservation, must therefore be based on reliable data. Thus, making a decision on conservation priorities may depend on the intuitive and subjective judgments of authorities, and this procedure often results in complexity in the prioritization of conserving of the heritage buildings. Thus, having objective criteria and tools will decrease the pressure on the decision-makers for the decision on conservation priorities in Cyprus, as in many other places.

1.3 Research Question of the Study

This study tries to answer the question of “how can we evaluate which heritage building is in higher priority for conservation?” This evaluation is according to the heritage values of the heritage buildings. Within this concept, the main question is: “How can a values-based model help decision makers to have a systematic decision-making for the priority of heritage conservation?”

1.4 Aim of the Study

The main aim of this study is to rationalize the decision-making process for priority of conservation for immovable built heritage through a values-based approach by the determination and inclusion of comprehensive heritage values, besides inclusion of all heritage stakeholders such as public sector, private sector and users, where this comprehensive inclusion will contribute to the rationalisation of the decision-making process. In fact, many challenges of this kind can be modelled with Multi-Criteria Decision Making (MCDM). In this regard, a MCDM framework has been developed in this study, aiming to illustrate how decision making for built heritage conservation can be achieved in a credible manner. The application of this framework can have many benefits for priority decision making, based on value assessment in built heritage conservation through efficient decision making in conservation.

1.5 Methodology and Limitations

Data collection method for this study is based on mixed method which includes both the qualitative and quantitative research methods. The qualitative part consists of: review of the relevant literature about the subject, for determination of the tangible and intangible values of heritage to be conserved and also, the valorisation studies on the cultural heritage. Literature review also served for evaluating existing decision-making models / frameworks, for extracting an appropriate model for “priority decision making”. The cultural heritage values are categorised systematically according to literature review dated 2010 onwards. Although the subject of cultural heritage value was first discussed in early 20th century by Alios Riegl, these pioneers are already considered in the study as they are mentioned by many authors.

The proposed framework is tested on some case studies. For the case studies, the cultural heritage sites or heritage buildings in Cyprus which are handled by UNDP (United Nation Development Program) and TCCHC (Technical Committee on Cultural Heritages of Cyprus) in the first two phases of conservation works are selected. UNDP works on “Support to cultural heritage monuments of great importance for Cyprus” (Agapiou et al., 2015) in collaboration with TCCHC for the reconciliation of peace in Cyprus between two major communities. For developing a values-based evaluation model for priority decision-making for conservation, a questionnaire is designed to get the opinions of stakeholders including a group of conservation experts, tourists and local people to propose a quantitative model for calculating the significance criteria which is described in detail in section 4.3.1 and 4.3.2. section of the thesis.

1.6 Structure of the Study

This study is divided into five phases (Figure 1.1), chapter one concentrates on the background of cultural heritage building, the research problem, the aim of the study, and explain the methodology and limitations. Chapter two deals with the literature review by concentrating on basic definitions of heritage values of heritage buildings, analysing the literature for identification of the values, and following the latest methods of conservation prioritization of heritage buildings. This chapter covered the phase one and two of the thesis (Figure 1.1). In addition, it deals with value extraction and categorization of them. Phase three focused on the development of the framework by preparing and designing questionnaire, distributing same to stakeholders, and evaluating the weight of each value. Chapter three (phase four) follows the importance of each value on specific selected cases and evaluation of

building weights. Chapter four (phase five) deals with analysis of cases and prioritizing of the cases based on it values

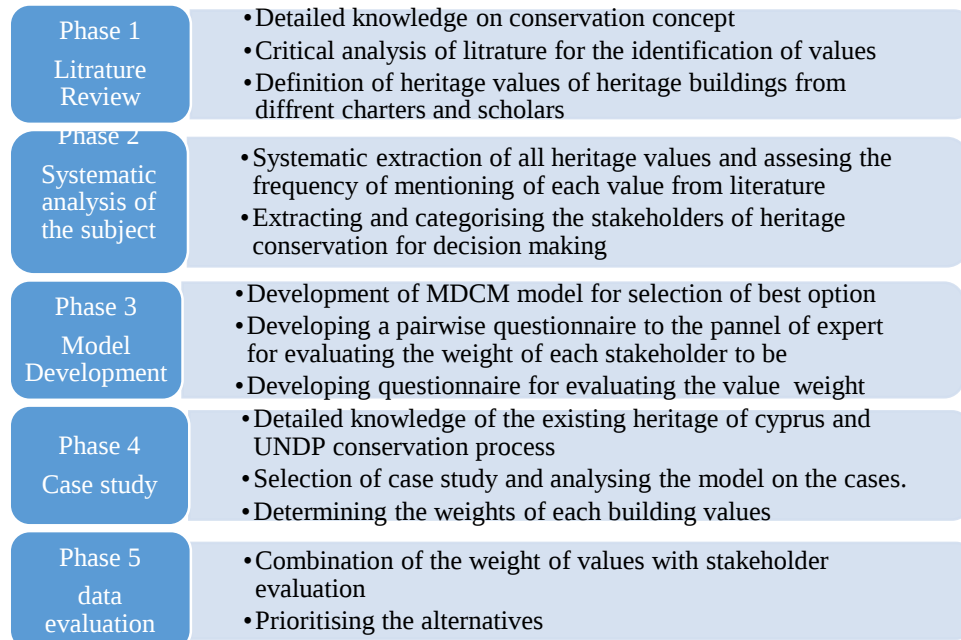


Figure 1.1: Structure of the study

Chapter 2

CATEGORISATION OF HERITAGE VALUES

Architectural heritage possesses a high variety of tangible and intangible values which are attached to heritage sites, buildings and their interior spaces, where tangible and intangible heritage values require different set of criteria which need to be defined clearly. In this respect a comprehensive understanding of these tangible and intangible values have been extracted from international literature. A values based assessment can help the decision makers to make a healthy decision regarding conservation. Although all of the heritage buildings have a significance, very often, prioritizing them is essential in conservation actions, especially in the case of limited financial resources. Lack of comprehensive value understanding of heritage, may have a negative effect in decision making for cultural heritage, in this respect, it is vital to explore the emergent terminology of heritage values by collecting a comprehensive data set of values and categorizing them into different typologies. In this regard, this study contends the identification of values from international literature and also seeks to engage in discourses and assessment of built heritage over values which is essential for decision-makers. As a qualitative methodology, content analysis is applied on a broad-based literature on heritage values. The collected value definitions are reviewed and the ones with close meaning are grouped under one category for a common reference point. Quantitatively, the weight of each value typology have been extracted, according to the frequency of being mentioned by different authorships.

2.1 Conservation of Cultural Heritage

During Today's conservation of cultural heritage is an important task and a common responsibility for everyone. Ultimately the main purpose of conserving heritage is not just preserving the assets; but also preserving the values that are attributed to them. (Mason & Avrami, 2002). In this respect, conservation of built heritage is not only about keeping the traces of the olden times, but also it is about telling what is significant to the future generations and what is valuable in the history and built heritage. The need of the conservation of cultural heritage is mentioned by various charters, legislations, and conventions (Giannakopoulou et al., 2017) and this is a common responsibility for everyone.

For the conservation of cultural heritage, understanding the value of heritage buildings and sites is a fundamental challenge, since the values shape the decisions for conservation. Assessing the heritage values assists to recognise the values attached to the built heritage (KC et al., 2019).

Ultimately, the goal of the conservation planning is to have expressive representation and balance among different values of heritage, as it is necessary for the decision-making process (Mason & Avrami, 2002).

Many scholars discuss about the theory and definition of cultural heritage values (Pearson & Sullivan, 1995; Avrami et al., 2000; Cerquetti, 2017; Yağcı & Mazlum, 2015). The subject of cultural heritage value was first discussed in early 20th century by Alois Riegl (Riegl, 1982). Then the discussion of heritage value quickly extended to other countries. Nara Document of Authenticity (ICOMOS, 1994) framed the importance of heritage value in 9th item which is: “Conservation of cultural heritage

in all its forms and historical periods is rooted in the values attributed to heritage”; and in 11th item as “All judgements about values attributed to heritage may differ from culture to culture and even within the same culture”. Therefore, it is not possible to base value judgments on fixed standards and criteria. This Document is based on the Burra Charter (ICOMOS, 1979) and Venice Charter (ICOMOS, 1964). The Council of Europe have raised the subject of integrated conservation in mid 1970s, which is mentioned also in 1975 in Amsterdam Declaration “The document stipulates that architectural conservation must become an integral part of urban and regional planning” (ICOMOS, 1975) then restated in Nairobi Recommendation (UNESCO, 1976). The social problems of integrated conservation can be properly posed only by simultaneous reference to both cultural values and use values (ICOMOS, 1975).

Parallel to the discussions on the cultural heritage values, various authors (ICOMOS, 1979; Throsby, 2002) included in their researches, the methods to evaluate cultural heritage values in practice. The necessity of value-based prioritisation for heritage conservation, arise especially when there is a limitation in funding for conservation of cultural heritage. As Giannakopoulou et al. (2017) pointed out, even when funding is provided, the issue of allocating the financial support is a challenge. Consequently, it is necessary to consider the questions for conservation of cultural heritage such as: ‘which building is going to be preserved first’; ‘who are the stakeholders for deciding for this prioritisation of heritage buildings to be conserved?’; and ‘what are the assessment criteria? In this regard, all decisions about built heritage conservation require prioritizing heritage through their numerous values. Generally, the value-based approaches are not successful since decisions rely on incomplete identification and understanding of heritage values (Fredheim & Khalaf, 2016). This could be due

to the lack of available systematic decision-making tools for determining the conservation priorities for different types of heritages.

The decisions regarding prioritising the heritage through assessing their values are commonly neither neutral nor subjective. Heritage experts who are involved with the process of participatory value assessment have already selected value types that they prefer to hear; and the ones who have the most power in the decision making process will have the veto power on what version of the heritage will be conserved or which value will be preferred to move on to the future by conservation (KC et al., 2019; Fredheim & Khalaf, 2016).

In this respect, the extracted ‘comprehensive heritage value typology’ is derived to support the decision makers to have an inclusive understanding of heritage value typology, in order to have a rationalized assessment of heritage values. Therefore, it has a direct effect on the management of cultural heritage. Consequently, this study will follow by discussing the perspective of related international organisations, their committees, and partner organisations, on heritage values and their assessment. They are involved in the development of contemporary conservation concept by adopting charters, resolutions and declarations, and other international standards. Venice Charter for instance, was the most influential international charter which has an important role in the principles of conservation, based on importance of conserving the historic buildings and important concept of authenticity (ICOMOS, 1964). In order to build a bridge between theories, strategies and practices, this research provides a common ground of discussion by extracting the comprehensive cultural heritage values from literature.

After examining the different terminologies and typologies of cultural heritage values involved in related international scientific literature, the research shifts its focus from heritage value terminology and typology to categorizing them into main groups of value categories and sub-groups of values with close or overlapping definitions. Finally, weight of each value sub-group, and hence each value group, are determined according to the frequency of being mentioned in the examined publications.

The following section discusses the methodological approach for defragmenting the subject of heritage values in the existing literature, to fill the gap of a comprehensive categorisation of value typologies of heritage buildings. This categorisation is believed to serve for the explicit value judgements as the initial step in the heritage conservation decision making.

2.2 Data Collection Method on Cultural Heritage Values

In this section, the methodology for reviewing literature on cultural heritage values for proposing a comprehensive value-based evaluation framework for prioritisation of architectural heritage is explained.

Evaluation of the values that are mentioned/ considered by scholars in their related researches have been done since 2010, Consequently, for answering this question a search source has been defined: Data collection regarding the extracting of the value terminology and typology of heritage were gathered through a comprehensive search on Google Scholar Database©. Keywords including two or more of the terms as: ‘architectural heritage’, ‘heritage building’, ‘heritage value’, ‘value typology’, ‘architectural conservation’, and ‘heritage value assessment’, were defined for the

content analysis methodology. This process involved identifying the terminology and selecting the type of values that have been used by different authors in their researches since year 2010, although the subject of cultural heritage value was first discussed in early 20th century by Alois Riegl, these pioneers are already considered in the study as they are mentioned by many authors. For the systematic analysis of heritage values, many journals, conferences, books, book chapters, organizational WEB sites, theses, working papers, reports, etc. from the last decade have been selected for the literature review. After checking the related references, then the collected studies are screened based on the criteria below:

The papers which are related to architectural heritage, heritage buildings and archaeological sites are included; hence many studies that bring forward a value typology for natural heritage, are excluded. The papers written in English; which are using value typologies in their studies; or which refer to value typologies based on another researcher's definition and categorisation. The study included 43 research studies.

The research procedure consisted of five steps. After gathering the terminology and typology of heritage values, the name of authors that stated the values in their resources were listed as the first step. Next, the frequency of mentioning each value terminology from total 152 value terms were summed up as the second step. The third step was the unification of the same values with similar or close meaning to achieve 38 typologies. In the fourth step, these typologies were categorised under the same heading to achieve related heritage value categories and value weights are calculated as the last step. The step-by-step procedure is illustrated in (Figure 2.1).

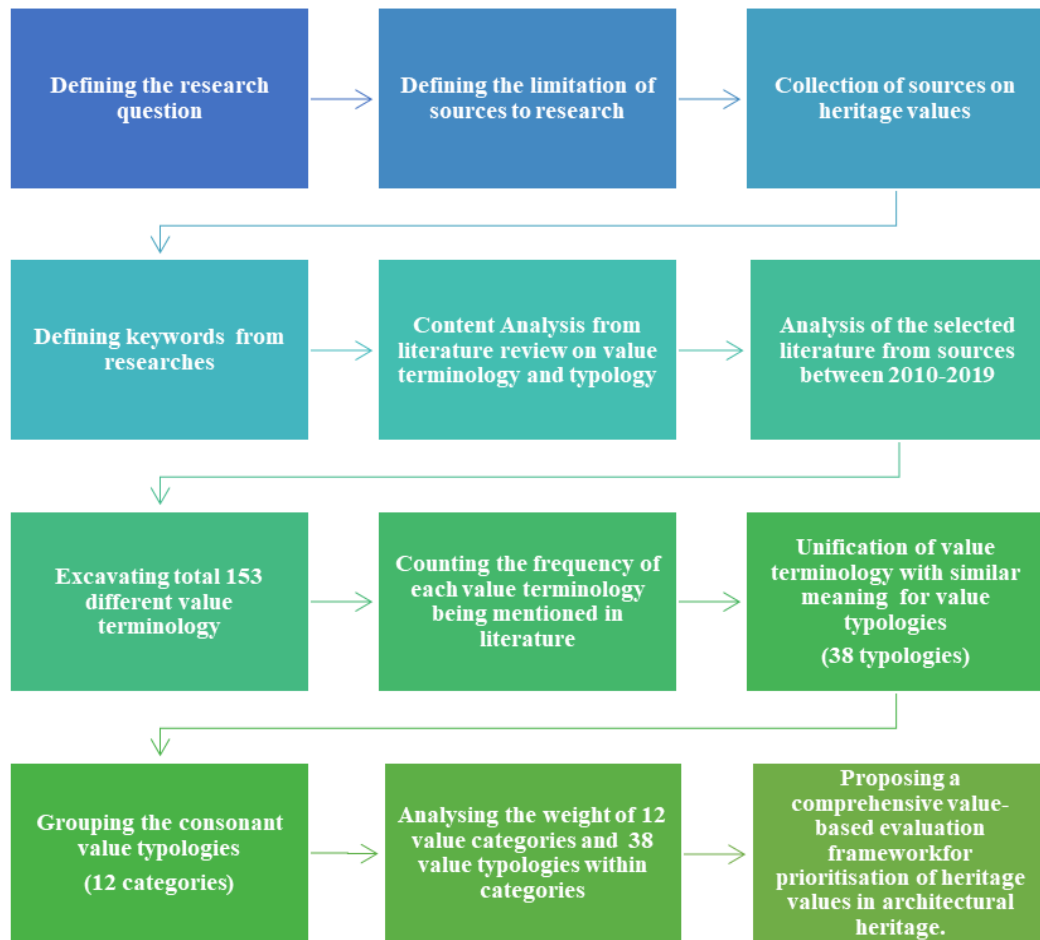


Figure 2.1: Steps of data collection and analysis since 2010

2.3 Heritage Values-based Approach in Conservation Decision-Making

Kc, Karuppannan and Sivam (2019), state that societies are willing to conserve the heritage when they find that it has value, since a heritage site is multivalent and hold many different values. It's not possible to assess a heritage building with one particular value (KC et al., 2019). Cultural heritage values have been discussed by the Getty Conservation Institute as a “set of positive characteristics or qualities perceived in cultural objects or sites by certain individuals or groups” (De la Torre & Mason, 2002) and also by many charters which is mentioned in the next part.

2.3.1 Investigation of Heritage Values within Related Conservation Charters

In the early 20th century Alois Riegl was the pioneer in classification of heritage values and separate the contemporary and historical value of cultural heritage (Riegl, 1996). From that time heritage stakeholders from different discipline tried to have a classification of heritage values that reflect the function, emotions and meanings credited to that built heritage (Johnston 1992; Walker 1998 cited in De la torre, 2013). In 1979 when the Australia ICOMOS issued the Burra Charter was one of the important moments in evolution of heritage, which introduced a new value of heritage as: social values and defined a source of new values as national, spiritual and political or other cultural values (ICOMOS, 1999). Protection of values of each heritage building shows its conservation challenge, in this regards several professional charters, declarations and recommendations, from 1981 Florence charter till 2011 Paris declaration provides the evidence of heritage professional efforts to adapt the principal of conservation (UNESCO, 2013) in this regards the protection of heritage values seen as a principal of practice in heritage conservation. Nara meeting in 1992 in Japan, re-examined the authenticity of heritage as an initial concept of conservation and as a result of Nara document the view of conservation and heritage offered in the Venice charter in 1964 which are not applicable over different lands and culture. Directly after the Nara conference the organiser stated that “Nara reflects the fact that international preservation doctrine has moved to a post-modern position characterized by recognition of cultural relativism” (Larsen, 1995). In 1996 the declaration of San Antonio mentioned a direct connection between the identity and authenticity, as it is mentioned there understanding the significance of heritage and the values which are attached to it is an important factor to identify the authenticity.

Therefore, it is necessary to understand not only the significant of physical fabric but also the social value of the site.

Conservation of built heritage have seen as :

“a complex and continual process that involves determinations about what constitutes heritage, how it is used, cared for, interpreted, and so on, by whom and for whom. It has also become evident that decisions about what to conserve and how to conserve are largely defined by cultural contexts, societal trends, political and economic forces, which themselves continue to change” (Avrami et al., 2000, p.7).

Simultaneously, stakeholders of heritage tried to incorporate a multiplicity approach to the new challenges of conservation, without admitting that “everything is possible” (Richmond & Bracker, 2009).

According to de la Torre (2013, p.159), while heritage values have become central to conservation, their nature and key to understanding this new perspective of conservation, lies in the nature of heritage values: “attributed, multiple, mutable, incommensurable, and in conflict” which is described in (Table 2.1) in detail.

Table 2.1: Characteristics of heritage values adapted from (de la Torre, 2013)

Heritage Value Characteristic	Definition of terms
Always attributed Never intrinsic	The most important characteristic of heritage values is that they are always attributed, never inherent. Although there are many references to the “inherent value” of objects and places, in fact, heritage places are value neutral until they are attributed cultural value. Cultural values are attributed by those who have an interest in a place.
Always multiple Never just one	Stakeholders attribute different values to heritage places for different reasons, and most heritage places have multiple stakeholders. Thus, the significance of a place is never based on a single value, even for World Heritage Sites that are considered to have Outstanding Universal Value.
Always mutable Never static	All values are expressions of emotions or beliefs (Zimmerman 2010), they are influenced by circumstance, and thus can evolve and change over time. The evolution of values can result from changes in society, such as those in the demographics of a place or in the function of a place.
Incommensurable Not comparable	The multiplicity of values attributed to any heritage place by its stakeholders requires that in establishing significance certain values be promoted over others. Ideally, the importance of certain values would be based on an objective comparison with the other values of a place.
Often in conflict Sometimes incompatible	The incommensurability of values would not be important if it was possible to protect and preserve all the values of a place simultaneously. However, experience demonstrates that this is seldom possible. With the recognition of multiple values comes the acceptance that are many instances when only some of them will be able to be fully conserved.

2.3.2 Development of the Discussion on Values-Based Approach

Development of the discussion of values-based approach started in the 1980s, and it is considered as the most ideal approach to heritage conservation. The values-based approach is generally constructed by Burra charter (ICOMOS, 1999) and has been advocated and developed regularly by Getty Conservation Institute’s publications (Demas, 2002; De la Torre, 2005; Mason & Avrami, 2002).

Worthing and Bond (2008), express that for the cultural heritage management, a values-based approach is established on the basic evidence that, to manage a special structure or place, first of all, it is required to identify why the heritage is significant. Within this scope, the values-based approach is ascribed with more advantages than

traditional expert-led approach and regulatory focused approaches that carry the risk of privileging a narrower range of values (Worthing & Bond, 2008).

In traditional approach were related with groups of experts who are dealing more with the physical part of conservation and subject related with materials authenticity and integrity of the buildings (De la Torre, 2005) Besides a values-based approaches from the view point of stakeholder groups, places people at the centre of conservation (Mason & Avrami, 2002). Heritage buildings are not embedded in the inherent values and the heritage significance is not only in the material itself, but also in the values which are recognised by the group of stakeholder to heritage (De la Torre, 2005).

Different organisations and scholars have developed heritage value typology and different ways of articulating it. Each value typology has driven out of variety of organisations and people and each group are approaching these values from their own perspective (McClelland et al., 2013). According to Worthing and Bond (2008), it is not possible to get consensus on a heritage value typology, but it is essential to have a typology that consists of all the values (Worthing & Bond, 2008). This study targets to achieve this typology of heritage significance by capturing all heritage values.

In order to make an identification, conservation and safeguarding of heritage, diverse expressions have been used by different scholars regarding the values. This dynamic is called “values-based conservation” (Mason & Avrami, 2002; Mason, 2002), “value-based management” (Mason, 2002), “value-based assessment of cultural heritage” (Satterfield, 2002) or “significance-driven approach” (Stovel, 1997). The

heritage field including both tangible and intangible heritage professionals now seems to universally agree on the “articulation of heritage values (often called ‘cultural significance’) as a reference point” (Mason, 2002; Rudolff, 2006). The main notion of values-based approach is the stakeholder group as this approach is detained to be more comprehensive and independent from a wider group of stakeholders (McClelland et al., 2013).

In values-based approach for the management and conservation process, the full account of stakeholder groups and their values are measured. But the equity of stakeholders and values is generally impractical and subjective. Without any doubt, there is always conflicts between the stakeholder groups and values, and it is not possible to satisfy all stakeholder groups and conserve all of the values equally at the same time. Therefore, inevitably any decision will favour certain group of stakeholders (De la Torre, 2005). This issue has been mentioned, because cultural heritages have a wide range of values, and it’s not possible to conserve all of the values equally. Sometimes values are in conflict, and heritage stakeholders must make decision on which values will be favoured more than others. A values-based approach also aims to reflect the diversity of values and specially the contemporary value that reflects the sustainability and including the environmental, economic and social features (Mason, 2002).

Although there are many discussions on heritage and values, there is a need for a typology that capture all heritage values and create a common value expression for all stakeholders. Fredheim and Khalaf, noted that one of the reason that value typology often fails is because of incomplete typology of heritage values (Fredheim & Khalaf, 2016). Additionally, Worthing and Bond (2008) mentioned the need of a

complete value typology that captures all the complexities of heritage, and creates a common expression of values for all stakeholders (Worthing & Bond, 2008). In this regards, this thesis established ‘a comprehensive value typology framework’. The classification of heritage values according to a logic that are supposed to include all heritage significance are identified as value typology. Value typologies classified by different studies, are generally used in evaluation of significance for heritage management and conservation issues. To have an inclusive value typology, some of the existing list of value typologies are very long, whereas other lists are presented as incomplete, and just giving the examples of possible values in the absence of presenting the comprehensive typology.

Architectural heritage values are the characteristics of a building that impress communities and consequently lead to their conservation. If the traditional conservation actors (architects, archaeologists and art historians) value objects to be essential by virtue of their embodied erudite values (artistic, historic, educational), the general public introduces a deeper complexity to the process, leading to a wider range of values as shown in (Table 2.2). However, these values are not self-contained and isolated from each other, they are usually related, and coincide on an object (De la Torre & Mason, 2002).

2.4 Content Analysis from Literature Review on Value Terminology and Typology

Space does not permit an explanation of how each of these values might be interpreted. Although certain commonalities exist between each of the typologies, it is notable that there are many different values and contrasting ways of expressing the same / similar value. Each typology has emanated from a diversity of organizations

and people, and each of them approaching value from a different perspective. One of the ways to assess heritage values starts with a pre-constructed typology that varies depending on the authors and reference texts in which evidence of known values is sought (Robles, 2010; Fredheim & Khalaf, 2016; Mason & Avrami, 2002) which is considered in this study.

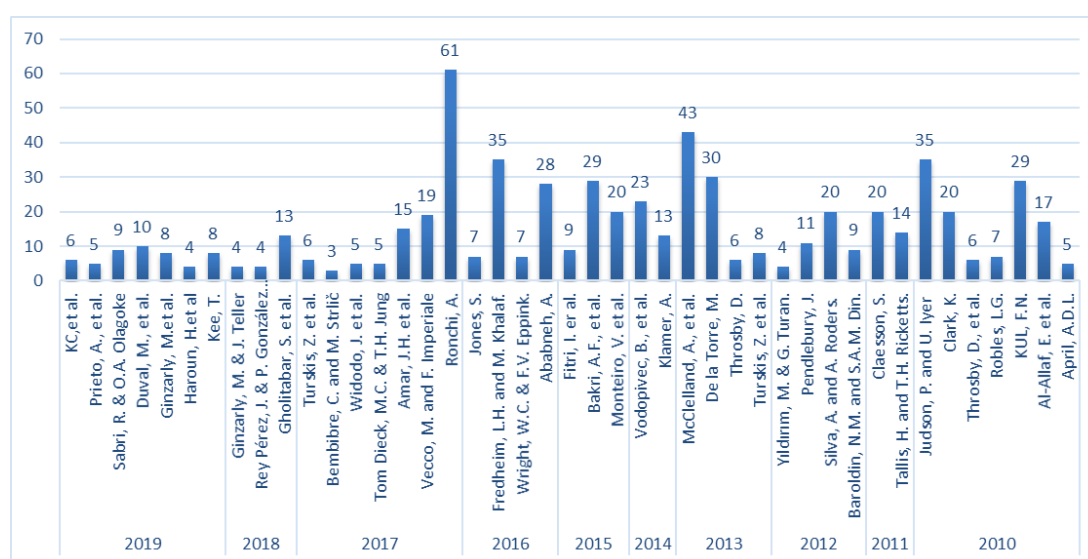


Figure 2.2: Number of heritage value terminology in selected studies by different authors (2010-2019)

In total, 152 different terms referring to values have been collected (see Table 2.2 a-h) from 43 studies (see Figure 2.2) on heritage. The maximum number of values obtained from a single study is 61 by Ronchi, 43 value by McClelland, 35 mentioned values by Fredheim and Khalaf, Judson and Iyer, and 30 mentioned values by De la Torre. The minimum number of values was 3. Also many authors conduct their studies with 4, 5 or 6 values (Figure 2.2); the reason is that, some authors had a review on heritage value and some others have selected some special value for evaluating their case study or etc.

Table 2.2: Value terminologies stated by various authors (2010-2019)

No	Terminology	Frequency of each value being stated	(KC, Karuppanan, and Sivam 2019)	(Prieto et al. 2019)	(Sabri and Olagoke 2019)	(Duval et al. 2019)	(Ginzarly, Rodgers, and Teller 2019)	(Haroun, Bakr, and Hasan 2019)	(Kee 2019)	(Ginzarly and Teller 2018)	(Key Perez and Gonzalez-Martinez 2018)	(Ghontabar, Alnpour, and Costa 2018)	(Turskas, Wolkante, and Kutur 2017)	(Bembibre and Strlič 2017)	(Widodo, Wong, and Ismail 2017)	(Dieck and Jung 2017)	(Amar, Armitage, and O'Hare 2017)	(Vecco and Imperiale 2017)	(Ronchi 2017)	(Jones 2016)	(Fredheim and Khalaf 2016)	(Wright and Eppink 2016)	(Ababneh 2016)	(Fitri, Ahmad, and Ahmad 2015)	(Bakri et al. 2015).	(Monteiro, Painho, and Vaz 2015)	(Vodopivec et al. 2014)	(Klamer 2014)	(McClelland et al. 2013)	(De la Torre 2013)	(Throsby 2013)	(Turskas, Zavadskas, and Kutur 2013)	(Yildirim and Turan 2012)	(Pendlebury 2013)	(Silva and Rodgers 2012)	(Baroldin and Din 2012)	(Claesson 2011)	(Tallis and Ricketts 2011)	(Judson and Iyer-Raniga 2010)	(Clark 2010)	(Throsby et al. 2010)	(Robles 2010)	(KUL 2010)	(Al-Allaf, Della Torre, and Milan-Italy 2010)	(April 2010)
1	Accessibility	1																																											
2	Activity	1																																											
3	Actuality	1																																											
4	Aesthetic	35																																											
5	Age	15																																											
6	Allegorical	1																																											
7	Amenity	1																																											
8	Anthropological	2																																											
9	Antiquity	2																																											
10	Archaeological	9																																											
11	Architectural	19																																											
12	Artistic	15																																											
13	Artless	2																																											
14	Associative	7																																											
15	Authenticity	9																																											
16	Beauty	1																																											
17	Bequest	10																																											
18	Capital/Estate	1																																											
19	Citizenship	1																																											
20	Civic	2																																											

No	Terminology	Frequency of each value being stated (KC, Karuppannan, and Sivam 2019)	(Prieto et al. 2019)	(Sabri and Olagoke 2019)	(Duval et al. 2019)	(Ginzarly et al., 2019)	(Haroun, et al., 2019)	(Kee 2019)	(Ginzarly & Teller 2018)	(Rey Pérez et al., 2018)	(Gholitabar et al.,, 2018)	(Turskis, 2017)	(Bembibre & Strlič 2017)	(Widodo et al., 2017)	(Dieck et al., 2017)	(Amar et al., 2017)	(Vecco & Imperiale, 2017)	(Ronchi, 2017)	(Jones 2016)	(Fredheim and Khalaf 2016)	(Wright and Eppink 2016)	(Ababneh 2016)	(Fitri, Ahmad, and Ahmad 2015)	(Bakri et al. 2015).	(Monteiro, Painho, and Vaz 2015)	(Vodopivec et al. 2014)	(Klamer 2014)	(McClelland et al. 2013)	(De la Torre 2013)	(Throsby 2013)	(Turskis et al., 2013)	(Yildirim and Turan 2012)	(Pendlebury 2013)	(Silva and Roders 2012)	(Baroldin and Din 2012)	(Claesson 2011)	(Tallis and Ricketts 2011)	(Judson and Iyer-Raniga 2010)	(Clark 2010)	(Throsby et al. 2010)	(Robles 2010)	(KUL 2010)	(Al-Ainat, Dena Torre, and Muan-Italy 2010)	(April 2010)			
40	Development	1																																													
41	Diplomatic	2																																													
42	Diversity	3																																													
43	Documentary	2																																													
44	Domestic/ Utilitarian	2																																													
45	Durability	2																																													
46	Ecological	6																																													
47	Economic	23																																													
48	Education	16																																													
49	Emotional	4																																													
50	Employment	1																																													
51	Energy / Efficiency	1																																													
52	Entertainment	2																																													
53	Environmental	7																																													
54	Essential	1																																													
55	Ethnographic	2																																													
56	Evidential	4																																													
57	Exclusivity	3																																													
58	Existence	11																																													
59	Experimental	1																																													

No	Terminology		Frequency of each value being stated (KC, Karuppannan, and Sivam 2019) (Prieto et al. 2019) (Sabri and Olagoke 2019) (Duval et al. 2019) (Ginzarly, Rodgers, and Teller 2019) (Haroun, Bakr, and Hasan 2019) (Kee 2019) (Ginzarly and Teller 2018) (Rey Pérez and González Martínez 2018) (Gholitabar, Alipour, and Costa 2018) (Turskis, Morkunaite, and Kutut 2017) (Bembibre and Strlič 2017) (Widodo, Wong, and Ismail 2017) (Dieck and Jung 2017) (Amar, Armitage, and O'Hare 2017) (Vecco and Imperiale 2017) (Ronchi 2017) (Jones 2016) (Fredheim and Khalaf 2016) (Wright and Eppink 2016) (Ababneh 2016) (Fitri, Ahmad, and Ahmad 2015) (Bakri et al. 2015). (Monteiro, Painho, and Vaz 2015) (Vodopivec et al. 2014) (Klamer 2014) (McClelland et al. 2013) (De la Torre 2013) (Throsby 2013) (Turskis, Zavadskas, and Kutut 2013) (Yildirim and Turan 2012) (Pendlebury 2013) (Silva and Roders 2012) (Baroldin and Din 2012) (Claesson 2011) (Tallis and Ricketts 2011) (Judson and Iyer-Raniga 2010) (Clark 2010) (Throsby et al. 2010) (Robles 2010) (KUL 2010) (Al-Allaf, Della Torre, and Milan-Italy 2010) (April 2010)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
60	Financial	1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

No	Terminology	Frequency of each value being stated	(KC, Karuppannan, and Sivam 2019)	(Prieto et al. 2019)	(Sabri and Olagoke 2019)	(Duval et al. 2019)	(Ginzarly, Roders, and Teller 2019)	(Haroun, Bakr, and Hasan 2019)	(Kee 2019)	(Ginzarly and Teller 2018)	(Key Perez and Gonzalez Martinez 2018)	(Gholitabar, Alipour, and Costa 2018)	(Turskis, Witek, and Kutut 2017)	(Bembibre and Strlič 2017)	(Widodo, Wong, and Ismail 2017)	(Dieck and Jung 2017)	(Amar, Armitage, and O'Hare 2017)	(Vecco and Imperiale 2017)	(Ronchi 2017)	(Jones 2016)	(Fredheim and Khalaf 2016)	(Wright and Eppink 2016)	(Ababneh 2016)	(Fitri, Ahmad, and Ahmad 2015)	(Bakri et al. 2015).	(Monteiro, Painho, and Vaz 2015)	(Vodopivec et al. 2014)	(Klamer 2014)	(McClelland et al. 2013)	(De la Torre 2013)	(Throsby 2013)	(Turskis, Zavadskas, and Kutut 2013)	(Yildirim and Turan 2012)	(Pendlebury 2013)	(Silva and Roders 2012)	(Baroldin and Din 2012)	(Claesson 2011)	(Tallis and Ricketts 2011)	(Judson and Iyer-Raniga 2010)	(Clark 2010)	(Throsby et al. 2010)	(Robles 2010)	(KUL 2010)	(Al-Awad, Deia Torre, and Vimar-Italy 2010)	(April 2010)		
80	Legacy	1																																													
81	Linguistic	1																																													
82	Literary	2																																													
83	Local	1																																													
84	Location	1																																													
85	Management	2																																													
86	Market	3																																													
87	Material	1																																													
88	Maturity	1																																													
89	Memory	3																																													
90	Monetary	2																																													
91	Monumental	1																																													
92	Moral	2																																													
93	Multimedia	1																																													
94	Mystery	1																																													
95	National	1																																													
96	Naturalistic	3																																													
97	Newness	7																																													
98	Non-Use	4																																													
99	Notable	1																																													

No	Terminology	Frequency of each value being stated	(Kee, Karapınar, and Özyurt 2019)	(Prieto et al. 2019)	(Sabri and Olagoke 2019)	(Duval et al. 2019)	(Ginzarly, Kocak, and Tunc 2019)	(Haroun, Bakr, and Hasan 2019)	(Kee 2019)	(Ginzarly and Teller 2018)	(Aytekin and Gonzalez Martinez 2018)	(Gonzalez, Kocak, and Costa 2018)	(Tursko, Morkunt, and Kutut 2017)	(Bembibre and Strlič 2017)	(Vodopivec et al. 2017)	(Dieck and Jung 2017)	(Gonzalez, Kocak, and Tunc 2017)	(Veeco and Imperiale 2017)	(Ronchi 2017)	(Jones 2016)	(Fredheim and Khalaf 2016)	(Wright and Eppink 2016)	(Ababneh 2016)	(Fitri, Ahmad, and Ahmad 2015)	(Bakri et al. 2015)	(Vodopivec et al. 2015)	(Vodopivec et al. 2014)	(Klammer 2014)	(McClelland et al. 2013)	(De la Torre 2013)	(Throsby 2013)	(Tursko, Morkunt, and Kutut 2013)	(Yildirim and Turan 2012)	(Pendlebury 2013)	(Silva and Roders 2012)	(Baroldin and Din 2012)	(Claesson 2011)	(Tallis and Ricketts 2011)	(Judson and Iyer-Raniga 2010)	(Clark 2010)	(Throsby et al. 2010)	(Robles 2010)	(KUL 2010)	(Aytekin, Kocak, and Tunc 2010)	(April 2010)
100	Operational	1																																											
101	Option	8																																											
102	Panoramic	1																																											
103	Personal	1																																											
104	Physical Design	4																																											
105	Picturesque	1																																											
106	Political	10																																											
107	Potential	2																																											
108	Present Day	1																																											
109	Preservation	2																																											
110	Prestige	4																																											
111	Public Asset	2																																											
112	Rarity	7																																											
113	Realization	2																																											
114	Recreation	5																																											
115	Regional	2																																											
116	Religious	9																																											
117	Representativeness	1																																											
118	Research	4																																											
119	Residential	3																																											

No	Terminology	Frequency of each value being stated	(K.C. Karuppannan, and Sivam 2019)	(Prieto et al. 2019)	(Sabri and Olagoke 2019)	(Duval et al. 2019)	(Ginzarly, Rodgers, and Teller 2019)	(Haroun, Bakr, and Hasan 2019)	(Kee 2019)	(Ginzarly and Teller 2018)	(Key Perez and Gonzalez-Martinez 2018)	(Gnanadhar, Anupour, and Costa 2018)	(Turskis, Workumane, and Kutut 2017)	(Bembibre and Strlič 2017)	(Widodo, Wong, and Ismail 2017)	(Dieck and Jung 2017)	(Amar, Armitage, and O'Hare 2017)	(Vecco and Imperiale 2017)	(Ronchi 2017)	(Jones 2016)	(Fredheim and Khalaf 2016)	(Wright and Eppink 2016)	(Ababneh 2016)	(Fitri, Ahmad, and Ahmad 2015)	(Bakri et al. 2015).	(Monteiro, Painho, and Vaz 2015)	(Vodopivec et al. 2014)	(Klamer 2014)	(McClelland et al. 2013)	(De la Torre 2013)	(Throsby 2013)	(Turskis, Zavadskas, and Kutut 2013)	(Yildirim and Turan 2012)	(Pendlebury 2013)	(Silva and Roders 2012)	(Baroldin and Din 2012)	(Claesson 2011)	(Tallis and Ricketts 2011)	(Judson and Iyer-Raniga 2010)	(Clark 2010)	(Throsby et al. 2010)	(Robles 2010)	(KUL 2010)	(Al-Ain, Dena Torre, and Wnan-Italy 2010)	(April 2010)		
120	Resource	4																																													
121	Respect and Veneration	1																																													
122	Richness	1																																													
123	Risk	2																																													
124	Scarcity	2																																													
125	Scenic	1																																													
126	Scientific	26																																													
127	Sense of Belonging	2																																													
128	Sense of Place	4																																													
129	Situational	1																																													
130	Social	32																																													
131	Societal	1																																													
132	Sociocultural	4																																													
133	Socioeconomic	2																																													
134	Spatial	5																																													
135	Spiritual	18																																													
136	Structure	1																																													
137	Sublime	1																																													
138	Substantial	1																																													
139	Sustainability	1																																													

No	Terminology	Frequency of each value being stated	(KC, Karuppanan, and Sivam 2019)	(Prieto et al. 2019)	(Sabri and Olagoke 2019)	(Duval et al. 2019)	(Ginzarly, Roders, and Teller 2019)	(Haroun, Bakr, and Hasan 2019)	(Kee 2019)	(Ginzarly and Teller 2018)	(Key Pérez and Gonzalez Martinez 2018)	(Ghontabar, Appour, and Costa 2018)	(Turskis, Morkunaitė, and Kunut 2017)	(Bembibre and Strlič 2017)	(Widodo, Wong, and Ismail 2017)	(Dieck and Jung 2017)	(Amar, Armitage, and O'Hare 2017)	(Vecco and Imperiale 2017)	(Ronchi 2017)	(Jones 2016)	(Fredheim and Khalaf 2016)	(Wright and Eppink 2016)	(Ababneh 2016)	(Fitri, Ahmad, and Ahmad 2015)	(Bakri et al. 2015)	(Monteiro, Painho, and Vaz 2015)	(Vodopivec et al. 2014)	(Klamer 2014)	(McClelland et al. 2013)	(De la Torre 2013)	(Throsby 2013)	(Turskis, Zavauskas, and Kunut 2013)	(Yildirim and Turan 2012)	(Pendlebury 2013)	(Silva and Roders 2012)	(Baroldin and Din 2012)	(Claesson 2011)	(Tallis and Ricketts 2011)	(Judson and Iyer-Raniga 2010)	(Clark 2010)	(Throsby et al. 2010)	(Robles 2010)	(KUL 2010)	(Al-Anat, Deia Torre, and Mian-Ily 2010)	(April 2010)		
140	Symbolic	14																																													
141	Technical	4																																													
142	Technological	4																																													
143	Touristic	4																																													
144	Townscape	1																																													
145	Traditional	2																																													
146	Uniqueness	3																																													
147	Universality	2																																													
148	Urban	4																																													
149	Use	13																																													
150	Welcoming	2																																													
151	Wonder	1																																													
152	Workmanship	2																																													

2.4.1 Merging the Synonyms

For conservation of heritage buildings there are some agreements which form the assessment criteria for building conservation. It is witnessed that the evaluation criteria could have different perspective as different authors express the same criteria in different ways. The value terminology which are given in (Table 2.3), shows that heritage values are complex and diverse. Some of the value definitions are expressed with different value terms by different authors. For example, architectural value definition by Orbaşlı (2008) has similarities with Mason's (2002) definition of artistic value, or Mason (2002) evaluate academic, educational value as a sub-category of historic value while historic value is usually used as a substitute of age value. Another example is Feilden and Jokilehto's (1998) definition of identity value which is synonym with Worting and Bond's (2008) definition of associative value and Orbaşlı's (2008) definition of emotional value. Likewise, the academic and education value of Mason (2002) matches with the Orbaşlı's (2008) definition of scientific, research and knowledge. Additionally, her definition of historic value matches with Feilden and Jokilehto's (1998) political value. On the other hand, some similar value terms used by various authors might have different definitions. This study initially tries to merge the values with similar meanings according to the expression that majority of authors have stated.

As conservation actions and decisions are directly managed by stakeholders of heritage, negligence of considering any value of heritage is alike a straight and deliberate harm to heritage (Myers, MacLean, & Mason, 2005). A heritage building, structure or object, can be accepted as a heritage only if all or some of the values deliberating its identity exist, therefore, decision of conservation are based on

interdependent and interrelated values which are attributed to the heritage (Kapelouzou, 2012).

The exhaustive values and their groups are listed in alphabetical order and their synonym values are listed in each group. After the summation of each synonym group, the most stated value term in that group is considered as the group representative for that value type. These groups of values are relevant cultural heritage in general and architectural heritage in particular, containing historical structures, monuments, traditional or vernacular buildings, industrial heritage and public historical buildings, but all of the values are not related to all places.

Table 2.3: Merging the terminology by grouping the synonyms

	Value typologies	Definition	Synonym value terminologies	Frequency of being stated
1	Aesthetic value	Displays the artistic quality which could be recognized by groups or individuals (Throsby, 2013)	Aesthetic Beauty	35 1
2	Anthropological value	Referral to a philosophical position which argues that human behaviour should be understood and studied in the context of daily life of and activities of a person (Low, 2002)	Anthropological Ethnographic	2 2
3	Archaeological value	Is derived from the history of the building since its origins to present day, and it includes the chronology of the alteration, decay and destruction of the building (Uçar, 2007)	Archaeological Antiquity Monument	9 2 1
4	Architectural value	Refers to the exemplary quality of design and contribution the building makes to the period, architectural style or pioneering building technique (Orbaşlı 2008)	Architectural Physical design Construction Structure	19 4 2 1
5	Artistic value	Is related to quality of craftsmanship or to the artwork that is integrated to the	Artistic Artless	15 2

		building and structure (Orbaşlı, 2008)	Craftsmanship	1
			Workmanship	2
6	Associative value	Is related with the values which express the significant connections, these connections can be related to events, places, peoples, traditions (Orbaşlı, 2008; Fredheim & Khalaf, 2016)	Universality	2
			Density	1
			Associative	7
			Communal	2
			Group	1
			Collective	1
7	Authenticity value	refers to the reality that a particular item is unique and not fake and a concomitant characteristic is integrity, meaning that the item has not been altered tampered with or defaced (Feilden & Jokilehto, 1998)	Authenticity	9
			Uniqueness	3
			Integration	1
			Integrity	3
			Completeness	1
			Maturity	1
8	Bequest value	Refers to the value that a heritage item has for later generation (Mason, 2002)	Legacy	1
			Heritage	1
			Bequest	10
9	Commemorational value	Implies the placing of the commemorative sign, place or things which reports the commemoration reason (Heritage, 2010)	Commemorational	8
			Memory	4
10	Communicability value	Refers to the quality of being communicable and capability of being imparted and recently it has been extracted through digital technology (Ronchi, 2017)	Accessibility	1
			Welcoming	2
			Communicability	2
			Multimedia	1
11	Conservation value	Refers to the previous intervention to heritage which is showing the state of conservation to structure or material (Vodopivec et al., 2014)	Conservation	2
			Preservation	2
12	Continuity value	Implies the value for continuity and existence of cultural heritage over period of time (Baroldin & Din, 2012)	Continuity	3
			Durability	2
			Sustainability	1
13	Cultural value	Implies the information on various aspects of the past lifestyle and it may continue to play a role in today's cultural traditions (Orbaşlı, 2008)	Identity	12
			Cultural	20
			Diversity	3
			Civilization	3
14	Economic value	Relates to the monetary value of cultural heritage (Orbaşlı, 2008)	Development	1
			Economic	24
			Financial	1

			Fruition	1
			Monetary	2
			Market	3
			Commercial	2
			Employment	1
			Capital/estate	1
			Energy efficiency	1
			Functional	11
			Use	13
			Material	1
			Non-use	4
15	Environmental value	Relates the value of a settlement to its integration into its original totality, landscape, buildings, roads, planning, style, scale, and lifestyle (Uçar, 2007)	Ecological	6
			Environmental	7
			Naturalistic	3
			Landscape	2
16	Existence	Relates to people's attachment to the existence of things or places (Ronchi, 2017)	Existence	11
			Resource	4
17	Historic value	Is derived from the history of the building, since its origins to present day, including the chronology of the alteration, decay and destruction of the building (Orbaşlı, 2008)	Age	15
			Historic	36
18	Individual value	Implies each Monument or cultural heritage have their own array of values (Szmelter, 2013).	Individual	1
			Personal	1
19	Intrinsic value	Implies the inherent worth (Francis-Lindsay, 2009)	Illustrative	1
			Substantial	1
			Intrinsic	3
			Essential	1
20	Literary value	It is generally an added value inspired from the real story or a myth which generally arise within heritage tourism routes (Ruiz, 2013)	Linguistic	1
			Literary	2
22	Management value	Corresponds to externalities derived from cultural heritage existence and management (Vodopivec et al., 2014)	Management	2
			Operational	1
21	Newness value	Presents the completeness and appearing new (Szmelter, 2013)	Contemporary	1
			Present day	1
			Newness	7

23	Option value	Is about option to visits or to enjoy something and also it refers to possibility to use heritage at some future time (Ronchi, 2017)	Option	8
			Potential	2
24	Picturesque value	Refers to a beauty and picturesque quality (Vahtikari, 2016)	Panoramic	1
			Picturesque	1
			Scenic	1
25	Political value	Refers to being related to a political event, person, ideology (Brusaporci, 2014)	Political	10
			Diplomatic	2
26	Rarity value	Is related to the occurrence of building type or technique in an area where it is not commonly found (Orbaşı, 2008; Feilden & Jokilehto, 1998)	Rarity	7
			Scarcity	2
			Exclusivity	3
27	Risk value	Is related to vulnerability of heritage (Ronchi, 2017)	Risk	2
28	Recreation value	Implies the relaxation and leisure activity (Worthing & Bond, 2008)	Actuality	1
			Activity	1
			Entertainment	2
			Recreation	5
			Amenity	1
29	Scientific value	Refers to whether it is the building techniques employed or the materials used, historic building have scientific values in terms of the information they contain on building practices of the period (Brusaporci, 2014)	Future happiness	1
			Demonstrate	3
			Academic	2
			Education	16
			Scientific	26
			Experimental	1
			Research	4
			Information	6
			Knowledge	2
30	Sense of place value	Implies the sense of belonging and community or cultural affiliation. Comfort, safety, and familiarity (Claesson, 2011)	Documentary	2
			Evidential	4
31	Social value	Refers to the meaning of historic place to a local community, often as part of an ongoing social interchange, constitutes its social value	Sense of place	4
			Sense of belonging	2
			Social	32
			Civic	2
			Societal	1
			Citizenship	1

	(Brusaporci, 2014)	National	1
		Sociocultural	4
		Socioeconomic	2
32	Spatial value	Refers to the spatial organization, perceptions and visual relationships, as well as all other elements of the structure (Brusaporci, 2014)	Spatial 5 Domestic/utilitarian 2 Location 1 Residential 3
33	Spiritual value	Is with a sense of connection with the infinite or with a particular faith or belief or it may convey religious meaning or message (Towse, 2011)	Inspirational 2 Religious 9 Spiritual 18 Respect/veneration 1 Mystery 1 Emotional 4 Wonder 1 Sublime 1 Moral 2
34	Symbolic value	Encompasses the representative value that communities develop in time for a monument when identifying it with specific historical events, individuals, religion, ideologies, culture, or tangible or intangible social images or icons (Mason, 2002).	Realization 2 Symbolic 14 Allegorical 1 Conceptual 1 Iconic 1 Notable 1 Prestige 4 Public asset 2 Representativeness 1
35	Technological value	Refers to the technological system used in the construction of a building and its contribution to advancing building technologies at the time constitutes technical value. (Brusaporci, 2014)	Creative 1 Innovative 1 Technical 4 Technological 4
36	Touristic value	Refer to the value that tourist can bring to a place or site (Gholitabar, Alipour, & Costa, 2018).	Touristic 4
37	Traditional value	Refers to the traditional elements that historical buildings are identified with them with the common understanding of “being old” (Brusaporci, 2014).	Conformity 1 Traditional 2 Indigenous 1 traditional
38	Urban value	Constituting an urban typology with real originality and hierarchy that	Urban 4 Townscape 1

strengths the local landscape's heritage	Situational	1
identity (Piderit, Agurto, & Marín-	Regional	2
Restrepo, 2019).	Contextual	2

Conservation actions and decisions are directly managed by stakeholders of heritage, therefore negligence of considering any value of heritage is alike a straight and deliberate harm to heritage (Myers, MacLean, & Mason, 2005). A heritage building, structure or object, can be accepted as a heritage only if all or some of the values deliberating its identity exist, therefore, decision of conservation are based on interdependent and interrelated values which are attributed to the heritage (Kapelouzou, 2012).

A necessary aspect of heritage value assessment is consideration of degree of significance. As Harald and Khalaf (2016) stated, assessing the degree of significance of heritage do not address explicitly and it's a complex work and difficult to construct. This comprehensive value categorisation presents the heritage values with their weights in evaluation of significance. After merging the synonyms, 38 value types are obtained and sorted from most frequently stated to least (Figure 2.3). These value types are essential for the further categorisation step of heritage values to be used by decision makers to have a rationalised decision making based on the degree of significance.

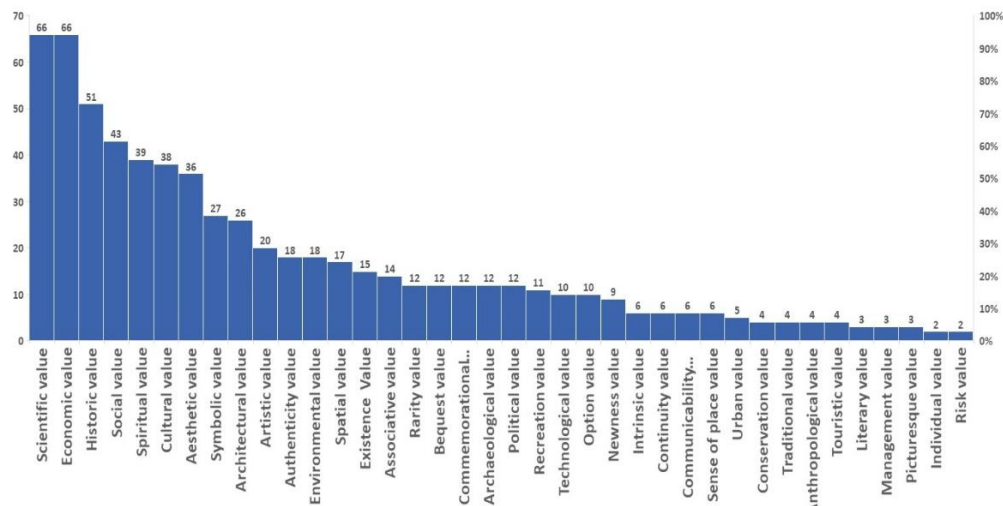


Figure 2.3: Heritage value frequency of being stated in literature (2010-2019)

2.4.2 Categorizing the Value Types

The value typologies are varying from each other in terms of content, variety, definition and grouping and this can be reasoned as different approaches of experts including institutional researchers and conservation professionals in the heritage conservation field. In this respect, author of this study find out the necessity to categorize these heritage value definitions into appropriate categories of values for the discussion on value-based approaches as a complete and definite reference point (Figure 2.4).

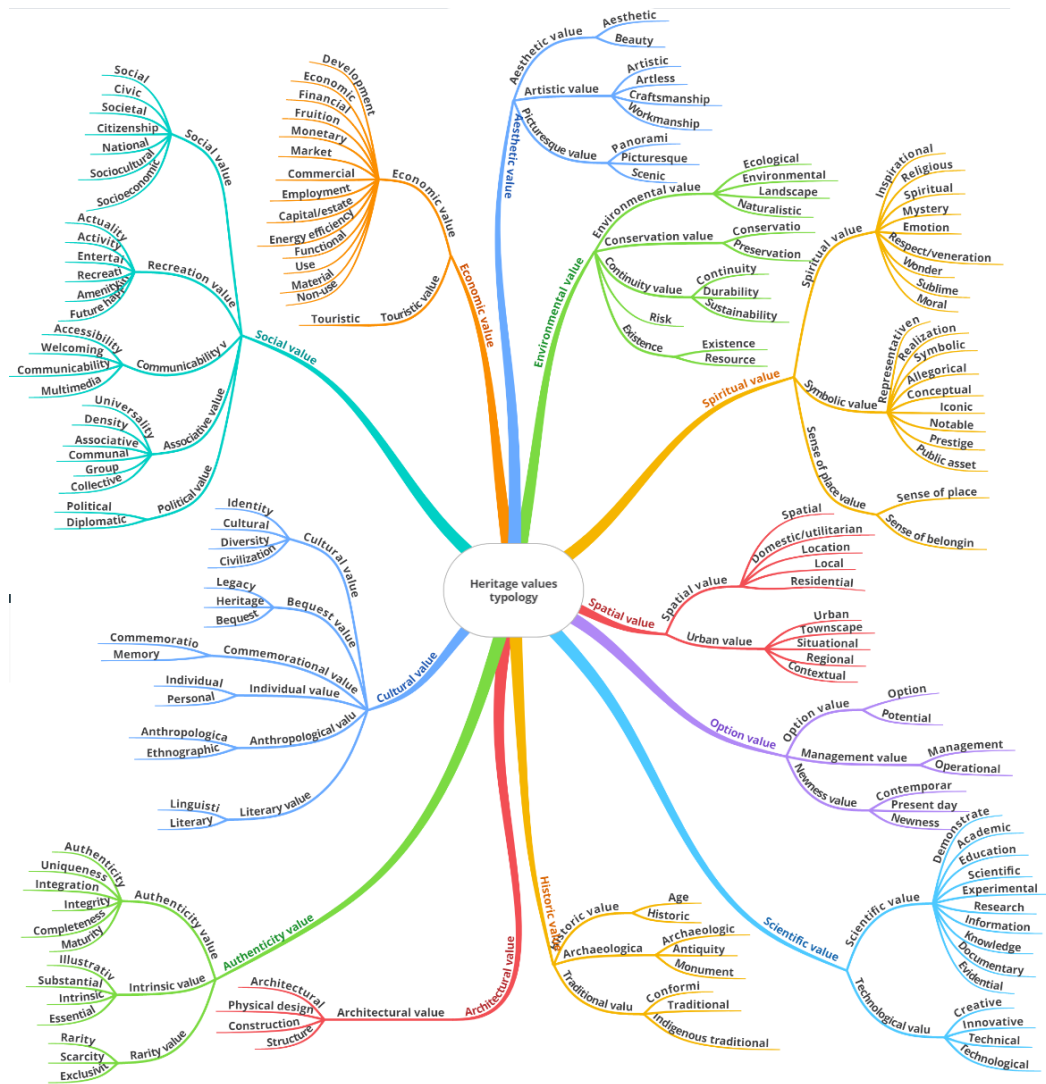


Figure 2.4: Holistic value categorisation of heritage

In this respect, after merging the synonym values together under 38 value types; and the summation of those related types have been collected under the same category. In this regard, 12 value categories have been extracted (Figure 2.5a-l).

According to emerged categories, aesthetic value category (Figure 2.5a) covers aesthetic value, artistic value and picturesque value. Architectural value category (Figure 2.5b) covers only architectural value type. Authenticity value category (Figure 2.5c) consists of intrinsic value and rarity value types. Cultural value category (Figure 2.5d) contains bequest value, commemorative value, sense of

place value, individual value, anthropological value, existence value, literary value and political value types. Environmental value category (Figure 2.5e) includes conservation value and continuity value types. Economic value (Figure 2.5f) includes economic and touristic value types. Historic value (Figure 2.5g) consists of traditional value and archaeological value types. Option value category (Figure 2.5h) embodies newness value, management value and risk value. Scientific value category (Figure 2.5i) contains technological value type. Social value category (Figure 2.5j) houses communicability value, recreation value and associative value types. Spiritual value category (Figure 2.5k) includes symbolic value type. Lastly, urban value category (Figure 2.5l) includes spatial value type.

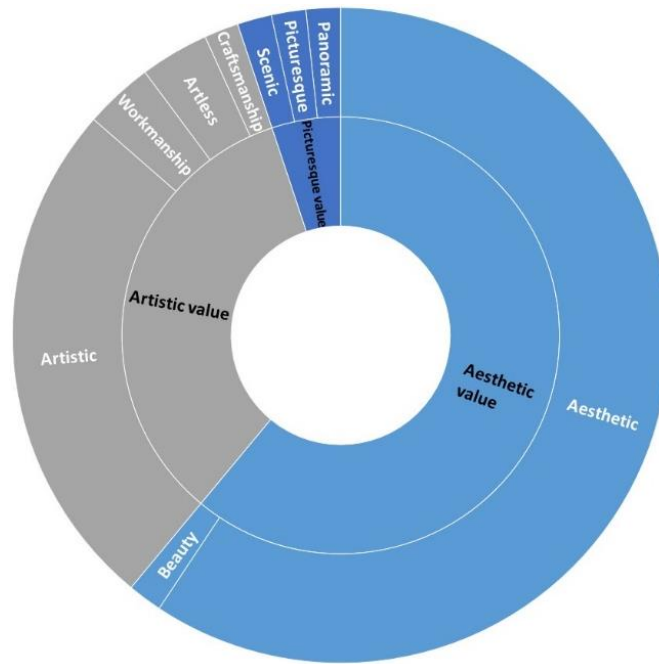


Figure 2.5: Aesthetic value category

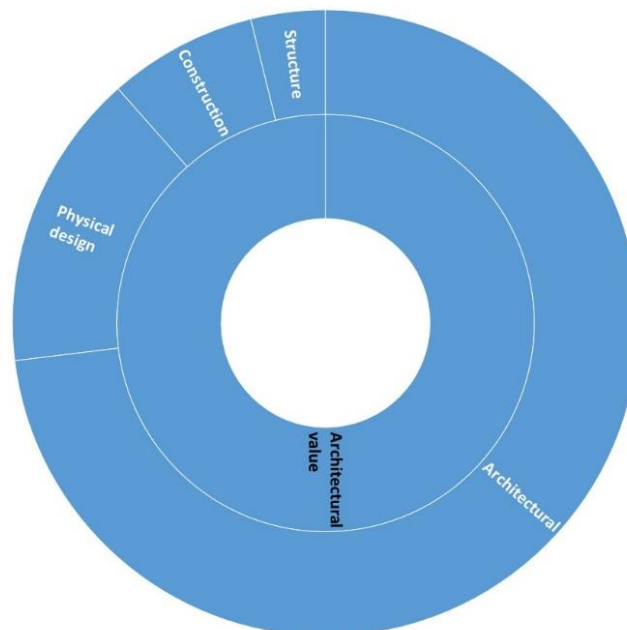


Figure 2.6 : Architectural value category

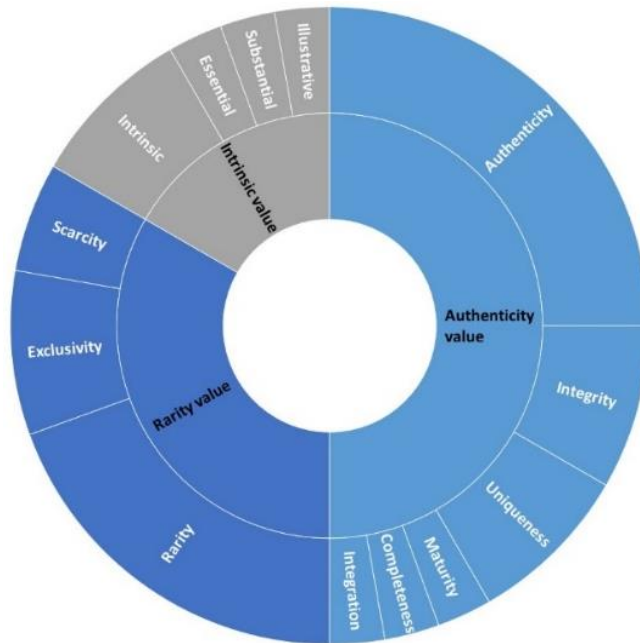


Figure 2.7: Authenticity value category

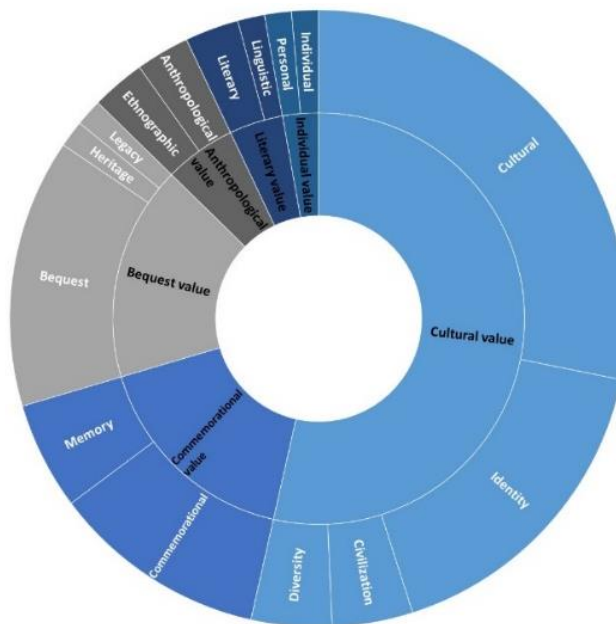


Figure 2.8: Cultural value category

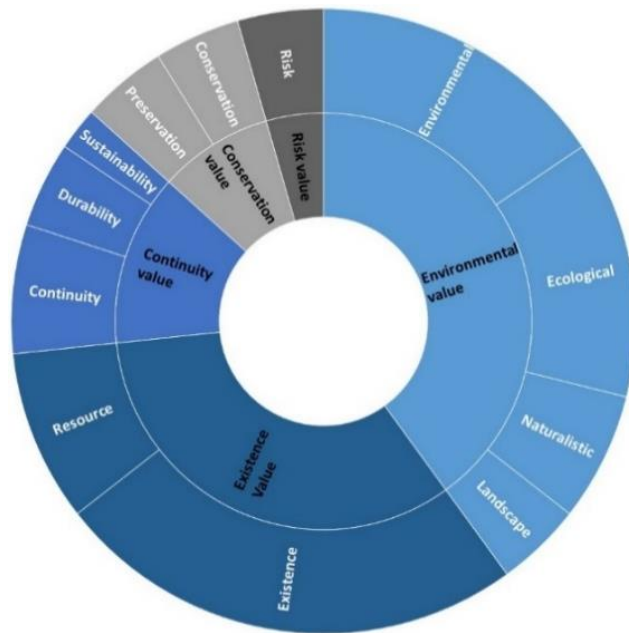


Figure 2.9: Environmental value category

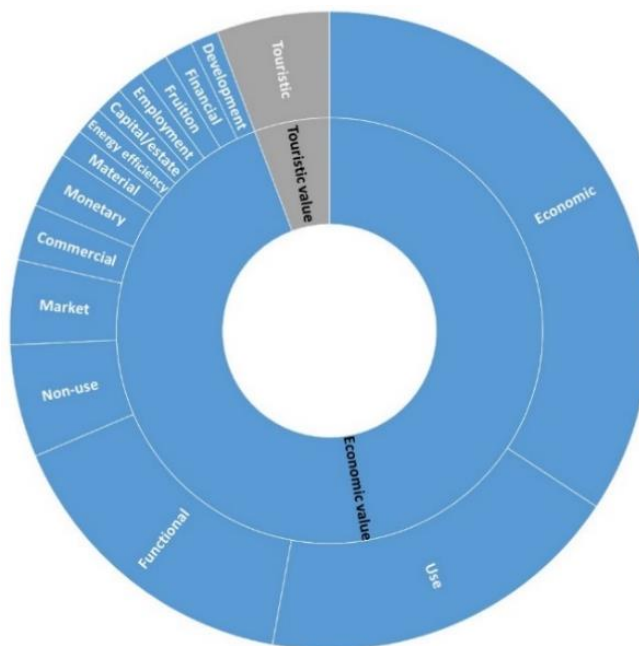


Figure 2.10: Economic value category

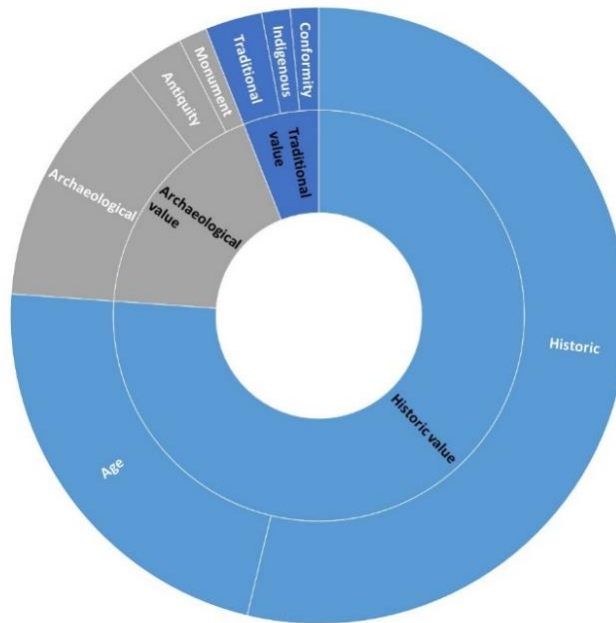


Figure 2.11: Historic value category

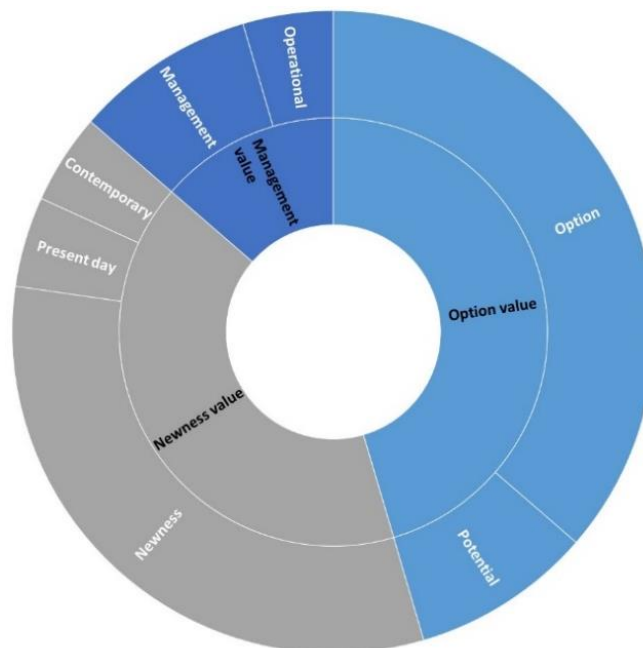


Figure 2.12: Option value category

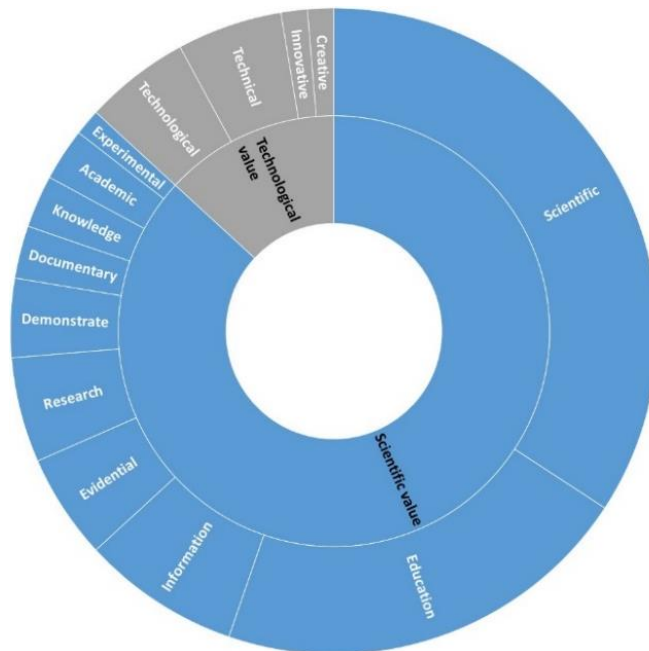


Figure 2.13: Scientific value category

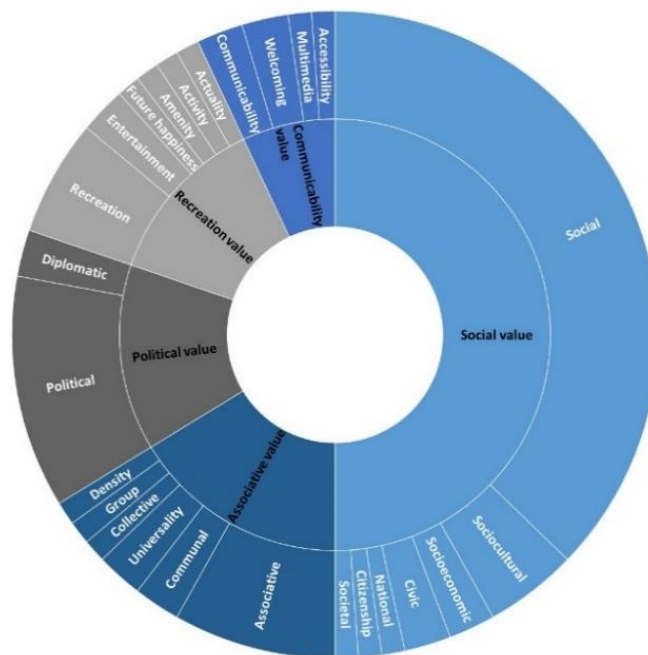


Figure 2.14: Social value category

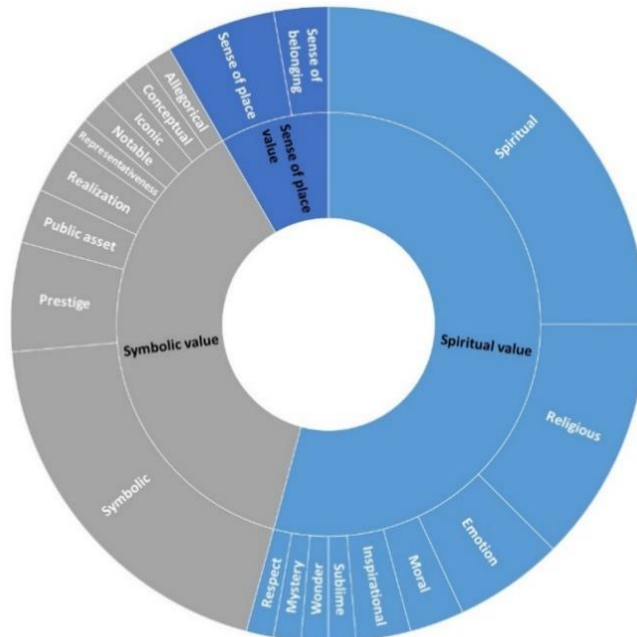


Figure 2.15: Spiritual value category

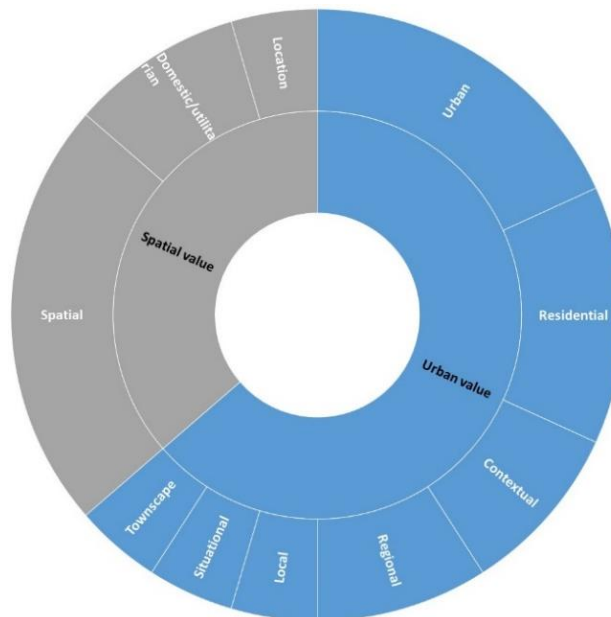


Figure 2.16: Spatial value category

The study tried to show the heritage values consonant categories, their general weights in addition to the weights of types within each category (Figure 2.6). The main aim of this value categorisation was to provide a comprehensive tool for the stakeholders as decision makers. This categorisation will help the decision makers to have more precise eye on value assessment to have a better management of their heritage.

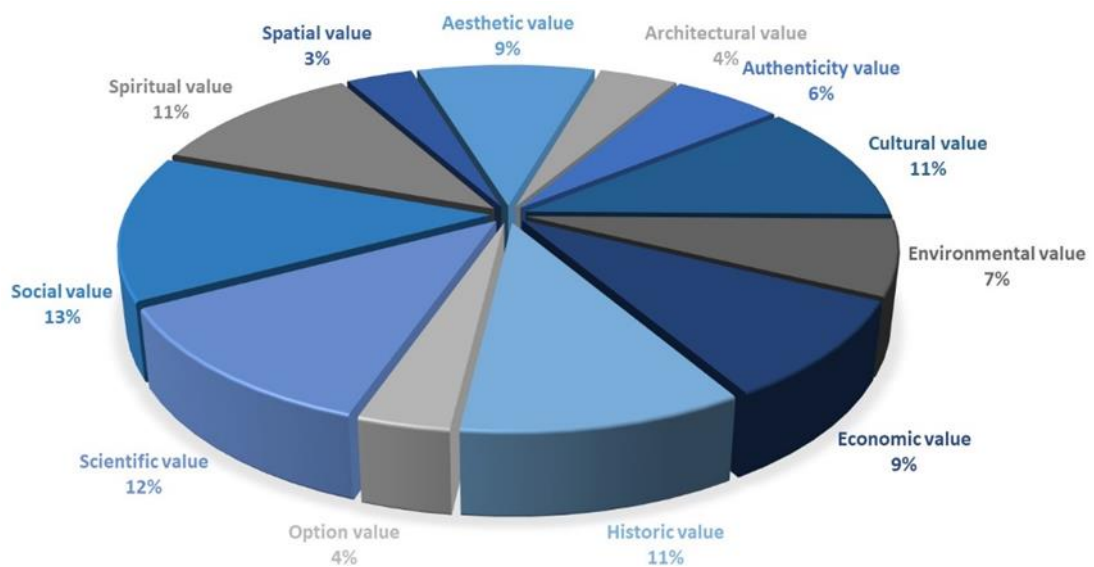


Figure 2.17: Weights of value categories

2.5 Chapter Conclusion

The purpose of this chapter was to provide a comprehensive categorisation of values ascribed to cultural heritage in the last decade by the pioneer drivers in order to gain a better understanding of how heritage is evaluated, and to identify their distinctive attributes. It is seen that; the assessment criteria might change from one perspective to another. Since different authors name the same criterion in different ways, one author might come across with different references and meet several criteria concerning the values and it is understood that the more references are examined; more criteria are found.

Data collection regarding the extracting the value typology of heritage building were gathered through a comprehensive search on Google Scholar database. Keywords including “Heritage,” “value,” “typology,” “conservation,” “assessment,” and “prioritizing” were used for a literature search from 2010 till 2019 (Table 2.2), and many papers were initially collected. More relevant papers were added after further cross-referencing. We then screened the collected papers based on four criteria: 1) the papers which are related to heritage building and archaeological sites; 2) the papers which are using value typologies in their studies 3) the paper was written in English; and 4) the review paper which are using value typologies in their context based on another researcher’s opinion. The research excluded many studies that are using a value typology for natural heritage. The final sample included: research papers in the forms of journal articles, theses and dissertations, working papers, and book chapters.

For the reason that different authors expressed one single value with various but synonym terms, and it caused difficulty in understanding the frequency of using each value, the author tried to merge the synonym terminology for similar values to find out the frequency of each single value.

Additionally, by ranking the 152 terms, the heritage values which were more frequently stated by the scholars, were extracted. Then after the synonym values are merged together under one type, the summation of that type was extracted and has been calculated. After the summation of each synonym group, the most frequently stated one in that group is considered as a group representative for that value type, hence achieving 38 types. This process is followed by the categorisation of 38 types into related categories. In this regard, 12 value categories have been extracted as ‘scientific value’, ‘economic value’, ‘cultural value’, ‘social value’, ‘spiritual value’,

‘historic value’, ‘aesthetic value’, ‘architectural value’, ‘urban value’, ‘authenticity value’, ‘economic value’ and ‘environmental value’. Finally, the weight of each value category has been calculated in percentages.

This systematic and holistic value categorisation (Figure 2.4) can help the stakeholders in decision making to comprehend the heritage values; and the total weights of categories (Figure 2.6) are expected to support rationalised decision making. As it is examined in detail (Figures 2.5a-h), each value type has its own weight, therefore heritage buildings can be ranked and prioritised according to the sum of weights of the value categories that they possess in addition to the other criteria such as the deterioration level.

Chapter 3

STAKEHOLDERS' INCLUSION IN CULTURAL HERITAGE CONSERVATION DECISION MAKING

3.1 Decision-Making for Sustainable Cultural Heritage Conservation

To have a sustainable cultural heritage conservation, participation of heritage stakeholders' community is an important issue within the management of heritage buildings (Landorf, 2009). Moreover, participation of community is known as a fundamental issue in practice of heritage management (Li et al., 2020). In conservation of cultural heritage, there is a lot of discussion about variety of stakeholders, and there are guidelines that emphasise the participation local community besides the government and experts (Schmidt, 2014). Aureli and Del Baldo to sustain the conservation process of heritage conservation, in their study try to increase the understanding of heritage stakeholders about cultural heritage and adapt their different needs in the process of conservation of heritage building (Aureli & Del Baldo, 2022) Stakeholders inclusion in Cultural heritage conservation.

ICOMOS (1979, 1999) emphasizes that heritage conservation cannot be sustained without community participation. This reveals that the designation of heritage should be decided not only by experts, but also by other stakeholder's collaboration (Aas, Ladkin, and Fletcher, 2005; ICOMOS, 1999; ICOMOS, 1979). Any individual who has the capacity and right to contribute to the process of decision-making, is defined

as a stakeholder; thus, anyone who is involved by the process, has the right to be involved (Gray, 1989). In this respect, a heritage stakeholder is considered as anybody who is influenced by the conservation negatively or positively. Consequently, including them in the conservation development process decreases the potential for future conflict between heritage stakeholders (Swarbrooke, 1999; Bramwell, 1999). Hall and McArthur stated that, to develop successful cooperation between heritage conservation and tourism, it is essential to include all stakeholders in cultural resource development. It is clear that the lack of interaction among different stakeholders is an important issue (Hall, 1998) There are cultural tourism, heritage tourism, special interest tourism, pilgrimage tourism etc. (Atun et al., 2019) as alternative tourism types, which are generally injected into cultural heritage sites to gain financial income for supporting future conservation expenses.

The notion of stakeholder is becoming gradually more important in the management of heritage sites, especially for the host community as the heritage custodian (Peters, 1999). According to van de Kerkhof (2006), a stakeholder of heritage conservation, in the context of the public realm, may be anyone who has awareness of conservation policy or potentially could be affected by the process or the outcomes. That is the reason why in ideal cases, the authorities first give seminars to educate the public before taking their views in urban conservation projects to enrich the stakeholders, specially tourists and locals knowledge about conservation process. He mentioned three groups of stakeholders. Firstly, an individual or organised group can be the stakeholder. Secondly, different groups or individuals may have varying perceptions of each other and themselves about heritage, which may change over time. Thirdly,

the designated stakeholder group may vary (Van de Kerkhof, 2006). It can be a public or private organisation or an institution.

Table 3.1: Three groups of stakeholders (derived from Van de Kerkhof, 2006)

Three groups of stakeholders	
Group 1	An individual or organised group
Group 2	Different groups or individuals with varying perceptions of each other and themselves about heritage. (This may change over time)
Group 3	A varying designated stakeholder group

Myers et al. (2016), claim that stakeholders vary according to the heritage such as local government bodies, universities, central governments, non-governmental organizations (NGOs), and host communities. They also discuss that there are multiple stakeholders involved in each heritage site and that there is a challenge to identify all stakeholders. Heritage management should seek to respect and achieve coexistence of multiple stakeholders and to avoid open conflict of the denial of some values (ICOMOS, 1998).

The success of conservation and adaptive reuse necessitates considering the stakeholders' memory associations, experiences, and uses of a place. The evaluation process should comprise the participation of various experts and the authorization of stakeholders who have an interest in the property or place (Déom & Thiffault, 2013). As different stakeholders, who are involved in the designated subject, may change over time or throughout the process, the policy may change as well. Usually, stakeholder groups are not homogenous bodies, since generally, identified stakeholder groups contain a mixture of diverse individuals, who may or may not

recognise themselves as being part of a specific categorisation (Van de Kerkhof, 2006).

To attain balanced decision-making, it is essential to improve collaboration between the different groups of people, such as the experts, authorities, NGOs, entrepreneurs, local community, and visitors. In other words, all who are influenced by the consequences of conservation need to be involved. In this regard, involving all groups of stakeholder in management of heritage building and identification of their value and interest is the most important key for the success. (Myers et al., 2010).

Taking contributions from all related stakeholders through a participatory process helps to certify that, the conservation process accounts for the contributions of academicians and professionals; at the same time, the social concerns and needs; and the significant role conservation experts play in guiding, participating in, and shortening the process of heritage conservation (Palumbo & Teutonico, 2002)

Many international charters highlight the importance of decision-making in heritage conservation. As noted in the Washington Charter in 1987 (Article 5), multidisciplinary studies have to be done for conservation development of heritage buildings and sites (ICOMOS, 1987). In the comprehensive framework of cultural heritage management, it is essential to have various stakeholders as decision-makers in conservation, like cultural institutions, government entities at local and national levels, tourism boards, entrepreneurs, NGOs, local people, and tourists. Also, it is very important to consider the habits, traditional knowledge, as well as the other values of heritage. According to the compound interaction and interdependencies of various stakeholders, design and implementation of a sustainable heritage

management model is an endless challenge (Wijesuriya, et al. 2013). It should be taking into consideration that to have a sustainable conservation, presenting new use to the buildings which lost their old function is an important task and the new function of building should have a sustainable means (Yaldız & Asatekin, 2013).

As it is mentioned by Grceva and Oktay, (2021) in sustainable heritage conservation decision making, which is based on Burra Charter (ICOMOS, 1979), there are different steps. One is the observation stage which is understanding the significance, and the other is co-generation stage which is related to policy development, which means there should be no hierarchy and all participants should be equally contributing. Integration stage for the most beneficial and sustainable solution and active stage which management policy should consider spontaneous process. In this regards if all stakeholders are being considered in the whole process, the result will be the most transparent and practical decision (Grceva & Oktay, 2021).

Palumbo and Teutonico (2002) also offered an inclusive description of stakeholders of cultural heritage as archaeologists and researchers – who have worked on the site – along with any local people for any of the following reasons: Locals may want to use the site for the social or commercial purposes; may benefit indirectly or economically from the site's conservation; or may have a special relationship to the site through ancestry or affinity. Contrarily, some locals may be considered as stakeholders because they are negatively affected by the increased tourist activity and traffic resulting from conservation efforts. The latter effect may be particularly true for case of special interest tourists, like pilgrims and large groups (Palumbo & Teutonico, 2002) on the other hand locals can also be positively affected due to increasing job-opportunities, continuity of local skills and traditions, etc.

Figure 3.1 shows the variety of stakeholders involved in decision-making for heritage conservation. These were re categorised into three sectors as public sector, private sector, and users. The classification is derived from various studies (Hall & McArthur, 1998; Swarbrooke, 1999; Jamal & Getz, 1995; Palumbo & Teutonico, 2002; Timothy, 2003; Pamela & McKercher, 2004; Su & Lin, 2014; Cheer & Reeves, 2015) discussed in the previous paragraphs.

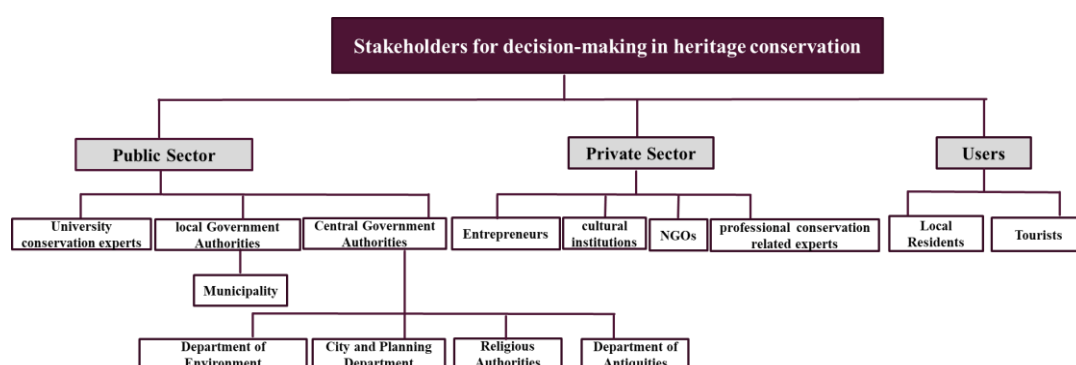


Figure. 3.1: Stakeholders for decision-making in heritage conservation

3.2 Values-Based Priority Dcision Making for Cultural Heritage Conservation

Assessment of the cultural heritage significance, which depends on values, is a challenging step in the decision-making processes. The ongoing management of heritage conservation use the heritage values as the main reference points of the approach (Mason, 2002). The development of the declaration of the significance of values was paired with the development of the heritage management approach called values-based management (McClelland & Peel, 2013). Values-based management is the structured process and coordination of heritage buildings with the main goal of safeguarding the values of places (Mason, 2002). Heritage-place significance can be measured and recognised by understanding the values that stakeholders assign to

heritage places (De la Torre et al., 2003; Myers, et al., 2010). Places of heritage may be visited by diverse people with differing understanding on heritage values, and differing expectations. Therefore management decisions should include a clear understanding of all kinds of heritage values; and therefore, values-based management must include these in the conservation process. This approach was established to provide strong guidance for heritage conservation decisions; hence, the key idea of this approach is the efficient inclusion of the views of all related stakeholders and the values that they assign to heritage buildings and sites (Poulios, 2010).

Within this perspective, the values vary according to the numerous kinds of architectural heritage classified by UNESCO (1972) such as monuments, groups of buildings, heritage sites, historic structures, vernacular buildings, and architectural, archaeological, and natural sites. Cultural heritage, as a whole, and each asset have their own arrays of values. Not all values are relevant to all places; even two nearly identical heritage assets may have associated values that alter from place to place. The diversified values are identified by the author after a deep literature survey which is thoroughly explained in Chapter 2 and illustrated in (Figure 2.4).

Values have always been the fundamental reason for heritage conservation (De la Torre, 2003). It should be considered that the values of heritage buildings are multivalent (Mason, 2002). Additionally, heritage values are provisional and non-fixed – meaning they can change according to the context of the heritage asset. An example of shifting significance may occur, for instance, when due to changes in political issues, i.e. an old statue might lose its symbolic value (Mason, 2002).

The Getty Conservation Institute, through a series of publications, also stressed the identification of heritage values assigned by stakeholders as the main goal of heritage conservation (Mason, 2002; De la Torre, 2003; Myers, 2010). The values-based approach in conservation suggests that heritage values should sustain the heritage significance, and physical changes should not exceed what is necessary for conservation. Value assessment can vary depending on who is doing the valuation and it can differ depending on individual perspective. To support the discussion of heritage values, it is important to have a comprehensive typology of heritage values since most heritage assets have an assortment of values in varying degrees (Palumbo, 2002).

3.3 Chapter Conclusion

The chapter presents a conceptual framework that is able to support the decision-making processes related to prioritization of the heritage buildings for conservation, by considering the heritage values. In this chapter, the relationship between heritage conservation and tourism and a variety of heritage values in heritage conservation are discussed. Besides, cultural tourism as a source of income and a tool for conservation is discussed in the light of the related charters and declarations.

The thesis categorizes the stakeholders influencing the prioritisation of heritage assets into three main categories: public sector, private sector, and users along with their sub-categories. This study advocated that the levels of building deterioration should be evaluated by experts, alongside their assessments on the values of heritages garnered from stakeholders, in order to make rational decisions. The next chapter proposes a values-based framework for prioritizing architectural heritage in conservation within tourism-led scenarios. In cases where there is a limited budget

for the conservation of heritage, this framework helps the decision-makers to develop rational prioritisation schemes for the conservation of architectural heritage. It also helps create the necessary conditions for sustainable development. Well-functioning of the proposed framework is advantageous for the conservation of heritage. In future stages of this study, this proposed framework verified by applying the step-by-step procedures to real case studies. It will be used as a tool for prioritizing the conservation of architectural heritage in each case.

Chapter 4

PROPOSED FRAMEWORK AND ITS APPLICATION: VALUE BASED PRIORITY DECISION MAKING IN CONSERVATION OF HERITAGE BUILDINGS

In this chapter, a unique and important framework is proposed for value-based priority decision making in conservation of heritage building, by extracting the values of the heritage building which are in need to be prioritised for conservation. The second step is based on heritage stakeholder analysis. It consists of the definition of a panel of experts and identification of others. The third step consists of two parts where the first part is the assignment of heritage values by the stakeholders. For the second part, investigation of the deterioration levels of built-heritage assets.

The heritage value evaluations have been implemented according to the extracted categories, to rank five selected case studies from UNDP projects in Cyprus. A hybrid multi-criteria decision making is used, which consists AHP to weight the values; and TOPSIS to prioritize the value-based decision making on the cases. To apply the framework, the questionnaire (Appendix II &III) was distributed among different types of stakeholders consisting of experts, authorities, representative of NGO's, tourists, and locals which will be explain in the following sub sections.

4.1 Proposed Framework

Based on prior studies, this research proposes a conceptual framework that is designed to help the process of decision-making in prioritising heritage conservation. This proposed framework (Figure 4.1) conceptualizes four distinctive steps.

The first step is extracting the alternatives. This initial stage defines alternative existing buildings that need to be prioritised for conservation. The second step is based on heritage stakeholder analysis. It consists of the definition of a panel of experts and identification of other stakeholders to be categorized into three main groups (Figure 3.1). One of the main groups is ‘public sector’, which is branched as ‘academic conservation experts’, ‘local governmental authorities’, and ‘central government authorities’. The ‘private sector’ is branched to sub-categories such as ‘entrepreneurs’, ‘cultural institutions’, ‘NGOs’, and ‘professional conservation-related experts’. The final group is the ‘users’ and contains sub-categories like ‘local residents’ and ‘tourists’. The third step consists of two parts where the first part is the assignment of heritage values by the stakeholders. The heritage value categories which are extracted in Chapter 2 are used in the proposed framework for value-assessment of selected heritage. For the second part, deterioration levels of built-heritage assets – related to their structure, form, and material – need to be evaluated and considered by the experts. The fourth step entails integration and aggregation of the findings and results of the previous steps in order to prioritize the alternatives for conservation (Sahraiyanjahromi and Türker, 2019).

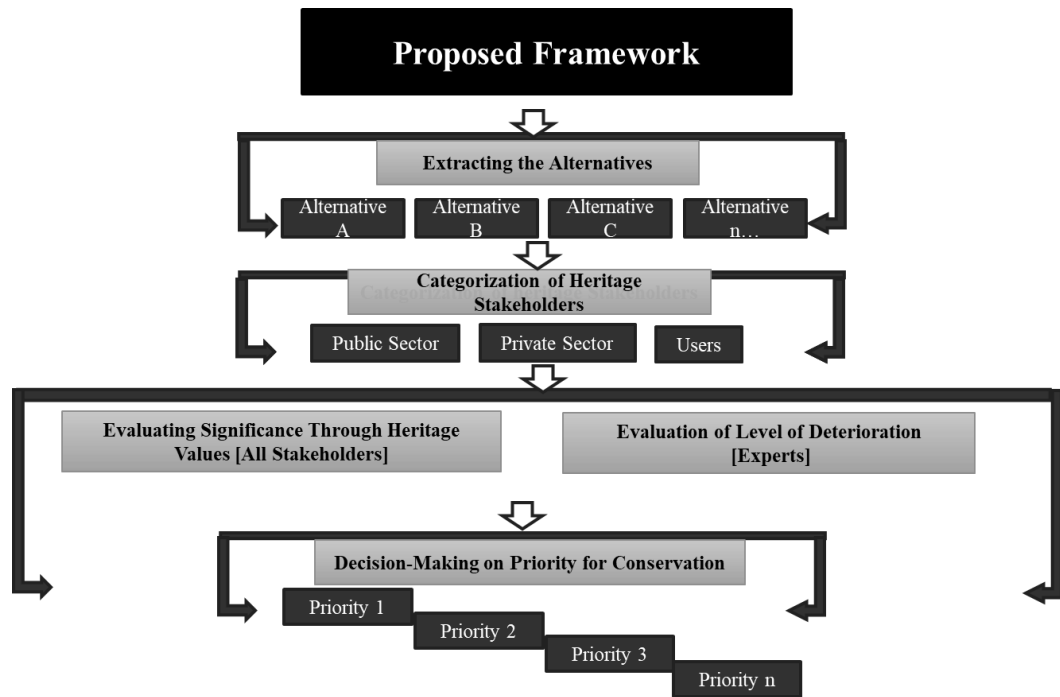


Figure 4.1: Proposed decision-making framework (Sahraiyanjahromi and Türker, 2019)

The proposed framework is interdisciplinary and brings together different fields of knowledge in the area of cultural heritage conservation. Development of the framework proceeds through the following sequence of consecutive activities.

4.1.1 Multi-criteria Decision Making Method

A method which is used for this study is Multi-Criteria Decision-Making (MCDM) method. This method has been widely addressed in scientific literature over the last years. MCDM for heritage assessment presents the area of active research, which receives an increasing attention; however, so far, there has been no single generally accepted system for multi-criteria heritage assessment (Fairclough et al., 2007).

Multi-criteria decision-making analysis is a formal methodology to deal with complex decision problems is provided by multi-criteria decision-making (MCDM) analysis, consisting of a set of techniques that aims to comparatively assess

alternative projects or heterogeneous measures. With respect to the stakeholders of heritage, the complexity of the evaluation has grown and so has the number of Multi-criteria Decision Analysis (MCDA) on heritage conservation. Considering that the objective value data cannot be acquired, it is inevitable to use subjective evaluations, requiring numerous experts with different specialties. Torre (2002), claims that quantitative data are more about causality but qualitative judgments are more about the relationship of feelings and scenes, thus bringing up a toolbox approach that puts all related values in a table (Torre, 2002).

The earliest references relating to MCDM trace back to Benjamin Franklin, and to the mathematical contributions of Georg Cantor (Husain, 2012) and Pareto, who firstly studied the aggregation of conflicting criteria into a single composite index. Since then, the contributions of Operational Research, multi-criteria analysis was employed in different areas, deriving techniques from other mathematical disciplines, such as mathematical modelling, statistical analysis and mathematical optimization. MCDM can be classified in two categories as multi-objectives decision analysis (MODA) and multi-attribute decision analysis (MADA) in relation to the decision context and the complexity of the mathematical model (Khatami et al., 2013) The first type is commonly used to determine the optimal compromise solution with a probabilistic approach, which assumes continuous solution spaces. The second one utilizes a deterministic approach, with a finite domain composed by a finite number of alternatives and requires multiple attributes to determine choices. MADA methods do not aim to compute an optimal solution; rather, they aim to determine a rank of decision alternatives that is optimal with respect to several criteria.

Recent studies (Karimzadeh et al, 2014) examine scholarly literature pertaining to decision analysis and identify the most common MCDM methods, which are multi-attribute utility theory (MAUT) (Vicente & Parodi, 2011) analytic hierarchy process (AHP) (Godfrey, 2015); fuzzy set theory, analytic net-work process (ANP), case-based reasoning, data envelopment analysis (DEA), simple multi-attribute rating technique (SMART), goal programming, ÉLimination et Choix Traduisant la REalité (ELimination Et Choice Translating REality) (ELECTRE), Preference ranking organization method for enrichment evaluation (PROMETHEE), weighted-average sum (WAS), the technique for order of preference by similarity to ideal solution (TOPSIS), and additive ratio assessment (ARAS). The widespread diffusion of MCDM in urban planning is connected to the need of justifying policy choices and to the possibility of involving the community in the process. By providing quantitative data to solve a planning problem, it is an important communication tool within the decision-making body, the evaluators and the wider community (Delavar et al., 2015).

Over the last few years, different MCDM have been applied for heritage assessment, but none of them is preferably adopted. A common purpose is to rank alternative scenarios for enhancement of historical buildings and sites, other valuable applications in the management of cultural heritage allow grading different sites in order to identify investments and conservation priorities. AHP and ARAS methods have been applied to define the priorities for reconstruction of heritage buildings (Çetinkaya & Özceylan, 2016) considering the opinions of representative stakeholders of the decision problem. Analytical Hierarchy Process (AHP) is a useful tool to identify heritage value factors and solves multiple-criteria decision-making

problems through the establishment of priorities (Della Spina, L. (2020)). The AHP or TOPSIS-grey methods have been applied to rank reuse alternatives for the upgrading of vernacular buildings, taking into account multiple quantitative and qualitative criteria and experts' opinions (Hosseinzade & Khodabakhah, 2015). Some studies use AHP method in cultural heritage conservation. Fior et. al. (2020) applied AHP to evaluate and choice of integrated interventions on historic buildings; Di Angelo et al. (2018), applied AHP method to choose the best available 3D scanner for cultural heritage applications and also Grcheva and Vehbi (2021) applied the AHP to find the ideal solution for appropriate decision-making criteria for the new use of heritage building.

Among these comprehensive AHPTOPSIS description about MCDM for this study, the AHP Model is selected for extracting the qualitative weights of values then TOPSIS were used to prioritize of the targets and for better understanding of this model application, an overview of the model is given in below.

4.1.2 The Analytic Hierarchy Process: An Overview

The analytic hierarchy process (AHP) was developed by Architect Thomas L. Saaty, a professor at the University of Pittsburgh, in the 1970s. It is considered as one of the most common tools of MCDM. According to Mardani et al. (2015) in their publication “Multiple Criteria Decision-Making Techniques” which reviewed a total of 393 articles published from 2000 to 2014 in more than 120 journals, they found that the analytic hierarchy process (AHP) method has been used more than other tools by 35 percent; as it has many advantages. The most commonly applied method of the MCDM reported in the literature (Mardani et al., 2015) is the analytic hierarchy process (AHP). To strike a balance between theoretical robustness and

practicability, the AHP is adopted for the evaluation of the criterion weightings. According to Yau (2009), the model is structured as a logical hierarchy with at least three levels, namely ‘the goal’, ‘the criteria’, and ‘the alternatives’, as shown in (Figure 4.2). The AHP helps the decision makers evaluate the importance of every criterion in an intuitive manner by incorporating both subjective and objective data into the hierarchical framework. One of its advantages is its ease of use. Due to its hierarchical structure, it can easily alter in size to accommodate decision-making problems (Mardani, et al., 2015).

While using Analytic Hierarchy Process (AHP) method, typically, decision-makers are required to adopt definite criteria to make a decision. If the criteria are quantitative, then somewhat similar mathematical methods are required to address them. Conversely, since the decision-making criteria can be either quantitative or qualitative, conflicts can arise. However, this can be addressed by using needs-specific methods like multi-criteria decision making (MCDM) procedures. Therefore, the MCDM comprises a series of methods (e.g., correlation analysis or weighted sum) that permits specialists to consider and allocate marks, or to classify the collection of criteria linked to the specific issue (Dodgson and Spackman, 2009).

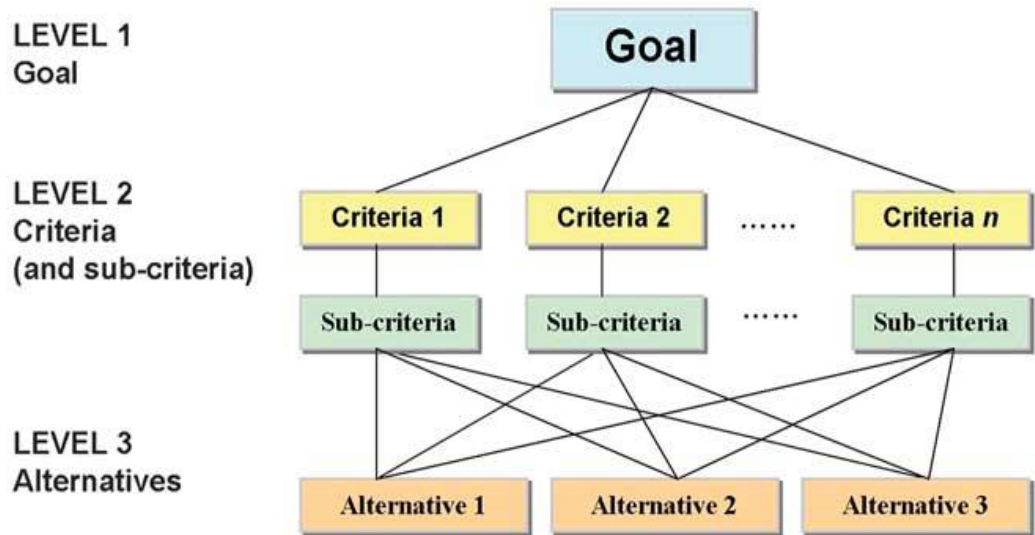


Figure 4.2: A typical hierarchy of AHP (Yau, 2008)

In this regard, the AHP adopts pairwise comparison to determine the relative importance of the criteria for meeting a goal. Being the heart of the approach, pairwise comparisons are made between the criteria, with respect to the goal, to decide on the relative importance of one criterion versus another (Saaty, 1980). In this study, the goal is making a value-based prioritization on the heritage buildings.

In fact, this pairwise comparison process can be facilitated with the help of a decision-making hierarchy. Factors listed at each level are perceived as important attributes that affect the attributes at the upper level.

4.1.3 Steps in the Development of the Analytical Hierarchy Model

The first step in the analytic hierarchy process is to model the problem. As explained in 4.1.1., the model is structured as a logical hierarchy with at least three levels; namely the goal, the criteria including sub-criteria, and the alternatives. Determining the pairwise weight of each criteria by each other will be compared in the second step. The comparison and weighting of the criteria will be applied according to Table 4.1 as it shows the ratio scale provided by Saaty (1980)

Table 4.1: Fundamental ratio scale in pairwise comparison

Intensity of importance	Definition	Explanation
1	Equal importance	Two criteria <u>equally contribute</u> to the goal
3	weak importance of one over another	Experience and judgment, consider one criterion <u>slightly more important</u> than another
5	Strong or essential importance	Experience and judgment, consider one criterion <u>strongly more important</u> than another
7	Demonstrated importance	A criterion is considered <u>strongly more important</u> and its dominance is demonstrated in <u>practice</u>
9	Absolute importance	The evidence showing one criterion to be <u>more important</u> than another is of the <u>highest possible order of confirmation</u>
2, 4, 6, 8	Intermediate values between the two adjacent judgments.	When <u>compromise is needed</u>

In this way for example, if the stakeholder believes the criteria A is equal weight or importance with criteria B, the intensity of importance of 1 will be selected or he/she believes criteria A is more important than B, based on the level of importance from Table 4.1, the appropriate number will be selected. The result of this comparison might be different in different cases and different purposes. It is very important to ensure about the awareness of the stakeholders about the comparison that they are doing. That's why it is suggested to make an interview about the case studies to ensure the awareness of the participators.

In the third step, the priority of each option based on 9-point scale will be concluded as each priority is only acceptable for each criterion. The fourth step is to calculate the final priority of each alternative. The highest rank of priority will be the best

choice of selection. These steps of the method have been presented in the case study with more details. In this study the case studies were selected among the EU funded conservation projects particularly in Walled-City Famagusta, Cyprus.

In this phase of the study, the experts on heritage conservation field were asked to determine the weights of heritage values. For this stage, the expected number of experts to contribute into the survey, was around 50 people. The target was to have representatives from different experts including theoreticians on cultural heritage and/or heritage conservation, and also conservators with site experience. It was first planned to distribute the questionnaires and conduct face to face interview with the wide range of experts available in both the public sector and the private sector together with the bi-communal Technical Committee on Cultural Heritage.

Unfortunately, due to Covid-19 pandemic, and the social distance protocols, and commute restrictions in year 2021, the questionnaires were distributed online to experts in the fields related with cultural heritage and conservation (Appendix II). In this regard, questionnaire is distributed to public sector such as conservation experts in the University, authorities in municipality as local government, authorities in central government such as department of environment, city and planning department, religious authorities and department of antiquities. In private sector they were entrepreneurs, cultural institutions, NGO's and professional conservation experts. 18 experts (E1 to E18) out of 50 have sent back their responses. Table 4.2 shows the different fields of their works on different subjects. In the table, the selected academic experts were mainly concentrating on cultural heritage and urban and architectural conservations fields. Architects were generally conservation designer and / or urban planner. It should be mentioned that some of the experts

might have different field of works and selected more than one area as the total number of experts were 18, however, 33 area of work have been selected. As it is mentioned in the table below there are 12 academic experts with the field of heritage conservation who filled the form, at the same time they had other expertise like architect, two of them were also cultural heritage expert, one urban planner, and one tourism expert and two of them were site expert. Also there were four archaeologists which had academic and cultural heritage expertise at the same time, besides, some of them were site which is defined in the table as conservation authorities.

Table 4.2: Field of works of the experts

Expert	Academic Expert	Conservation Authorities	Cultural Heritage	Architect	Urban Planner	Site expert	Archeologist	Toursim Expert
Ex1	1			1		1		
Ex2	1							
Ex3	1			1				
Ex4	1			1				
Ex5	1		1	1				
Ex6	1							
Ex7	1							
Ex8		1					1	
Ex9		1	1				1	
Ex10	1					1		
Ex11	1			1				1
Ex12	1		1				1	
Ex13		1	1					
Ex14		1	1					
Ex15		1		1				
Ex16		1		1				
Ex17	1			1	1			
Ex18	1						1	
Total	12	6	5	8	1	2	4	1

Demographic questions have been collected and analysed. As it is shown in Figure 4.3, the age range of the experts start by 25 years old as 11% of experts were between 25 and 34 years, 28% between 35 and 44 years old, 44% from 45 to 54 years old, 11% between 55 and 64 years old and 6% had above 65 years old. 83% of experts had PhD degree, however, only 17% were with master degree and none of

the participants had less than master degree. Regarding the gender, 28% were males versus 72% of females. Another analysis shows the experiences of the experts who participate in this study as it shows in (Figure 4.3) , 39% of experts had more than 15 years' experience, 33% between 10 and 15 years, 11% between 6 and 10, 6% between 2 and 5 years, and 11% less than 2 years experiences.



Figure 4.3: Tomography Analysis of Experts

4.1.4 Value Weighting Using AHP Analysis

In Multi-criteria decision making, it is important to find the significance level of each variable before considering their roles on the different case study periodization. There are several methods to find the weight of the variables and as mentioned before, one of the most applicable methods is Analytical Hierarchy Process (AHP).

In order to calculate the weight of each value, it is needed to follow the AHP method.

The AHP method is explained in (Table 4.3) step by step.

Table 4.3: Steps of AHP method.

steps	explanation	formula
Step 1: Creating the comparison matrix:	After collecting all the pairwise comparison of the values stated by the expert, the pairwise comparison matrix for each expert is provided	$A = [c_{ij}] = \begin{matrix} C_1 & \begin{bmatrix} 1 & a_{12} & \cdots & a_{1n} \\ C_2 & 1/a_{12} & 1 & \cdots & a_{2n} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ C_n & 1/a_{1n} & 1/a_{2n} & \cdots & 1 \end{bmatrix} \end{matrix}.$
Step 2: Normalizing the pairwise comparison matrix:	By using the normalization, the comparison matrix will be dimensionless and will be calculated	$\bar{A} = [\bar{c}_{ij}] = \begin{bmatrix} c_{11} / \sum_{i=1}^n c_{i1} & c_{12} / \sum_{i=1}^n c_{i2} & \cdots & c_{1n} / \sum_{i=1}^n c_{in} \\ c_{21} / \sum_{i=1}^n c_{i1} & c_{22} / \sum_{i=1}^n c_{i2} & \cdots & c_{2n} / \sum_{i=1}^n c_{in} \\ \vdots & \vdots & \ddots & \vdots \\ c_{n1} / \sum_{i=1}^n c_{i1} & c_{n2} / \sum_{i=1}^n c_{i2} & \cdots & c_{nn} / \sum_{i=1}^n c_{in} \end{bmatrix}.$
Step 3: Calculating the weights	The weight of each value then will be calculated following the below formula	$W = \begin{bmatrix} w_1 \\ w_2 \\ \vdots \\ w_n \end{bmatrix} = \begin{bmatrix} w_1 = \left(\prod_{j=1}^n \bar{c}_{1j} \right)^{1/n} / \sum_{i=1}^n \left(\prod_{j=1}^n \bar{c}_{ij} \right)^{1/n} \\ w_2 = \left(\prod_{j=1}^n \bar{c}_{2j} \right)^{1/n} / \sum_{i=1}^n \left(\prod_{j=1}^n \bar{c}_{ij} \right)^{1/n} \\ \vdots \\ w_n = \left(\prod_{j=1}^n \bar{c}_{nj} \right)^{1/n} / \sum_{i=1}^n \left(\prod_{j=1}^n \bar{c}_{ij} \right)^{1/n} \end{bmatrix}$
Step 4: Determine the largest eigenvalue:		$\lambda_{max} = \sum_{j=1}^n c_{ij} w_j$
Step 5: Determine the Consistency Index (CI):		$CI = \frac{\lambda_{max} - 1}{n - 1}$
Step 6: Determine the Consistency Ratio (CR):		$CR = \frac{CI}{RI}$
Step 7:	Controlling the consistency	

For the implementation of AHP in this research, the CI and CR values for each expert have been brought in (Table 4.4).

RI represents the random consistency index over numerous random elements of the same order reciprocal matrices which is shown in (Table 4.5).

Table 4.4: Random Consistency Index (RI) for corresponding number of variables

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
R	0	0	0.5	0.9	1.1	1.2	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5
I			8	0	2	4	2	1	5	9	1	3	6	7	9

Controlling the consistency of the data collection: It is generally acceptable if $CR < 0.10$. When CR becomes relatively large (> 0.10), then its reasons should be explored. Inconsistencies can result from unintentional errors, lack of concentration during the comparison process, or even misunderstandings. An advantage of the AHP is that it allows the researcher to identify, explore, and correct these inconsistencies. The selected participants were among the expert person in the heritage conservation, on this basis, the CR of each expert on the pairwise questionnaires were considered individually and together, to verify the quality of answers and errors which might happened through the answering process. As it is shown in (Table 4.4), expert 15 once submitted the questionnaire (E15) with the CR of 0.41 which was not reliable for the consideration therefore, it was asked again to refill the questionnaire and then E'15 was submitted by the expert with CR of 0.06. The Average CR is 0.9 which is less than 0.1 which shows the consistency of the matrix.

Table 4.5: Weight of the criteria, CI and CR

No	Aesthetic Value	Arctitectural Value	Authenticity Value	Cultural Value	Environmental Value	Economic Value	Historic Value	Option Value	Scientific Value	Social Value	Spiritual Value	Spatial Value	Deterioration Level	Sum	CI	CR
E1	0.02	0.02	0.20	0.11	0.02	0.07	0.12	0.05	0.08	0.06	0.16	0.04	0.06	1.00	0.14	0.09
E2	0.03	0.07	0.18	0.10	0.04	0.03	0.09	0.05	0.09	0.16	0.05	0.09	0.02	1.00	0.21	0.13
E3	0.02	0.06	0.12	0.10	0.13	0.06	0.09	0.05	0.07	0.07	0.07	0.07	0.09	1.00	0.10	0.06
E4	0.03	0.14	0.13	0.14	0.09	0.01	0.11	0.02	0.04	0.09	0.10	0.08	0.03	1.00	0.19	0.12
E5	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	1.00	0.00	0.00
E6	0.06	0.06	0.08	0.11	0.02	0.06	0.08	0.09	0.03	0.13	0.06	0.09	0.14	1.00	0.21	0.13
E7	0.02	0.05	0.05	0.07	0.06	0.01	0.09	0.01	0.12	0.05	0.04	0.07	0.37	1.00	0.18	0.12
E8	0.01	0.06	0.06	0.11	0.03	0.02	0.15	0.02	0.13	0.03	0.09	0.03	0.28	1.00	0.19	0.12
E9	0.05	0.03	0.08	0.04	0.04	0.04	0.04	0.02	0.30	0.03	0.01	0.08	0.23	1.00	0.21	0.13
E10	0.04	0.05	0.17	0.11	0.04	0.03	0.09	0.02	0.07	0.07	0.06	0.14	0.10	1.00	0.11	0.07
E11	0.14	0.13	0.09	0.10	0.01	0.27	0.08	0.01	0.05	0.05	0.04	0.02	0.03	1.00	0.21	0.13
E12	0.01	0.01	0.05	0.07	0.10	0.01	0.09	0.02	0.05	0.07	0.14	0.06	0.32	1.00	0.19	0.12
E13	0.07	0.08	0.16	0.16	0.02	0.02	0.07	0.04	0.06	0.03	0.15	0.04	0.11	1.00	0.10	0.06
E14	0.01	0.06	0.06	0.04	0.03	0.04	0.06	0.04	0.06	0.05	0.20	0.08	0.26	1.00	0.12	0.08
E15	0.01	0.08	0.12	0.05	0.03	0.08	0.07	0.07	0.12	0.10	0.11	0.07	0.10	1.00	0.64	0.41
E'15	0.02	0.08	0.11	0.15	0.03	0.04	0.12	0.03	0.09	0.16	0.09	0.03	0.08	1.00	0.10	0.06
E16	0.07	0.07	0.07	0.07	0.07	0.02	0.07	0.02	0.07	0.06	0.03	0.09	0.28	1.00	0.06	0.04
E17	0.02	0.04	0.18	0.09	0.09	0.03	0.06	0.06	0.06	0.06	0.06	0.06	0.17	1.00	0.09	0.06
E18	0.02	0.03	0.11	0.07	0.08	0.02	0.05	0.05	0.04	0.05	0.05	0.05	0.39	1.00	0.10	0.06
Average	0.04	0.06	0.11	0.09	0.05	0.05	0.08	0.04	0.08	0.07	0.08	0.07	0.16	1.00	0.14	0.09

Figure below shows the weight of the values after AHP analysis, on this basis (Figure 4.4), Deterioration risk and aesthetics values received the maximum and minimum weight of 16.5% and 3.8%, respectively and other values placed between these two values.

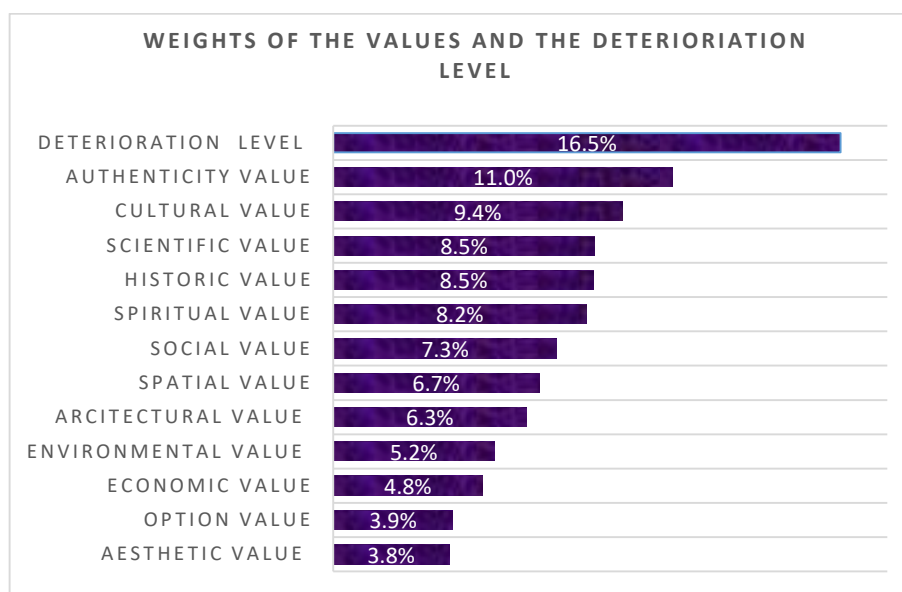


Figure 4.4: Weights of the different values and the deterioration level

4.2 Introducing Case Studies: UNDP Projects in Famagusta for the Implementation of Proposed Framework

UNDP in Cyprus, established a Project Management Office which is funded by the EU (European Union), to support the process of confidence and peace building (TCCHC, 2022). The selection of these case study was to evaluate the prioritising process for conservation in Cyprus, and to implement the purposed framework to test the model to improve the process of valorisation process for heritage conservation. Since 2001, UNDP of Cyprus and the EU have been working together, with the Directorate General, first enlargement, and from 2006, UNDP Cyprus has been involved in implementation, facilitating and supporting the of purposes of the Task

Force for the Community of Turkish Cypriot for co-funded, bi-communal and initiatives. main partner of UNDP's in Cyprus is the Technical Committee on Cultural Heritage of Cyprus (TCCHC,2022).

In 2008 there was an agreement between Turkish Cypriot and Greek Cypriot under control of United Nation, for the establishment of Technical Committee on Cultural Heritage in order to promote, and protect of cultural heritage of Cyprus. The TCCH is supported by architects, archaeologist, town planner and historians from both north and south group, and all decisions are taken according to their agreed discussion between their leaders from both side of Cyprus. In North part of Cyprus the projects are done in Famagusta, Nicosia and Kyrenia and some small towns and villages (TCCHC, 2022).

Historic city of Famagusta existed since antiquity and many of its heritage buildings are deteriorated due to neglect during the years. During the years 2004 till 2006 UNDP with the funds from EU, six infrastructure and upgrading projects have been done to improve the living condition of the area and make the walled city more liveable for the locals and tourists by rehabilitation of the traditional public spaces, conservation of the original urban pattern, providing sustainable access to water, and modernization of the waste collection system (TCCHC, 2022).

The Cultural Heritage Technical Committee (2009), explains in their website that they support the conservation of built heritage of Cyprus. TCCHC mention “it is the primary responsibility of Greek Cypriots and Turkish Cypriots to protect the endangered cultural heritage of the island, and that it is important for these monuments to be preserved, not only because they are important symbols for both

Turkish Cypriots and Greek Cypriots, as well as for humanity, but also because they have an intrinsic value of their own.” (Press statement of the Technical Committee on Cultural Heritage, 06 May 2009).

For the conservation of cultural heritage, the TCCH provided a mechanism for application of practical measurement for the protection and proper preservation such as study, research and survey, and they believe that one of the important parts of cooperation between Turkish Cypriot and Greek Cypriot is protection and conservation of these heritage which is also simulate the mutual understanding and sustainable development (TCCHC, 2022).

List of 40 heritage sites which are in needs of emergency conservation was approved by the TCCH and the committee published in their webpage that the specific attention was given to the archaeological value of monuments which is reflecting the historic significance and educational role as well as role in society (TCCHC, 2022). As it is mentioned above, selection of case studies was done among the first 3 phases of the UNDP projects. The ones which are located in Famagusta and are intact, were selected as a case study (Table 4.6) for the implementation of purposed framework which are described in following sections.

Table 4.6: Selected UNDP Conservation Cases

UNDP Conservation Phases	
Since 2010 the United Nations Development Programme (UNDP) has assisted the Technical Committee on Cultural Heritage to preserve the cultural heritage of Cyprus. UNDP directly implements and administers the Committee's conservation works and visibility efforts, hence creating a favourable environment for the non-political consideration of cultural heritage on both sides of the island. Joint monitoring visits and regular meetings with the Advisory Board of the Technical Committee are facilitated by UNDP to encourage and ensure the direct involvement in each stage of the project cycle. The direct involvement of technical teams from both communities (architects, archaeologists, engineers etc.) act, in time, as team- and confidence-building measures, allowing for increased exchange of experiences and the setting of a positive example of successful collaboration between Greek Cypriots and Turkish Cypriots. Moreover, UNDP provides logistical and strategic support to the Technical Committee on Cultural Heritage in its efforts to re-establish community links between villages and their former residents and encourage cross-community exchanges.	
Phases	Famagusta Selected cases
Phase 1	• Othello Tower/Citadel in Famagusta • Martinengo Bastion in Famagusta
Phase 2	• Not available case in Famagusta
Phase 3	• St. Anne of the church • St. Mary of the Armenians church • Ravelin/Land Gate in Famagusta

4.2.1 Othello Tower/ Citadel

The Othello Tower/Citadel (Figure 4.5) is one of the important heritage buildings in Famagusta from its age and also an evident mystery, which is consist of fortifications, towers and walls (TCCHC, 2022). The building includes two structures in inside and outside which is the fortification from 1492 which is constructed in early Lusignan from 14th century. The building was in the defensive position in Famagusta in top of the city walls and protector between the sea and port (Walsh, 2012). Othello Tower was among the priority in first phase of conservation project of TCCH.



Figure 4.5: Othello Tower/ Citadel (UNDP-PFF, Othello Tower project, 2017)

Within the outline of the European Union funded and UNDP implemented “Support to cultural heritage monuments of great importance for Cyprus” project, a study “Survey, Investigations, Assessment and Project Design” was carried out in 2012, aim and Scope of the conservation study of Othello is described in (Table 4.7).

Table 4.7: Aim and Scope of the conservation study – Othello Citadel

Conservation works to Othello Citadel	
The aim of the Study:	Pre-conservation condition assessment first to identify the critical problems, research and understand the monument
the designs include:	- stabilizing the monument - protecting the elements that are at most risk while observing internationally recognised conservation standards - creating a safe environment for the community and visitors - accommodating disabled persons with an access path and toilet facilities
Scope of the conservation works:	- The works carried out focused mainly on emergency masonry stabilisation works to walls, arches and other unstable sections. - Areas where losses/collapses had occurred over the years were strengthened. - A proper drainage system was constructed to canalise and take away water, which was one of the most damaging causes of deterioration for the Tower/Citadel. - New roof layers were installed with compatible materials to avoid future rainwater infiltration. - Visitors’ information features were also provided as well as accessibility at ground level and sanitation facilities for persons with disabilities. - The reopening of the Othello Tower/Citadel and completion of Phase 1 of the structural stabilisation and conservation works, was aptly celebrated by a theatre performance of the play which gave the structure its name – William Shakespeare’s Othello. - The play was performed inside the castle itself by a bi-communal cast of both Greek Cypriot and Turkish Cypriot actors (UNDP-PFF, Othello Tower project, 2022)
Comments on post-conservation situation:	(2015) Around 700 people from both sides of the divide joined the two leaders, Nicos Anastasiades and Mustafa Akinci, at Famagusta’s newly-renovated Othello (2015) AROUND 300 people turned out for the inauguration of the reopening of the Othello Tower

4.2.2 Martinengo Bastion in Famagusta

Martinengo Bastion (Figure 4.6) is a prime example of state of the art renaissance military architecture. This is in stark contrast to its peaceful and secluded setting, which is some distance from the centre of Famagusta. Unfortunately, it seems to be little known and rarely visited by residents and visitors alike. This includes both the

exterior and interior. The Bastion was created by the Venetian architect Giovanni San Michelle over a period covering almost 10 years. The Venetians realised that this corner of Famagusta city's defences was weak and this structure was designed to strengthen the northwest corner. Access to the interior is through dual ramps designed to allow easy access for horses and heavy munitions to supply the cannon in its interior. Walsh (2012), stated that Martinengo Bastion is a defence structure which is designed by Giovanni San Michelle, which is similar with the fortification of Florence, in Italy



Figure 4.6: Martinengo Bastion (UNDP-PFF Martinengo Bastion project, 2018)

Within the framework of the EU funded and UNDP implemented “Support to cultural heritage monuments of great importance for Cyprus” project, a study “Survey, Investigations, Assessment and Project Design” was carried out between April and January 2015 and it was on the first phase of the project, aim and Scope of the conservation study of Martinengo Bastion is described in (Table 4.9).

Table 4.8: Aim and Scope of the conservation study – Martinengo Bastion

Conservation works to Martinengo Bastion	
The Aim of the study	Pre-conservation condition assessment
The building issue:	• large and small holes in the bedrock base and undercut of the bedrock right over the earthen floor of the moat • cracks in the bedrock on which some parts of the bastion sits • capillarity water action occurring in many places • stains and salts in the vaults and interiors coming from water percolation • stone ashlar at the apex of the vault ceilings in all diagonal passageways suffering from significant loss of material • lack of visitor safety and control measures The conservation project addresses all the points identified above (UNDP-PFF, Martinengo Bastion project, 2018)
Scope of the conservation works:	• Upgrade and improvement of drainage of the bastion on the upper parts, as well as at the lower areas and the moat • Selective site demolition – removal of concrete caps on skylights and metal fixtures. • Reconstruction of skylights. • Removal of site vegetation and rubbish. Plant removal from the top of all walls. Treatment of the surfaces where organic growth is present. • Structural stabilisation works on the wall surfaces. • Masonry stabilisation works at the areas where there were losses/collapses. • Wood restoration of historic wood elements. • New ashlar stone to fill bedrock undercut. • Installation of rigid hydraulic lime concrete pavement. • Replacement of bollards. • Installation of electrical distribution system. • Provision of new emergency doors/gates. • Provision of visitor safety and control measures. • Provision of access for persons with disabilities. • Installation of didactic informational materials. • Provision of bird control measures
Comments on post-conservation situation:	(2017) Eastern Mediterranean University (EMU) Faculty of Architecture, Department of Interior Architecture breathed life into the recently completed Famagusta Martinengo Bastion restoration project. High Honour Certificate Ceremony for the Spring Semester of the 2017 – 2018 Academic Year as well as a welcoming event for new students as part of the department's 20th year.

4.2.3 St. Anne Church

It is thought that the church of St. Anne (Figure 4.7) was as a part of the monastic complex and built in the early 4th Century. It was initially a Catholic church but it was given to the Maronites in the 14th Century. It also consists of a single nave with two bays with groin vaults separated by transverse ribs.



Exterior Photo



Exterior Photo



Exterior Photo

Figure 4.7: St. Anne Church (UNDP-PFF St. Anne Church project, 2017)

The Church is located in Famagusta walled city, near the Martinengo Bastion, the St. Anne Church forms part of the “Martinengo Cluster”. Clusters are critical mass areas of monuments identified by the TCCH in the Famagusta, Paphos, and Karpasia areas, to promote the economic growth and territorial development of these areas (UNDP-PFF, St. Anne Church project, 2017).

‘Survey, Investigations, Assessment and Project Design’ studies for this monument were completed in June 2016 as the second phase of conservation works. The conservation works to St. Anne Church are mentioned in (Table 4.8).

Table 4.9 : Aim and Scope of the conservation study –St. Anne Church

Conservation works to St. Anne Church	
External works:	Rainwater management.
Roof:	removal of any plants from the roof, cleaning of the spouts and installation of proper gutters (copper), repair and insulation of the roof.
Walls:	treatment of the surfaces where organic growth is present, repair all cracks found with proper material, repointing of the walls surfaces, injection to the lower parts of the walls to create a barrier to humidity and rising damp, replacement of decayed/deteriorated and heavily damaged stones, stitching of cracks, installation of missing gypsum panels for windows, general light cleaning of surface with soft brushes. Removal of brick infill in the south and add new timber door, and consolidation the historical plaster and take special protection measures.
Floor:	partial removal of cement screed to allow ventilation of the ground, special attention given to the protection of all historical frescoes.
Ceiling:	essential replacement of some crumbling and decayed stones /voussoir and cross vaults.
Comments on post-conservation situation:	(2019) People from all over Cyprus travelled on Wednesday to Famagusta to witness a ceremony marking the completion of conservation works at the church of St. Anne and the neighbouring Tanners' Mosque and heard officials convey messages of peaceful coexistence.

4.2.4 St. Mary of the Armenians Church

The St. Mary of the Armenians church (Figure 4.8) was built after the 14th Century by Armenian refugees from the Lajazzo port. It was therefore built in a smaller simpler scale and form than the others around it. The church consists of a single nave and apse roofed by a square groin vault. It was part of a monastic complex, built between 1324 and 1366, painted sometime between the 14th and 15th century. It is a beautiful and simple building consisting of a single nave with three bays and semi hexagonal apse.



Exterior Photo
Interior Photo
Interior Photo
Windows detail
Figure 4.8: St. Mary of the Armenians Church (UNDP-PFF St. Mary of the Armenians Church project, 2017)

The church is located in Famagusta walled city of famagusta, near the Martinengo Bastion, the Church forms part of the “Martinengo Cluster”. (UNDP-PFF, St. Mary of the Armenians Church, 2018). ‘Survey, Investigations, Assessment and Project Design’ studies were completed in June 2016, aim and scope of the conservation study is described in (Table 4.10).

Table 4.10: Aim and scope of the conservation study – St. Mary of the Armenians Church

Conservation work St. Mary of the Armenians Church	
External works:	• Overall structural consolidation. Installation of new drainage system. External works including water management. • Structural consolidation of the belfry. • Cleaning of the site and the monument. • Provision of bird control measures.
Roof:	• Conservation works on the roof including waterproofing.
Ceiling:	• Conservation works on the ceiling including waterproofing.
Walls:	• Conservation works on the external walls of the church. Addition of new stone masonry for structural reinforcement. Conservation works on the internal walls of the church.
Doors and windows:	• Repair of existing doors at the south and west entrance of the church. Installation of new wooden door at the north entrance of the church. Addition of new wooden frame at the window area of the south façade for structural reinforcement.
Disabled accessibility:	• provision of new external ramp.
Comments on post-conservation situation:	• (2018) A ceremony held on Saturday May 26 in Famagusta in the north to mark the completion of conservation works in two historic churches, located in the north-western part of the walled city.

4.2.5 Ravelin Bastion / Land Gate

The Ravelin Bastion / Land Gate (Figure 4.9) is an essential part of the walls of Famagusta and the main entry point for those arriving to the city from other parts of the island of Cyprus. It is a complex massive structure built into the living rock with many layers of history from the original Lusignan original tower to the Venetian Ravelin to the later changes by the Ottomans and finally British conservation efforts. It is formed by various levels of constructions, connected by small passageways, bridges and fosses; and connected to the outside of the city across the fosse (at least on one side) by a bridge and drawbridge. Because of its importance and prominence as the main entry into Famagusta, it receives many visitors.



Figure 4.9: Ravelin/Land Gate (UNDP-PFF Ravelin/Land Gate project, 2018)

Within the framework of the EU funded and UNDP implemented “Support to cultural heritage monuments of great importance for Cyprus” project, a study “Survey, Investigations, Assessment and Project Design” was carried out between April 2014 and January 2015 and resulted in a Condition Assessment and Report that allowed for the identification of several structural stability issues and then after the conservation works have been implemented (UNDP-PFF, Ravelin/Land Gate project, 2018), aim and scope of the conservation study is mentioned in (Table 4.11).

Table 4.11: Aim and scope of the conservation study Ravelin Bastion / Land Gate

Conservation work Ravelin Bastion / Land Gate	
The design include:	• Removal of all debris and vegetation from the roof and walls. • Metal framed skylight. • Treatment of the surfaces where organic growth is present by using appropriate biocide/herbicide. • Stabilization of structurally risk elements. • Stabilization and structural consolidation of the masonry walls and vaults. • Scaffolding support of vault. • Structural consolidation of existing rubble core on open tunnel. • Installation of new ashlar stone and rubble stone on walls.
Scope of the conservation:	• Stone cleaning and mortar pointing of the tower's wall on main entrance square. • Cleaning of stones' surface and joints on the tower's roof. • New ashlar stone to fill bedrock undercuts. • Injection grouting of linear cracks. • Mortar pointing and repointing. • Interior and exterior stone cleaning. • Stabilisation of wall painting conservation in the Central Hall and Inner Hall. • Conservation of historic doors. • Visitors' safety measures (disabled access ramps, installation of safety fences). • Installation of the lightning rod protection system. • Installation of drainage system. • Visitor information panel. • Bird control measures.
Comments on post-conservation situation:	• (2018) The handover ceremony of the monument take place on Tuesday, June 19, with the Head of the Technical Committee, Takis Hatzidimitriou, pointing out his special symbolism for peace in Cyprus. The ambassadors of the EU countries in Cyprus were also invited to attend the ceremony.

4.3 Implementation of Proposed Framework on Selected Cases

Implementation of the proposed MCDM framework using TOPSIS on the selected case studies, has been divided into four steps and followed by the below flowchart (Figure 4.10). In the first step, normalization of the values which has been collected from questionnaires, has been calculated. In the normalization, each qualitative data has been normalized in a range between zero and one. In the second step, weight of each normalized value, which is based on the previous AHP method, has been implemented until the effect of weight of each value could be considered as well. In the third step, the distances from the best ideal and the worst ideal solutions have

been calculated. Finally, in the last step, ranking of alternatives based on the previous method was measured.

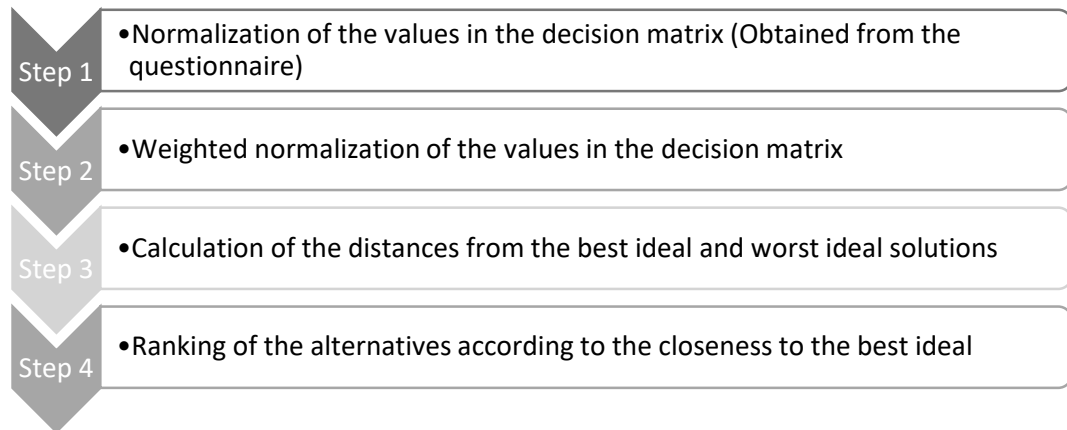


Figure 4.10: Flowchart on steps of MCDM Framework by the support of TOPSIS

4.3.1 Decision Making Analysis (expert based)

In this section of the study, the importance of each value on the different case studies were evaluated by the experts. To convert the observation from qualitative to quantitative, the scale of importance was provided and explained to experts as it has been shown in (Figure 4.11). Number one is representative of ‘not at all important’ and by increasing the number, the importance grade is increasing until number nine which shows ‘extremely important’.

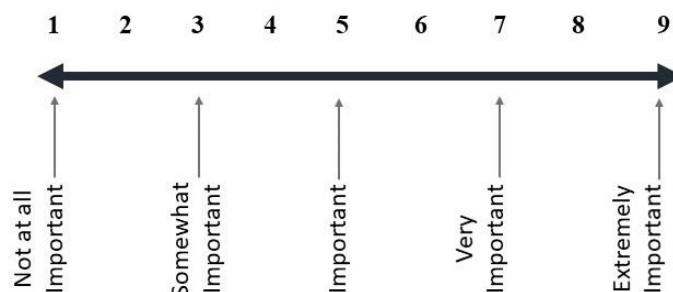


Figure 4.11: Scale of importance of variables on case studies

After collecting the questionnaires from the experts (same experts which contributed for the weighting of values), the average grading was calculated as illustrated in (Table 4.11) in order to calculate the priority rank through MCDM. The criteria ranging from V1 to V12 in Table 4, refer to the valuation of heritage values which are categorised in Chapter 2 and DL refer to the evaluation of the deterioration level of each heritage building.

Table 4.12: Weight of the criteria and average rating of values given by experts on alternatives

Criteria	Criteria Weights	Alternatives				
		A1	A2	A3	A4	A5
Aesthetic Value (V1)	0.038	7	7	8	7	8
Architectural Value (V2)	0.063	8	8	9	7	8
Authenticity Value (V3)	0.110	8	8	8	8	8
Cultural Value (V4)	0.094	8	7	8	8	8
Environmental Value (V5)	0.052	7	6	8	6	7
Economic Value (V6)	0.048	6	6	7	6	6
Historic Value (V7)	0.085	9	8	8	8	8
Option Value (V8)	0.039	6	6	7	7	7
Scientific Value (V9)	0.085	7	7	8	7	8
Social Value (V10)	0.073	7	7	7	7	7
Spiritual Value (V11)	0.082	5	7	5	7	5
Spatial Value (V12)	0.067	7	7	8	6	7
Deterioration Level (DL)	0.165	3	1	3	1	5

In this study, a hybrid multi-criteria decision-making method including AHP and TOPSIS, has been used. Five heritage buildings were selected and 12 values were considered as the criteria of decision making plus deterioration level (DL) as an inevitable factor to rank the priority of the value-based heritage building (Çalışkan,

2013). It should be borne in mind that the weight of each value has already been calculated and applied in TOPSIS method.

The TOPSIS method consists of the following steps:

Step one: The normalization of the decision matrix is performed using the Equation 7:

$$\bar{X}_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^n x_{ij}^2}} \quad j=1,2, \dots, n; \quad i=1,2, \dots, m \quad (7)$$

where $\bar{X}_{ij}$ is the normalized value of each element; X_{ij} designates the performance rating of each alternative (Table 4.12).

Table 4.13: Normalization of the values in the decision matrix

Criteria	Criteria Weights	Alternatives				
		A1	A2	A3	A4	A5
V1	0.038	0.367 9	0.408 0	0.445 1	0.395 7	0.4266
V2	0.063	0.424 3	0.390 8	0.441 1	0.368 5	0.4132
V3	0.110	0.426 7	0.398 6	0.415 5	0.404 2	0.4211
V4	0.094	0.409 1	0.391 3	0.403 2	0.415 1	0.4210
V5	0.052	0.415 5	0.388 3	0.459 8	0.388 3	0.4291
V6	0.048	0.430 6	0.393 5	0.445 4	0.386 0	0.4306
V7	0.085	0.429 3	0.384 7	0.418 1	0.395 8	0.4237
V8	0.039	0.403 0	0.389 1	0.437 8	0.410 0	0.4308
V9	0.085	0.395 9	0.383 3	0.446 2	0.383 3	0.4399
V10	0.073	0.429 0	0.402 2	0.422 3	0.422 3	0.4022
V11	0.082	0.327 5	0.451 2	0.327 5	0.487 6	0.3566
V12	0.067	0.418 1	0.398 5	0.463 9	0.372 4	0.3985
DL	0.165	0.309 4	0.103 1	0.309 4	0.103 1	0.5157

Step two: Calculating the weighted normalized matrix which will be followed by using Equation 8:

$$V_{ij} = \bar{X}_{ij} \times W_j \quad (8)$$

where V_{ij} is the ideal solution; W_j is the weight of each variables that have been taken as equal as one.

Thereafter, the ideal best and ideal worst value as V^+ = the ideal best and V^- = the ideal worst are selected as shown in (Table 4.13):

Table 4.14: Weighted normalization of the values in the decision matrix

Criteria	Criteria Weights	Alternatives					Best Ideal	Worst Ideal
		A1	A2	A3	A4	A5	V+	V-
V	0.	0.	0.	0.	0.	0.	0.016	0.0140
1	0.038	0.0140	0.0155	0.0169	0.0150	0.0162	9	
V2	0.063	0.0267	0.0246	0.0278	0.0232	0.0260	0.0278	0.0232
V3	0.110	0.0469	0.0438	0.0457	0.0445	0.0463	0.0469	0.0420
V4	0.094	0.0385	0.0368	0.0379	0.0390	0.0396	0.0396	0.0368
V5	0.052	0.0216	0.0202	0.0239	0.0202	0.0223	0.0239	0.0188
V6	0.048	0.0207	0.0189	0.0214	0.0185	0.0207	0.0214	0.0171
V7	0.085	0.0365	0.0327	0.0355	0.0336	0.0360	0.0365	0.0327
V8	0.039	0.0157	0.0152	0.0171	0.0160	0.0168	0.0171	0.0146
V9	0.085	0.0337	0.0326	0.0379	0.0326	0.0374	0.0379	0.0326
V10	0.073	0.0313	0.0294	0.0308	0.0308	0.0294	0.0313	0.0269
V11	0.082	0.0269	0.0370	0.0269	0.0400	0.0292	0.0400	0.0269
V12	0.067	0.0280	0.0267	0.0311	0.0250	0.0267	0.0311	0.0250
DL	0.165	0.0511	0.0170	0.0511	0.0170	0.0851	0.1191	0.0170

Step 3: The distances from the ideal and worst solutions are measured. The two Euclidean distances from the best ideal (S_i^+) and worst ideal (S_i^-) for each alternative are computed as given in the equations 9 and 10 respectively. (Table 4.14) shows the equation from the ideal best and ideal worst.

$$S_i^+ = \{\sum_{i=1}^m (V_{ij} - V_i^+)^2\}^{0.5} \quad (9)$$

$$S_i^- = \{\sum_{i=1}^m (V_{ij} - V_i^-)^2\}^{0.5} \quad (10)$$

Table 4.15: The distances from the best ideal and worst ideal solutions

Criteria	Criteria Weights	Alternatives				
		A1	A2	A3	A4	A5
V1	0.038	0.014 0	0.015 5	0.016 9	0.015 0	0.0162
V2	0.063	0.026 7	0.024 6	0.027 8	0.023 2	0.0260
V3	0.110	0.046 9	0.043 8	0.045 7	0.044 5	0.0463
V4	0.094	0.038 5	0.036 8	0.037 9	0.039 0	0.0396
V5	0.052	0.021 6	0.020 2	0.023 9	0.020 2	0.0223
V6	0.048	0.020 7	0.018 9	0.021 4	0.018 5	0.0207
V7	0.085	0.036 5	0.032 7	0.035 5	0.033 6	0.0360
V8	0.039	0.015 7	0.015 2	0.017 1	0.016 0	0.0168
V9	0.085	0.033 7	0.032 6	0.037 9	0.032 6	0.0374
V10	0.073	0.031 3	0.029 4	0.030 8	0.030 8	0.0294
V11	0.082	0.026 9	0.037 0	0.026 9	0.040 0	0.0292
V12	0.067	0.028 0	0.026 7	0.031 1	0.025 0	0.0267
DL	0.165	0.051 1	0.017 0	0.051 1	0.017 0	0.0851
Si+		0.069 6	0.102 7	0.069 3	0.102 7	0.0361
Si-		0.035 6	0.011 1	0.036 7	0.014 3	0.0689

Step 4: The relative closeness to the best ideal solution is calculated as shown in the following equation:

$$P_i = \frac{s_i^-}{s_i^+ - s_i^-} \quad (11)$$

where $0 \leq P_i \leq 1$. The higher values of P_i mean that the rank is higher as it is shown in (Table 4.15).

Table 4.16: Ranking of the alternatives according to the closeness to the best ideal

Criteria	Criteria Weights	Alternatives				
		A1	A2	A3	A4	A5
V1	0.0376	0.014 0	0.015 5	0.016 9	0.015 0	0.016 2
V2	0.0627	0.026	0.024	0.027	0.023	0.026

		7	6	8	2	0
V3	0.1103	0.046 9	0.043 8	0.045 7	0.044 5	0.046 3
V4	0.0938	0.038 5	0.036 8	0.037 9	0.039 0	0.039 6
V5	0.0523	0.021 6	0.020 2	0.023 9	0.020 2	0.022 3
V6	0.0485	0.020 7	0.018 9	0.021 4	0.018 5	0.020 7
V7	0.0846	0.036 5	0.032 7	0.035 5	0.033 6	0.036 0
V8	0.0388	0.015 7	0.015 2	0.017 1	0.016 0	0.016 8
V9	0.0849	0.033 7	0.032 6	0.037 9	0.032 6	0.037 4
V10	0.0726	0.031 3	0.029 4	0.030 8	0.030 8	0.029 4
V11	0.0822	0.026 9	0.037 0	0.026 9	0.040 0	0.029 2
V12	0.0668	0.028 0	0.026 7	0.031 1	0.025 0	0.026 7
DL	0.1647	0.051 1	0.017 0	0.051 1	0.017 0	0.085 1
Si+		0.069 6	0.102 7	0.069 3	0.102 7	0.036 1
Si-		0.035 6	0.011 1	0.036 7	0.014 3	0.068 9
Pi		0.338 1	0.097 9	0.345 8	0.122 5	0.656 4
Ranking		3	5	2	4	1

Final results of experts analysis is available in (Table 4.16)

Table 4.17: Results of opinions analysis (experts)

Rank	alternative	Architectural heritage name
1	A5	Ravelin Bastion
2	A3	Martinengo Bastion
3	A1	Othelo Tower
4	A4	St. Mary of the Armenians Church
5	A2	St. Anne Church

4.3.2 Decision Making Analysis (Tourist and local based)

In this study rather than taking the opinions of only experts, the effect of each value on different cases were asked from the tourists and locals as well. In this part, 72 participants were contributed as shown in (Table 4.18).

Table 4.18: Types of participants

Field of work	Number of respondents	Percentage
Educational Visitors	22	31%
Cultural Visitors	5	7%
Friends or Family Visitors	14	19%
Locals	28	39%
Others	3	4%

Demographic questions have been collected and analysed as it is shown in (Figure 4.12).

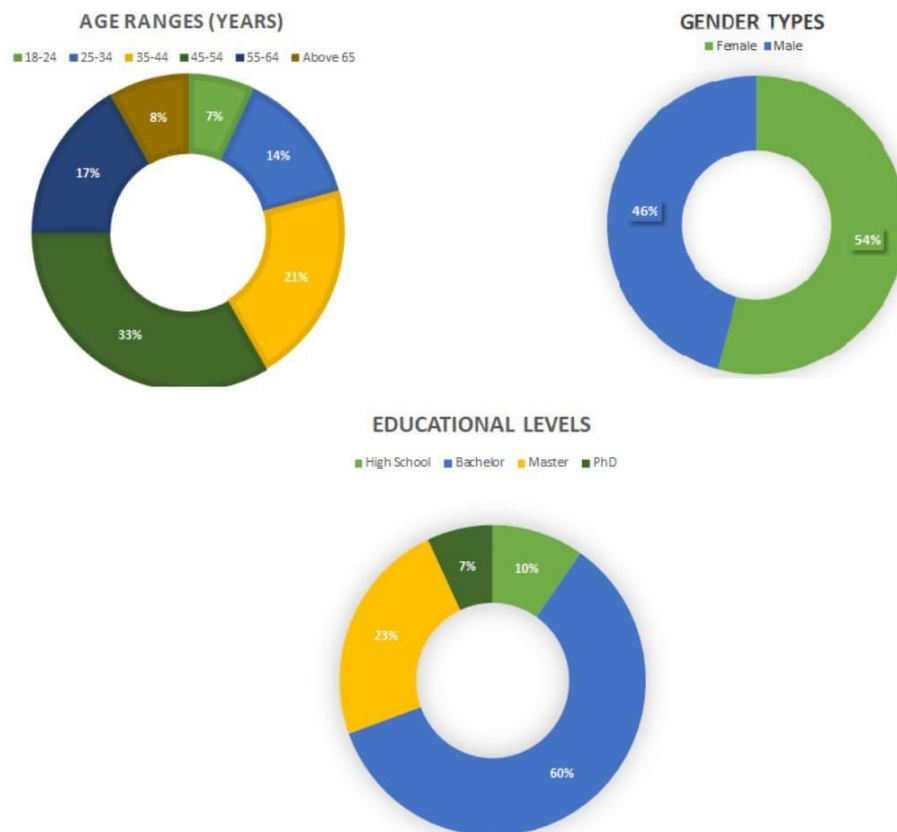


Figure 4.12: Participants' tomography Analysis

Like results from the experts, to convert the observation from qualitative to quantitative, the scale of importance has been provided and explained to experts as it is shown in (Figure 4.12). Number one is representative 'not at all important' and by increasing the number, the importance grade is increasing until number nine which

shows ‘extremely important’. After collecting the questionnaires from the locals and tourists, the average grading was calculated as illustrated in (Table 4.19) in order to calculate the priority rank through MCDM.

Table 4.19: Weight of the criteria and average rating of values given by locals and tourists

Criteria	Criteria Weights	Alternatives				
		A1	A2	A3	A4	A5
V1	0.038	7	8	7	8	9
V2	0.063	8	7	8	8	9
V3	0.110	9	9	8	8	9
V4	0.094	7	7	6	9	8
V5	0.052	5	5	6	7	7
V6	0.048	6	6	8	6	7
V7	0.085	9	8	9	8	8
V8	0.039	5	6	8	6	7
V9	0.085	7	8	8	6	7
V10	0.073	7	9	9	8	8
V11	0.082	6	8	8	8	7
V12	0.067	4	7	6	6	7
DL	0.165	4	4	3	6	6

The same steps have been followed through the TOPSIS method. Step one: The normalization of the decision matrix is performed using the Equation 7. The normalized values are shown in the decision matrix in (Table 4.19):

Table 4.20: Normalization of the values in the decision matrix

Criteria	Criteria Weights	Alternatives				
		A1	A2	A3	A4	A5
V1	0.038	0.3710	0.4240	0.3710	0.4240	0.4770
V2	0.063	0.4153	0.3634	0.4153	0.4153	0.4673
V3	0.110	0.4392	0.4392	0.3904	0.3904	0.4392
V4	0.094	0.3944	0.3944	0.3381	0.5071	0.4507
V5	0.052	0.3459	0.3459	0.4150	0.4842	0.4842
V6	0.048	0.389	0.389	0.519	0.389	0.4547

		7	7	7	7	
V7	0.085	0.448 3	0.398 5	0.448 3	0.398 5	0.3985
V8	0.039	0.310 7	0.372 8	0.497 1	0.372 8	0.4350
V9	0.085	0.405 5	0.463 4	0.463 4	0.347 6	0.4055
V10	0.073	0.361 5	0.464 8	0.464 8	0.413 1	0.4131
V11	0.082	0.345 3	0.460 3	0.460 3	0.460 3	0.4028
V12	0.067	0.275 4	0.481 9	0.413 1	0.413 1	0.4819
DL	0.165	0.314 3	0.314 3	0.235 7	0.471 4	0.4714

Step two: Calculating the weighted normalized matrix (Table 4.20) which uses Equation 8.

Table 4.21: Weighted normalization of the values of the decision matrix

Criteria	Critical Weights	Alternatives					Best Ideal	Worst Ideal
		A1	A2	A3	A4	A5	V+	V-
V1	0.038	0.0141	0.0161	0.0141	0.0161	0.0181	0.0181	0.0141
V2	0.063	0.0262	0.0229	0.0262	0.0262	0.0294	0.0294	0.0229
V3	0.110	0.0483	0.0483	0.0429	0.0429	0.0483	0.0483	0.0376
V4	0.094	0.0371	0.0371	0.0318	0.0477	0.0424	0.0477	0.0318
V5	0.052	0.0180	0.0180	0.0216	0.0252	0.0252	0.0252	0.0180
V6	0.048	0.0187	0.0187	0.0249	0.0187	0.0218	0.0249	0.0125
V7	0.085	0.0381	0.0339	0.0381	0.0339	0.0339	0.0381	0.0296
V8	0.039	0.0121	0.0145	0.0194	0.0145	0.0170	0.0194	0.0121
V9	0.085	0.0345	0.0394	0.0394	0.0295	0.0345	0.0394	0.0295
V10	0.073	0.0264	0.0339	0.0339	0.0302	0.0302	0.0339	0.0226
V11	0.082	0.0283	0.0377	0.0377	0.0377	0.0330	0.0377	0.0236
V12	0.067	0.0184	0.0323	0.0277	0.0277	0.0323	0.0323	0.0184
DL	0.165	0.0519	0.0519	0.0389	0.0778	0.0778	0.0907	0.0389

Step 3: The two Euclidean distances from the best ideal (S_i^+) and worst ideal (S_i^-) for each alternative are measured (Table 4.21) with the equations 9 and 10 respectively

Table 4.2 2: The distances from the ideal and worst solutions

Criteria	Criteria Weights	Alternatives				
		A1	A2	A3	A4	A6
V1	0.038	0.014 1	0.016 1	0.014 1	0.016 1	0.0181
V2	0.063	0.026 2	0.022 9	0.026 2	0.026 2	0.0294
V3	0.110	0.048 3	0.048 3	0.042 9	0.042 9	0.0483
V4	0.094	0.037 1	0.037 1	0.031 8	0.047 7	0.0424
V5	0.052	0.018 0	0.018 0	0.021 6	0.025 2	0.0252
V6	0.048	0.018 7	0.018 7	0.024 9	0.018 7	0.0218
V7	0.085	0.038 1	0.033 9	0.038 1	0.033 9	0.0339
V8	0.039	0.012 1	0.014 5	0.019 4	0.014 5	0.0170
V9	0.085	0.034 5	0.039 4	0.039 4	0.029 5	0.0345
V10	0.073	0.026 4	0.033 9	0.033 9	0.030 2	0.0302
V11	0.082	0.028 3	0.037 7	0.037 7	0.037 7	0.0330
V12	0.067	0.018 4	0.032 3	0.027 7	0.027 7	0.0323
DL	0.165	0.051 9	0.051 9	0.038 9	0.077 8	0.0778
	Si+	0.069 6	0.070 3	0.068 0	0.081 1	0.0403
	Si-	0.035 6	0.036 8	0.039 1	0.029 3	0.0746

Step 4: The relative closeness to the best ideal solution is calculated by the Equation 11 to achieve the ranking of the alternatives (Table 4.22)

Table 4.23: Ranking of the alternatives

Criteria	Criteria Weights	Alternatives				
		A1	A2	A3	A4	A6
V1	0.0376	0.014 1	0.016 1	0.014 1	0.016 1	0.0181
V2	0.0627	0.026 2	0.022 9	0.026 2	0.026 2	0.0294
V3	0.1103	0.048 3	0.048 3	0.042 9	0.042 9	0.0483
V4	0.0938	0.037 1	0.037 1	0.031 8	0.047 7	0.0424
V5	0.0523	0.018 0	0.018 0	0.021 6	0.025 2	0.0252
V6	0.0485	0.018 7	0.018 7	0.024 9	0.018 7	0.0218

V7	0.0846	0.038 1	0.033 9	0.038 1	0.033 9	0.0339
V8	0.0388	0.012 1	0.014 5	0.019 4	0.014 5	0.0170
V9	0.0849	0.034 5	0.039 4	0.039 4	0.029 5	0.0345
V10	0.0726	0.026 4	0.033 9	0.033 9	0.030 2	0.0302
V11	0.0822	0.028 3	0.037 7	0.037 7	0.037 7	0.0330
V12	0.0668	0.018 4	0.032 3	0.027 7	0.027 7	0.0323
DL	0.1647	0.051 9	0.051 9	0.038 9	0.077 8	0.0778
Si+		0.070 3	0.068 0	0.081 1	0.043 6	0.0423
Si-		0.036 8	0.039 1	0.029 3	0.063 4	0.0632
Pi		0.343 3	0.365 1	0.265 2	0.592 4	0.5989
Ranking		4	3	5	2	1

Table 4.24: Results of opinions analysis (tourists and locals)

Rank	alternative	Architectural heritage name
1	A5	Ravelin Bastion
2	A4	St. Mary of the Armenians Church
3	A2	St. Anne Church
4	A1	Othello Tower
5	A3	Martinengo Bastion

4.3.3 Decision Making Analysis of the Whole Stakeholders

In this part the average rating of values on alternatives, given by both the experts and the visitors and locals, has been calculated (Table 4.26) and then MCDM using TOPSIS were continued as follows. The average of result of experts, and tourists/locals were considered equal as one to one. The number of questionnaires distributed to the locals and tourists were four times larger than the ones to experts, therefore 72 participants of tourists/local has been equalised to 18 experts.

Table 4.25: Weight of the criteria and average rating of values given by experts on alternatives

Criteria	Criteria Weights	Alternatives				
		A1	A2	A3	A4	A5
V1	0.038	7	8	8	8	8
V2	0.063	8	7	8	8	9
V3	0.110	9	8	8	8	9
V4	0.094	7	7	7	8	8
V5	0.052	6	6	7	7	7
V6	0.048	6	6	7	6	7
V7	0.085	9	8	9	8	8
V8	0.039	6	6	8	6	7
V9	0.085	7	7	8	6	7
V10	0.073	7	8	8	8	7
V11	0.082	6	7	7	8	6
V12	0.067	6	7	7	6	7
DL	0.165	4	3	3	4	6

The same steps have been followed through the TOPSIS method. Step one: The normalization of the decision matrix is performed using the equation 7. The normalized matrix is shown in (Table 4.27).

Table 4.26: Normalization of the values of the decision matrix

Criteria	Criteria Weights	Alternatives				
		A1	A2	A3	A4	A5
V1	0.038	0.401 1	0.451 9	0.442 0	0.445 3	0.4912
V2	0.063	0.455 7	0.409 5	0.465 0	0.424 9	0.4773
V3	0.110	0.464 7	0.449 9	0.432 1	0.426 2	0.4617
V4	0.094	0.434 7	0.424 8	0.401 8	0.497 3	0.4709
V5	0.052	0.410 5	0.395 0	0.470 5	0.464 7	0.4880
V6	0.048	0.431 7	0.412 5	0.508 8	0.408 6	0.4664
V7	0.085	0.473 1	0.422 2	0.467 1	0.428 2	0.4432
V8	0.039	0.391 2	0.417 8	0.512 7	0.429 2	0.4747
V9	0.085	0.432 4	0.456 4	0.490 7	0.394 6	0.4564
V10	0.073	0.417 8	0.463 9	0.473 7	0.444 1	0.4343

V11	0.082	0.365 6	0.494 9	0.432 1	0.513 4	0.4137
V12	0.067	0.381 5	0.473 1	0.476 9	0.423 5	0.4731
DL	0.165	0.418 3	0.298 8	0.358 6	0.418 3	0.6574

Step two: Calculating the weighted normalized matrix which will be followed by using equation 8.

Thereafter, the ideal best and ideal worst value as V^+ = the ideal best and V^- = the ideal worst should be selected as shown in (Table 4.28).

Table 4.27: Weighted normalization of the values of the decision matrix

Criteria	Criteria Weights	Alternatives					Best Ideal	Worst Ideal
		A1	A2	A3	A4	A5	V+	V-
V1	0.038	0.0152	0.0172	0.0168	0.0169	0.0187	0.0187	0.0152
V2	0.063	0.0287	0.0258	0.0293	0.0268	0.0301	0.0301	0.0258
V3	0.110	0.0511	0.0495	0.0475	0.0469	0.0508	0.0511	0.0469
V4	0.094	0.0409	0.0399	0.0378	0.0467	0.0443	0.0467	0.0378
V5	0.052	0.0213	0.0205	0.0245	0.0242	0.0254	0.0254	0.0205
V6	0.048	0.0207	0.0198	0.0244	0.0196	0.0224	0.0244	0.0196
V7	0.085	0.0402	0.0359	0.0397	0.0364	0.0377	0.0402	0.0359
V8	0.039	0.0153	0.0163	0.0200	0.0167	0.0185	0.0200	0.0153
V9	0.085	0.0368	0.0388	0.0417	0.0335	0.0388	0.0417	0.0335
V10	0.073	0.0305	0.0339	0.0346	0.0324	0.0317	0.0346	0.0305
V11	0.082	0.0300	0.0406	0.0354	0.0421	0.0339	0.0421	0.0300
V12	0.067	0.0256	0.0317	0.0320	0.0284	0.0317	0.0320	0.0256
DL	0.165	0.0690	0.0493	0.0592	0.0690	0.1085	0.1085	0.0493

Step 3: The distances from the ideal and worst solutions are measured. The two Euclidean distances from the ideal (S_i^+) and worst ideal (S_i^-) for each alternative are computed as given in the equations 9 and 10, respectively. (Table 4.29) shows the distance from the ideal best and ideal worst.

Table 4.28: The distances from the ideal and worst solutions

Criteria	Criteria Weights	Alternatives
----------	------------------	--------------

ia	Weights	A1	A2	A3	A4	A5
V1	0.038	0.015 2	0.017 2	0.016 8	0.016 9	0.0187
V2	0.063	0.028 7	0.025 8	0.029 3	0.026 8	0.0301
V3	0.110	0.051 1	0.049 5	0.047 5	0.046 9	0.0508
V4	0.094	0.040 9	0.039 9	0.037 8	0.046 7	0.0443
V5	0.052	0.021 3	0.020 5	0.024 5	0.024 2	0.0254
V6	0.048	0.020 7	0.019 8	0.024 4	0.019 6	0.0224
V7	0.085	0.040 2	0.035 9	0.039 7	0.036 4	0.0377
V8	0.039	0.015 3	0.016 3	0.020 0	0.016 7	0.0185
V9	0.085	0.036 8	0.038 8	0.041 7	0.033 5	0.0388
V10	0.073	0.030 5	0.033 9	0.034 6	0.032 4	0.0317
V11	0.082	0.030 0	0.040 6	0.035 4	0.042 1	0.0339
V12	0.067	0.025 6	0.031 7	0.032 0	0.028 4	0.0317
DL	0.165	0.069 0	0.049 3	0.059 2	0.069 0	0.1085
	Si+	0.069 6	0.051 8	0.070 0	0.060 6	0.0509
	Si-	0.035 6	0.054 4	0.038 3	0.047 8	0.0564

Step 4: The relative closeness to the ideal solution is calculated as shown in the equation 11. Where $0 \leq P_i \leq 1$. The higher values of P_i mean that the rank is higher as it is shown in (Table 4.29).

Table 4.29: Ranking of the alternatives

Criter ia	Criterial Weights	Alternatives				
		A1	A2	A3	A4	A5
V1	0.0376	0.015 2	0.017 2	0.016 8	0.016 9	0.0187
V2	0.0627	0.028 7	0.025 8	0.029 3	0.026 8	0.0301
V3	0.1103	0.051 1	0.049 5	0.047 5	0.046 9	0.0508
V4	0.0938	0.040 9	0.039 9	0.037 8	0.046 7	0.0443
V5	0.0523	0.021 3	0.020 5	0.024 5	0.024 2	0.0254
V6	0.0485	0.020	0.019	0.024	0.019	0.0224

		7	8	4	6	
V7	0.0846	0.040 2	0.035 9	0.039 7	0.036 4	0.0377
V8	0.0388	0.015 3	0.016 3	0.020 0	0.016 7	0.0185
V9	0.0849	0.036 8	0.038 8	0.041 7	0.033 5	0.0388
V10	0.0726	0.030 5	0.033 9	0.034 6	0.032 4	0.0317
V11	0.0822	0.030 0	0.040 6	0.035 4	0.042 1	0.0339
V12	0.0668	0.025 6	0.031 7	0.032 0	0.028 4	0.0317
DL	0.1647	0.069 0	0.049 3	0.059 2	0.069 0	0.1085
Si+		0.070 3	0.051 8	0.070 0	0.060 6	0.0509
Si-		0.036 8	0.054 4	0.038 3	0.047 8	0.0564
Pi		0.343 3	0.511 8	0.353 6	0.440 7	0.5253
Ranking		3	5	4	2	1

4.3.4 Discussion of Results and Final Decision Making

Based on the TOPSIS method, three value based rankings have been calculated including experts, tourists & locals and whole stakeholders (experts together with tourists & locals) which are given in (Table 4.30). As it has been mentioned above average rating of values on alternatives, given by both the experts and the visitors and locals, has been calculated and the average of result of experts, and tourists/locals were considered equal as one to one.

Table 4.30: Interpretation of separate results for merging into one list

Rank	Experts	Tourists & Locals	All Stakeholders	Building Photos
1	Ravelin Bastion	Ravelin Bastion	Ravelin Bastion	
2	Martinengo Bastion	Armenian Church	Armenian Church	
3	Othello Tower	St. Anne Church	Othello Tower	
4	Armenian Church	Othello Tower	Martinengo Bastion	
5	St. Anne Church	Martinengo Bastion	St. Anne Church	

As it is clear in (Table 4.30), in first ranking Ravelin Bastion has been selected as rank 1, however, left four rankings have been selected with some changes from experts or tourists & locals as St. Mary of the Armenians Church, Othello Tower, Martinengo Bastion and St. Anne Church have been selected in the ranking, respectively. Application chart derived from proposed framework is shown in (Figure 4.13).

The value-based model is a scientific way based on quantitative methodologies to propose the prioritization of different cases, based on their values. As it is not enough to make the final decision as there are some parameters that should be considered through the final decision based on different actions;

- Emergency actions - for deteriorated or intact
- Restoration- decided according to heritage values
- Adaptive reuse - only for intact ones at the first stage and after restoration of non-intact ones.

For each action, different final decisions will be opted that will be applicable for different actions, however, the proposed model will support decision-makers to make a better decision following the value of each case in addition to deterioration levels.

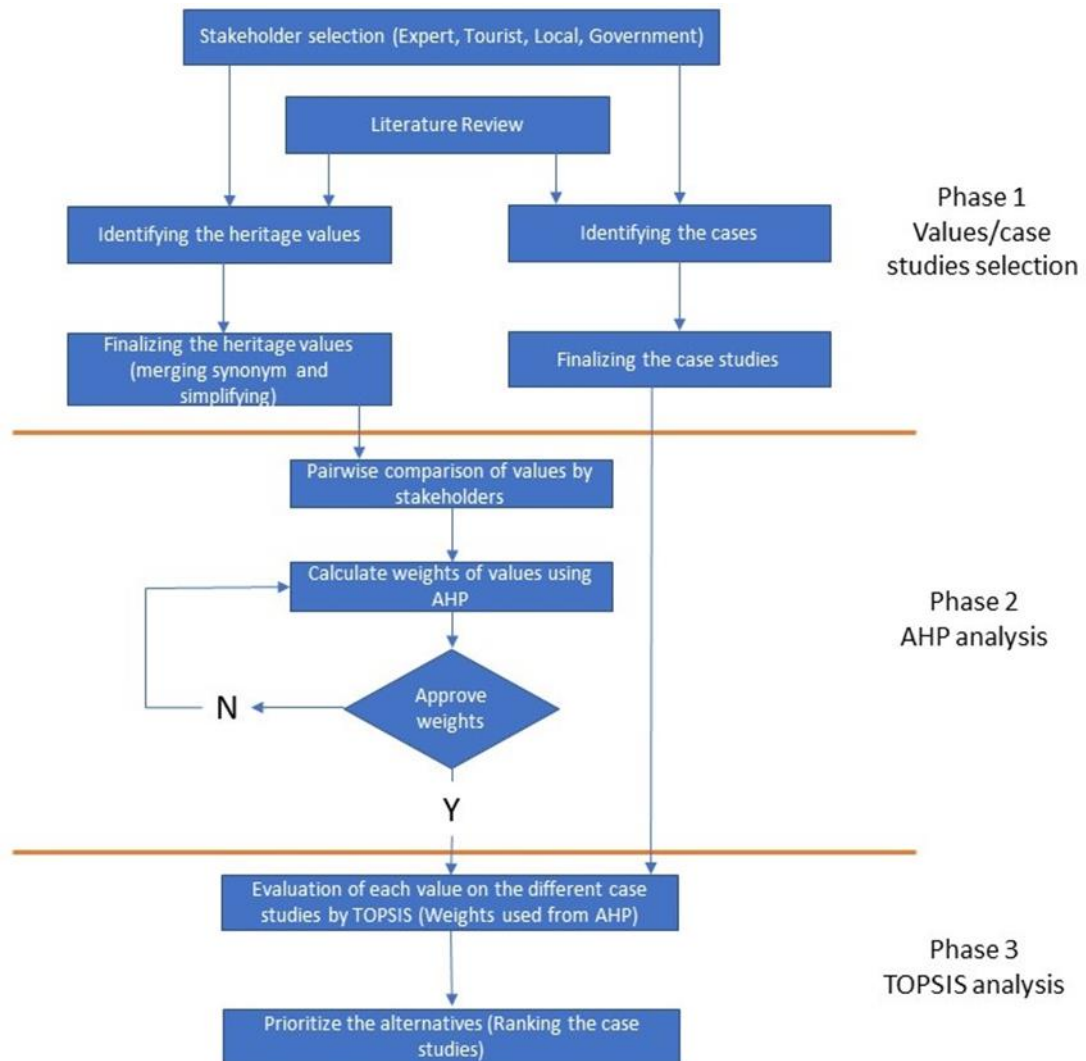


Figure 4.13: Value-based framework to rank the heritage building using AHP-TOPSIS

Chapter 5

CONCLUSION

In this study, in the first phase, the value-based prioritization of heritage buildings for conservation, has been considered according to hybrid multi-criteria decision-making methods, using AHP and TOPSIS methods to make a rational process of decision making. Data collection regarding the extraction of the value terminology and typology of heritage were gathered through a comprehensive search on Google Scholar Database©. Keywords including two or more of the terms as: ‘architectural heritage’, ‘heritage building’, ‘heritage value’, ‘value typology’, ‘architectural conservation’, and ‘heritage value assessment’, were defined for the content analysis methodology. This process involves identifying the terminology and selecting the type of values that have been used by different authors in their researches since year 2010. For the systematic analysis of heritage values, many journals, conferences, books, book chapters, organizational WEB sites, theses, working papers, reports, etc. from the last decade have been selected for the literature review. For the selection of the values, the most used repetitive heritage values (twelve categories of values) in the last 10 years were detected among 152 values which were extracted.

Different groups of experts in the heritage conservation field have contributed to weigh the values individually; and by considering their importance on the five case studies located in Famagusta, Cyprus. The following results of value weighting are observed;

- 12 main value categories, which have been extracted as ‘scientific value’, ‘economic value’, ‘cultural value’, ‘social value’, ‘spiritual value’, ‘historic value’, ‘aesthetic value’, ‘architectural value’, ‘urban value’, ‘authenticity value’, and ‘environmental value’ were weighted pairwise using AHP;
- the weight of each value has been calculated;
- Deterioration risk as a vital parameter of conservation has been added to evaluation criteria, and the findings of the study reveal that deterioration rate had the heaviest weight among the criteria.
- The consistency of the data collection for the weighting of the values were controlled; and the acceptable CR has been obtained, which confirms the validity of the data collection.
- Among the values, aesthetic value (Vn) and deterioration risk (DL) had the lowest and highest weight among the criteria, respectively.

The UNDP projects in Northern Cyprus has been done in different cities like Nicosia, Famagusta, and Kyrenia and also small villages and towns. Famagusta, one of the three large cities in North Cyprus is well known as a historic city and during 2004 till 2006, many funded conservation projects were done by UNDP to improve the living condition of the area and make the walled city more liveable for the locals and tourists.

The UNDP projects in the northern part of Cyprus, is done in Nicosia, Famagusta, Kyrenia and 11 small villages and towns. Historic city of Famagusta existed since antiquity and many of its heritage building suffered and damaged due to neglect over the years. During the years 2004 till 2006 UNDP with the funds from EU, six

infrastructures and upgrading project were done to improve the living condition of the area and make the walled city more liveable for the locals and tourists (TCCHC, 2022). In order to sample UNDP projects in Famagusta for the Implementation and verification of the proposed framework, five case studies were selected. Selection of case studies was done among first 3 phases of the UNDP conservation projects. The ones which are located in Famagusta and are intact, were selected as case studies for the implementation of the proposed framework. These are the Othello Tower/ Citadel, the Martinengo Bastion, St. Anne Church, St. Mary of the Armenians, and the Ravelin Bastion / Land Gate.

Based on the TOPSIS method, three value-based rankings have been calculated including the experts, the tourists & locals, and the whole stakeholders (experts, together with tourists and locals). Out of five case studies evaluated for the value-based prioritization of conservation, Ravelin ranked number 1, however, the remaining four rankings have been selected with some changes from experts or tourists & locals. The difference in their selection may be due to their visions and their points of view to the values and the cases, however, for both categories, the first conservation priority are same.

Lastly, the simplified framework of the value-based model using AHP-TOPSIS for the ranking of built heritage, has been provided in three phases as shown in Figure

5.1

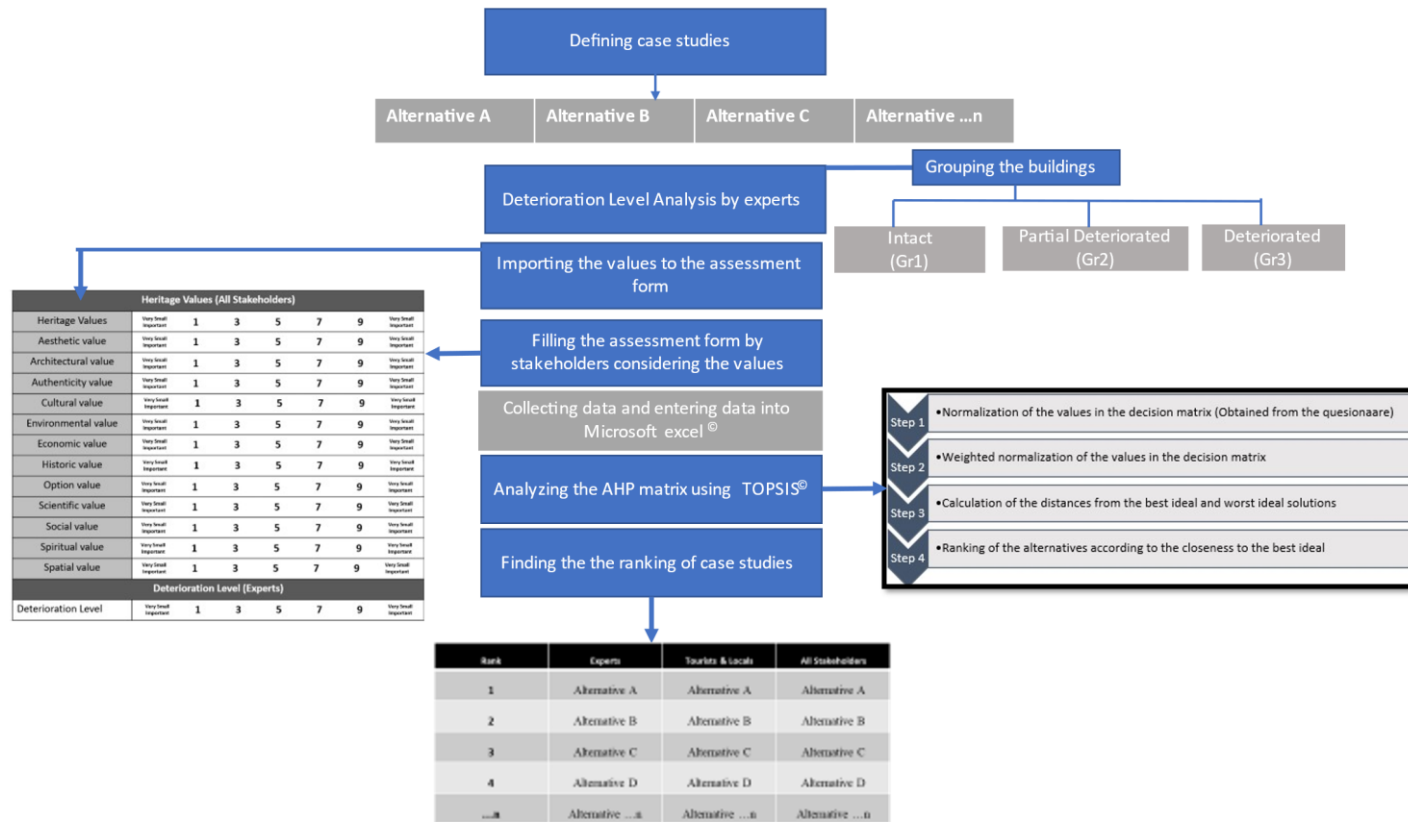


Figure 5.1: Value-based framework to rank the heritage building using AHP-TOPSIS

Describing the study framework step by step can answer the study research question, that is, “How can a values-based model help decision makers to have a systematic decision making for the priority of heritage conservation?” In this regard in the first step of the model (Figure5.1), the case studies are defined by selecting of the alternatives which should be from the same group of heritage buildings, defining the deterioration level by experts: from the material and structural condition of building, the same group of heritage will be in the same cluster for evaluation as: as intact, partially deteriorated or deteriorated heritage building.

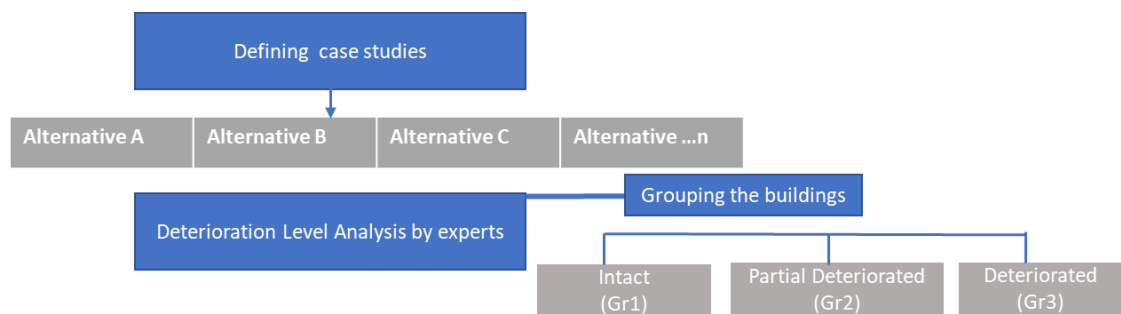


Figure 5.2: First step of the framework

In the Second step (Figure5.2), the categorized values will be imported to the assessment of each heritage building and it will be asked from all group of stakeholders such as Experts, tourists and locals to fill the questionnaires, by numbering of the importance of each value on the different case studies, for each case separately.

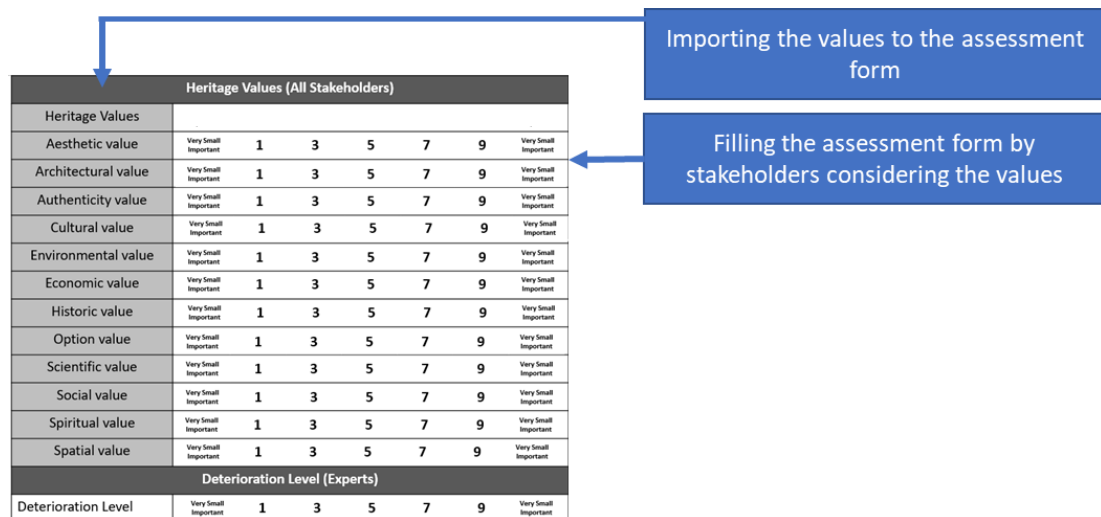


Figure 5.3: Second step of the framework

In the third step (Figure 5.3) collecting the questionnaire results and entering them into Microsoft excel[®] and analyzing the AHP matrix using TOPSIS[®]. In TOPSIS, the matrix is normalized and after analysis, the value-based ranking of the heritage buildings is obtained. Then, after calculation of the distances from best ideal to worst ideal solutions; ranking of the alternatives according to the closeness to the best ideal follows; and finally finding the ranking of the case studies. Therefore, this framework can be followed step by step as it is discussed above, to be calibrated for a different region, and it is applicable in different built heritage cases around the World, with different stakeholders.

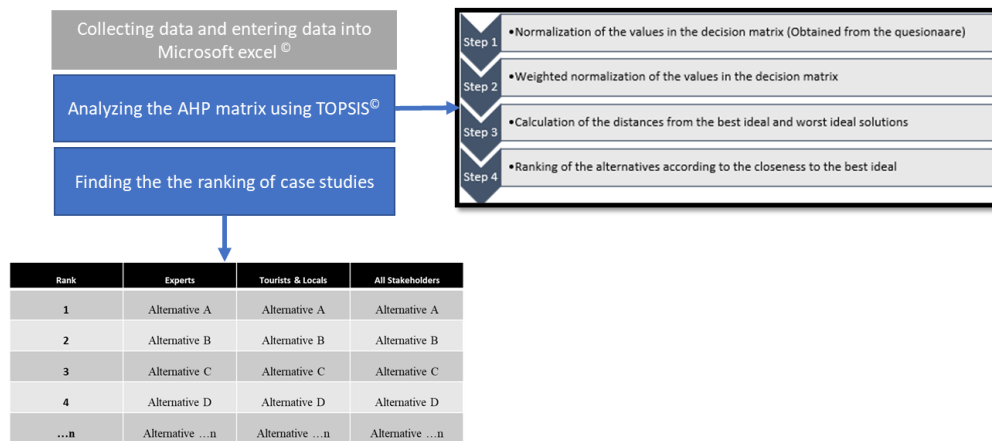


Figure5.4: Third step of the framework

When there is a limited budget to divide into conservation of different heritage buildings, this model will help the decision makers to avoid complexity in the prioritization of conservation of the heritage buildings. Having objective criteria and tools will reduce the pressure on the decision makers; and this value-based framework can help the decision maker to have a healthier decision. This framework can be applied in different regions and other wider number and types of case studies for the prioritisation process in decision-making and management of cultural heritage. In a broad sense, this model provides a dynamic framework that makes it easier to include and investigate new tools and ideas in response to future needs, such as the integration of new types of heritage data that include the values and deterioration taking into account various stakeholder types. With the ability to regulate and take preventative measures, it promotes the proper use of this information together with ongoing evaluation of management plans and activities.

This hybrid value-based framework using AHP and TOPSIS has been proposed, which has the capacity to calibrate for the various categories of heritage buildings by gathering the value-based data from their stakeholders. In addition to other factors that might influence the decision-makers', this model will assist their choices. Future

planning, execution, and evaluation of participatory conservation should also be discussed with the larger community and relevant stakeholders.

The given framework can be calibrated by introducing new data collection from the stakeholders and new categories of heritage buildings. It is very important to mention that this value-based framework has a very strong potential to facilitate the heritage management decision-making process in different context. This framework advocates the integration of different stakeholders and decision makers of heritage conservation as well as addressing the comprehensive values of heritage buildings. This proposed framework can also be applied in different heritage context to reflect the opinions of different related stakeholders at the same time, while considering and sustaining all heritage values.

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APPENDICES

Appendix A: Interview / Questionnaire Ethical Approval

	Doğu Akdeniz Üniversitesi "Erdem, Bilgi, Gelişim"	Eastern Mediterranean University "Virtue, Knowledge, Advancement"	99628, Gazimağusa, KUZZEY KIBRIS / Famagusta, North Cyprus, via Mersin-10 TURKEY Tel: (+90) 392 630 1995 Faks/Fax: (+90) 392 630 2919 E-mail: bayek@emu.edu.tr
Etik Kurulu / Ethics Committee			

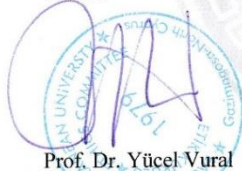
Reference No: ETK00-2020-0152

11.06.2020

Subject: Your application for ethical approval.

Re: Faraneh Sahraiyan Jahromi
Faculty of Architecture.

EMU's Scientific Research and Publication Ethics Board (BAYEK) has approved the decision of the Ethics Board of Architecture (date: 18.02.2020, issue: 2020/01) granting Faraneh Sahraiyan Jahromi from the Faculty of Architecture to pursue with his/her PhD thesis work titled "A value based model for decision making in priority of conservation of cultural heritage, UNDP projects in Cyprus as a case study" supervised by Prof. Dr. Özlem Olgaç Türker.



Prof. Dr. Yücel Vural

Chair, Board of Scientific Research and Publication Ethics - EMU

YV/ns.

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Appendix B: Survey Conducted by Experts

MULTI-CRITERIA ANALYSIS FOR THE WEIGHTING OF HERITAGE VALUE

The process of prioritization and selection of heritage building must involve different group of stakeholders so that the process of implementation can be facilitated successfully. In this context, the purpose of this research project is to identify each stakeholder view about the weights of heritage values. With this research, we are therefore exploring stakeholders' opinions conservation alternatives. As part of this study, we are evaluating the weight of different heritage value.

Explanation	Numeric Values
If Option A and Option B are equally important : Mark/Insert	1
If Option A is <i>Slightly</i> more important than Option B : Mark/Insert	3
If Option A is <i>Moderately</i> more important than Option B : Mark/Insert	5
If Option A is <i>Strongly</i> more important than Option B : Mark/Insert	7
If Option A is <i>Extremely</i> more important than Option B : Mark/Insert	9

Table 1- Saaty Comparison Scale

Example:

Given Options A & B, you can judge their relative importance as shown below example:

If you think the option X1 in first line is **strongly more important** than the option 'Y1' in, then you mark 7 with (X) on the left-hand side.

If you think the option 'Y2 ' in second line is **extremely more important** than the option 'X2', then you mark 9 with (Y) on the right hand side.

Criteria I	Extremely more important	Strongly more important	Moderately more important	Slightly more important	Equally important	Slightly more important	Moderately more important	Strongly more important	Extremely more important	Criteria II
X1	9	7	5	3	1	3	5	7	9	Y1
X2	9	7	5	3	1	3	5	7	9	Y2

With respect to Heritage Value Using the scale from 1 to 9 (where 9 is extremely and 1 is equally important), please indicate (X) the relative importance of options A (left column) to options B (right column)										
Criteria I	Extremely more important	Strongly more important	Moderately more important	Slightly more important	Equally important	Slightly more important	Moderately more important	Strongly more important	Extremely more important	Criteria II
Aesthetic value	9	7	5	3	1	3	5	7	9	Architectural value
Aesthetic value	9	7	5	3	1	3	5	7	9	Authenticity value
Aesthetic value	9	7	5	3	1	3	5	7	9	Cultural value
Aesthetic value	9	7	5	3	1	3	5	7	9	Environmental value
Aesthetic value	9	7	5	3	1	3	5	7	9	Economic value
Aesthetic value	9	7	5	3	1	3	5	7	9	Historic value
Aesthetic value	9	7	5	3	1	3	5	7	9	Option value
Aesthetic value	9	7	5	3	1	3	5	7	9	Scientific value
Aesthetic value	9	7	5	3	1	3	5	7	9	Social value
Aesthetic value	9	7	5	3	1	3	5	7	9	Spiritual value
Aesthetic value	9	7	5	3	1	3	5	7	9	Spatial value
Aesthetic value	9	7	5	3	1	3	5	7	9	Deterioration Risk
Architectural value	9	7	5	3	1	3	5	7	9	Authenticity value
Architectural value	9	7	5	3	1	3	5	7	9	Cultural value
Architectural value	9	7	5	3	1	3	5	7	9	Environmental value
Architectural value	9	7	5	3	1	3	5	7	9	Economic value
Architectural value	9	7	5	3	1	3	5	7	9	Historic value
Architectural value	9	7	5	3	1	3	5	7	9	Option value
Architectural value	9	7	5	3	1	3	5	7	9	Scientific value
Architectural value	9	7	5	3	1	3	5	7	9	Social value
Architectural value	9	7	5	3	1	3	5	7	9	Spiritual value
Architectural value	9	7	5	3	1	3	5	7	9	Spatial value

Architectural value	9	7	5	3	1	3	5	7	9	Deterioration risk
Authenticity value	9	7	5	3	1	3	5	7	9	Cultural value
Authenticity value	9	7	5	3	1	3	5	7	9	Environmental value
Authenticity value	9	7	5	3	1	3	5	7	9	Economic value
Authenticity value	9	7	5	3	1	3	5	7	9	Historic value
Authenticity value	9	7	5	3	1	3	5	7	9	Option value
Authenticity value	9	7	5	3	1	3	5	7	9	Scientific value
Authenticity value	9	7	5	3	1	3	5	7	9	Social value
Authenticity value	9	7	5	3	1	3	5	7	9	Spiritual value
Authenticity value	9	7	5	3	1	3	5	7	9	Spatial value
Authenticity value	9	7	5	3	1	3	5	7	9	Deterioration Risk
Cultural value	9	7	5	3	1	3	5	7	9	Environmental value
Cultural value	9	7	5	3	1	3	5	7	9	Economic value
Cultural value	9	7	5	3	1	3	5	7	9	Historic value
Cultural value	9	7	5	3	1	3	5	7	9	Option value
Cultural value	9	7	5	3	1	3	5	7	9	Scientific value
Cultural value	9	7	5	3	1	3	5	7	9	Social value
Cultural value	9	7	5	3	1	3	5	7	9	Spiritual value
Cultural value	9	7	5	3	1	3	5	7	9	Spatial value
Cultural value	9	7	5	3	1	3	5	7	9	Deterioration Risk
Environmental value	9	7	5	3	1	3	5	7	9	Economic value
Environmental value	9	7	5	3	1	3	5	7	9	Historic value
Environmental value	9	7	5	3	1	3	5	7	9	Option value
Environmental value	9	7	5	3	1	3	5	7	9	Scientific value
Environmental value	9	7	5	3	1	3	5	7	9	Social value
Environmental value	9	7	5	3	1	3	5	7	9	Spiritual value
Environmental value	9	7	5	3	1	3	5	7	9	Spatial value
Environmental value	9	7	5	3	1	3	5	7	9	Deterioration Risk
Economic value	9	7	5	3	1	3	5	7	9	Historic value
Economic value	9	7	5	3	1	3	5	7	9	Option value
Economic value	9	7	5	3	1	3	5	7	9	Scientific value

Economic value	9	7	5	3	1	3	5	7	9	Social value
Economic value	9	7	5	3	1	3	5	7	9	Spiritual value
Economic value	9	7	5	3	1	3	5	7	9	Spatial value
Economic value	9	7	5	3	1	3	5	7	9	Deterioration Risk
Historic value	9	7	5	3	1	3	5	7	9	Option value
Historic value	9	7	5	3	1	3	5	7	9	Scientific value
Historic value	9	7	5	3	1	3	5	7	9	Social value
Historic value	9	7	5	3	1	3	5	7	9	Spiritual value
Historic value	9	7	5	3	1	3	5	7	9	Spatial value
Historic value	9	7	5	3	1	3	5	7	9	Deterioration Risk
Option value	9	7	5	3	1	3	5	7	9	Scientific value
Option value	9	7	5	3	1	3	5	7	9	Social value
Option value	9	7	5	3	1	3	5	7	9	Spiritual value
Option value	9	7	5	3	1	3	5	7	9	Spatial value
Option value	9	7	5	3	1	3	5	7	9	Deterioration Risk
Scientific value	9	7	5	3	1	3	5	7	9	Social value
Scientific value	9	7	5	3	1	3	5	7	9	Spiritual value
Scientific value	9	7	5	3	1	3	5	7	9	Spatial value
Scientific value	9	7	5	3	1	3	5	7	9	Deterioration Risk
Social value	9	7	5	3	1	3	5	7	9	Spiritual value
Social value	9	7	5	3	1	3	5	7	9	Spatial value
Social value	9	7	5	3	1	3	5	7	9	Deterioration Risk
Spiritual value	9	7	5	3	1	3	5	7	9	Spatial value
Spiritual value	9	7	5	3	1	3	5	7	9	Deterioration Risk
Spatial value	9	7	5	3	1	3	5	7	9	Deterioration Risk

Appendix C: Survey Conducted by All Stakeholders

Evaluating Heritage values in Different Case Studies in Famagusta, Cyprus

In this section the value of selected case study will be examine one by one for each case. In this context, the purpose of this section is to identify each heritage building values. With this research, we are therefore exploring stakeholders' opinions on conservation priority. As part of this study we are evaluating the weight of different heritage-values in specific case studies as below:

- Case Study 1: Othello Tower
- Case Study 2: St Anne Church
- Case Study 3: Martinengo Bastion
- Case Study 4: St. Mary of the Armenians Church
- Case Study 5: Ravelin/Land Gate

Example of how to fill this section:

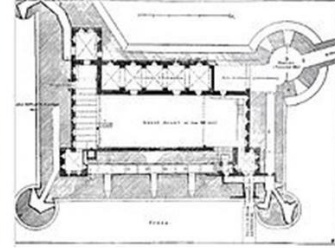
Given options you can judge their relative importance as shown in the example below:

How do you see the importance of **criteria X**?

Very small important	1	3	5	7	9	Extremely important
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If you think the criteria X is very small important you may select 1, if the importance is increasing you may select 3, 5, 7 or 9 according to your opinion on degree of importance.

Case Study 1: Othello Tower



How do you see the importance of Aesthetic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Architectural value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Authenticity value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Cultural value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Environmental value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Economic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Historic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Option value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Scientific value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Social value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Spiritual value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Spatial value in this building?

Very small important	1	3	5	7	9	Extremely important
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Case Study 2: St Anne Church



How do you see the importance of Aesthetic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Architectural value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Authenticity value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Cultural value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Environmental value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Economic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Historic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Option value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Scientific value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Social value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Spiritual value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Spatial value in this building?

Very small important	1	3	5	7	9	Extremely important
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Case Study 3: Martinengo Bastion



How do you see the importance of Aesthetic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Architectural value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Authenticity value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Cultural value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Environmental value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Economic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Historic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Option value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Scientific value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Social value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Spiritual value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Spatial value in this building?

Very small important	1	3	5	7	9	Extremely important
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Case Study 4: St. Mary of the Armenians Church



How do you see the importance of Aesthetic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Architectural value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Authenticity value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Cultural value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Environmental value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Economic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Historic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Option value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Scientific value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Social value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Spiritual value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Spatial value in this building?

Very small important	1	3	5	7	9	Extremely important
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Case Study 5: Ravelin/Land Gate



How do you see the importance of Aesthetic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Architectural value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Authenticity value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Cultural value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Environmental value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Economic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Historic value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Option value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Scientific value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of social value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Spiritual value in this building?

Very small important	1	3	5	7	9	Extremely important
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How do you see the importance of Spatial value in this building?

Very small important	1	3	5	7	9	Extremely important
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Heritage Value	Definition
Aesthetic value	Displays the artistic quality which could be recognized by groups or individuals (Throsby 2006)
Architectural value	Refers to the exemplary quality of design and contribution the building makes to the period, architectural style or pioneering building technique (Orbaşlı 2008)
Authenticity value	Refers to the reality that a particular item is unique and not fake and a concomitant characteristic is integrity, meaning that the item has not been altered tampered with or defaced (Feilden and Jokilehto 1998)
Cultural value	Implies the information on various aspects of the past lifestyle and it may continue to play a role in today's cultural traditions (Orbaşlı 2008)
Environmental value	Relates the value of a settlement to its integration into its original totality, landscape, buildings, roads, planning, style, scale, and lifestyle (Uçar 2007)
Economic value	Relates to the monetary value of cultural heritage (Orbaşlı 2008)
Historic value	Is derived from the history of the building, since its origins to present day, including the chronology of the alteration, decay and destruction of the building (Orbaşlı 2008)
Option value	Is about option to visits or to enjoy something and also it refers to possibility to use heritage at some future time (Ronchi 2017)
Scientific value	Refers to whether it is the building techniques employed or the materials used, historic building have scientific values in terms of the information they contain on building practices of the period (Brusaporci 2014)
Social value	Refers to the meaning of historic place to a local community, often as part of an ongoing social interchange, constitutes its social value (Brusaporci 2014)
Spiritual value	Is with a sense of connection with the infinite or with a particular faith or belief or it may convey religious meaning or message (Towse 2011)
Spatial value	Refers to the spatial organization, perceptions and visual relationships, as well as all other elements of the structure (Brusaporci 2014)