

## A CONCEPTUAL FRAMEWORK FOR AN EFFECTIVE ECONOMIC VALUATION OF HERITAGE BUILDING

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**Abstract.** The economic valuation of non-market goods specifically heritage building has faced many challenges over the time. Valuation is part of decision making process for the preservation and protection of heritage building. Contingent Valuation Method (CVM) is the most popular method for heritage building valuation. However, over the past two decades this method has received many criticisms due to potential biased estimation. This paper presents a conceptual framework for an effective economic valuation of heritage building based on CVM.

**Keyword:** Economic Valuation, Valuation, Heritage Building

**Abstrak.** Penilaian ekonomi barangan bukan pasaran khususnya bangunan warisan telah menghadapi pelbagai cabaran. Penilaian adalah sebahagian daripada proses membuat keputusan bagi pemeliharaan dan perlindungan bangunan warisan. Kaedah Penilaian Kontinjen (CVM) merupakan kaedah penilaian bangunan warisan yang paling mudah diterima pakai. Walau bagaimanapun, dalam tempoh dua dekad yang lalu, kaedah ini telah menerima banyak kritikan kerana potensi anggaran yang berat sebelah. Kertas ini membentangkan rangka kerja konsep bagi penilaian ekonomi yang berkesan di atas bangunan warisan berasaskan Kaedah Penilaian Kontinjen (CVM).

**Kata kunci:** Penilaian Ekonomi, Penilaian, Bangunan Warisan

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## 1.0

### Introduction

Cultural economics is a branch of economics that studies the relation between the culture and economic outcomes. There are various areas in cultural economics that consider both theoretical and applied aspect and this paper focus on the valuation of heritage building. Besides that, the researchers or economists must be aware of the changeless situation in built cultural heritage especially its assessment process. Over the past two decades, there are vast studies in estimating the economic value of heritage building. It also shows the growing recognition by academic, policy makers from government and industry. In Malaysia, Chiam et al., (2011) reviews several methods that can be used in valuing heritage building. They prefer to use CV method because of its capability in estimating the heritage building values. However, many studies have indicated the limitations of CV method. Given its popularity, it should be discussed in view of finding ways toward its improvement. Parallel with issues regarding the CV method, this paper aims to develop a conceptual framework for economic valuation of the heritage building using CV method and rasch measurement models.

The rest of this paper is organized as follows. Section 2 presents the economic valuation of heritage building. Section 3 reviews the methodological issues associated with CV method. Section 4 presents the determinants for choosing an effective method for valuation of heritage building. Section 5 presents a conceptual framework for an effective economic valuation of heritage building. Lastly, Section 6 concludes the paper.

## 2.0 Economic Valuation of Heritage Building

This section presents the concept of total economic valuation for non-market goods, contingent valuation (CV) method and rasch measurement model.

### 2.1 Total Economic Valuation

Figure 1 shows the concept of total economic value in valuing heritage building. There are two types of value involved: use value and non-use value. Use value is a value that directly benefit dthe individual, household or companies through direct consumption of heritage services (Throsby, 2007). For instance, the benefit gained from living and working in the heritage building. Furthermore, this value often affects the market price of dwellings and it can be seen from the rental value of heritage assets (O'Brien, 2010).

Non-use value is also known as passive-use value. There are three categories of non-use value of cultural heritage which are existence value, bequest value and option value. Existence value is the enjoyment gained knowing the cultural heritage site (Dana, 2004). The Bequest value represents the value that is attached for preserving cultural heritage for future generations. Option value is a benefit of having an option to visit the cultural heritage in the future (Productivity Commission, 2006).

In addition, the intrinsic value is one of the non-use values. The intrinsic value is a unique value that cultural heritage has. This value is difficult to identify because it relates to aesthetic elements and individual enjoyment. Non-use value is normally measured based on individual willingness to pay (WTP).

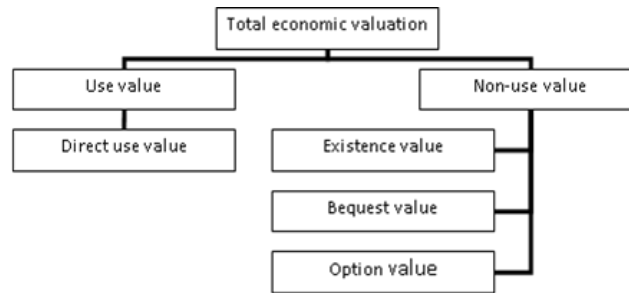


Figure 1. The concept of total economic valuation of cultural heritage

## 2.2 Contingent Valuation Method

The valuation on cultural heritage is a new field in applied science and falls in the border between economics and cultural. It needs to consider the economics and cultural factors simultaneously because both factors influence heritage values. The CV method has been used over 40 years in estimating the non-use market. CV method employs survey as its main instrument. CV method survey is designed in obtaining the willingness to pay (WTP) and willingness to accept (WTA) from the visitors or residents. There are several steps involved in the applications of CV method namely: 1) defined the valuation problem, 2) make a preliminary discussion about the survey (conduct by mail, phone or in person, sample size and the potential respondents), 3) actual survey design, 4) actual survey implementation, and 5) compile, analyse and report. The second step refers to the need to run a pilot study. This stage is very important because it can reduce the bias/error in the final results (Bález & Herrero, 2012; Iorgulescu et al., 2011; Rahim, 2008).

There are several advantages as well as disadvantages of CV method. The advantages of this method are: 1) more flexible to be implemented, 2) widely accepted in the field and, 3) the result is not difficult to be analysed and described. The disadvantages of this method are: 1) most controversial method, 2) no basis in initial stage of the research will lead to bias/error, 3) possible of bias and, 4) based on knowledge and income of respondents (Bález & Herrero, 2012; Iorgulescu et al., 2011; Rahim, 2008).

## 2.3 Rasch Measurement Model

This paper focuses on themes of heritage building valuation, economic valuation of non-market goods emphasizing on contingent valuation (CV) method and rasch measurement model in order to develop an effective method in valuing heritage building. In an innovative way, it provides research on heritage building including the development of conceptual framework for heritage building valuation by taking into account the elements of effectiveness consisting of the reliability, validity and practicality. Rasch measurement model is an appropriate tool to be used in constructing the better survey instrument because the model is considering the reliability and validity criteria (Azrilah Abdul Aziz et al., 2013). Each items or factors in the survey instrument will be analysed to see whether the factors are important to be included in survey instrument or not, and if the factors are not important it will be dropped. Based on previous studies, the researchers used probit and tobit tests in order to validate the reliability of the questionnaire results. However, for validity no tests are performed. Hence, the rasch model fulfils the requirement for an effective method by considering both tests for reliability and validity.

### 3.0 The Methodological Issues of Contingent Valuation Method

Previous research on economic valuation method for non-market goods shows the rising attention among the researchers and economists as well as the debates on their methodologies. Hence, the question arises on how far the method can express the non-market goods value? Blore (1996) questions, “If yes, does the method produce the accurate and reliable value?” Therefore, this section aims to discuss the methodological issues of CV method for heritage building valuation.

Table 1 summarises the methodological issues of CV method. The issues are: 1) inaccurate and unreliable results, 2) improper questionnaire design stage, 3) misunderstanding the questionnaire, 4) missing important factors, 5) lack of suitable instrument and, 6) improper application of CV method. The review indicates that main weaknesses of CV method relates to the quality of information derived from the survey.

Table 1. Review of Existing Studies on the Methodological Issues of CV Method.

No.	Authors	Inaccurate and unreliable results	Improper questionnaire design stage	Misunderstanding the questionnaire	Missing important factors	Lack of suitable instrument	Improper application of CV method
1.	Chambers et al. (1998)	✓					
2.	Holvad (1999)	✓	✓	✓		✓	
3.	Carson et al. (2001)		✓				
4.	Mason (2002)				✓		
5.	Belhaj (2003)			✓			
6.	Venkatachalam (2004)	✓					✓
7.	Riganti & Nijkamp (2004)	✓					
8.	Donaghey (2006)	✓	✓			✓	
9.	Roddewig et al. (2006)	✓	✓	✓	✓		
10.	Christie & Azevedo, (2009)		✓				

Table 1 (continued). Review of existing studies on the methodological issues of CV method.

No.	Authors	Inaccurate and unreliable results	Improper questionnaire design stage	Misunderstanding the questionnaire	Missing important factors	Lack of suitable instrument	Improper application of CV method
11.	Sayce (2009)	✓					
12.	Lazrak et al. (2009)		✓				
13.	Whitehead et al. (2008)	✓					
14.	Hoyos & Mariel (2010)	✓	✓				
15.	Dong et al. (2011)						✓
16.	Gražulevičiūtė-Vileniške et al. (2011)			✓	✓		
17.	Iorgulescu et al. (2011)	✓		✓	✓		

The information provided to the respondents is critically affecting the value of WTP (Chiam et al., 2011). Sometimes, the information demonstrates the researcher's needs and does not reflect the reality. Hence, the WTP results may be inaccurate and unreliable. There are two major criticisms of CV method: validity and reliability. Validity refers to 'accuracy' and reliability refers to 'consistency' or 'reproducibility'. To elaborate, validity is measured based on theoretical construct (Venkatachalam, 2004) and reliability refers to the result produced when repeated measurement are conducted.

The reviews show that the researchers argue the use of CV method for valuation of heritage building due to the bias in value estimation (Chambers et al., 1998; Donaghey, 2006; Holvad, 1999; Hoyos & Mariel, 2010; Iorgulescu et al., 2011; Lazrak et al., 2009; Riganti & Nijkamp, 2004; Ruijgrok, 2006; Sayce, 2009; Venkatachalam, 2004; Whitehead et al., 2008). Furthermore, the bias also relates to the nature of heritage building itself (Chiam et al., 2011). Validity of CV method is difficult to be determined and is also dependent on the questionnaire structure (Carson et al., 2001; Donaghey, 2006). Researchers tend to design the questionnaire based on their own desire and this may lead to bias. Therefore, it is very important to examine the validity and reliability of the questionnaire structure (Lazrak et al., 2009). Chambers et al. (1998) support the use of CV method. They have introduced the tools to test the validity and reliability of the output. The tools for measuring the reliability are: 1) test-retest method, 2) split-half method, and 3) the alternative method, meanwhile the tools they have used for measuring validity are: 1) criterion validity, 2) convergent validity, and 3) construct validity.

The main challenge in using the CV method seems to relate to the correct design of the questionnaire with which most economists are not trained for this business. However, Carson et al., (2001) argue that this whereby can be solved with careful design of the questionnaire. Pilot study can be conducted in order to get the early pictures about the factors that affect the cultural heritage values (Venkatachalam, 2004).

Mason (2002) reports that, value of cultural heritage are influenced by many factors including cultural, economic, political, aesthetic. Some of the factors may overlap or compete. Whitehead & Blomquist (2006) and Iorgulescu et al. (2011) also include economic and cultural factors as important in order to reflect the real values in the valuation.



### 4.0 Determinants of an Effective Method

There are several determinants that need to be considered to ensure that the methods used in the economic valuation of heritage buildings are effective. The determinants are discussed as follows (Figure 2).

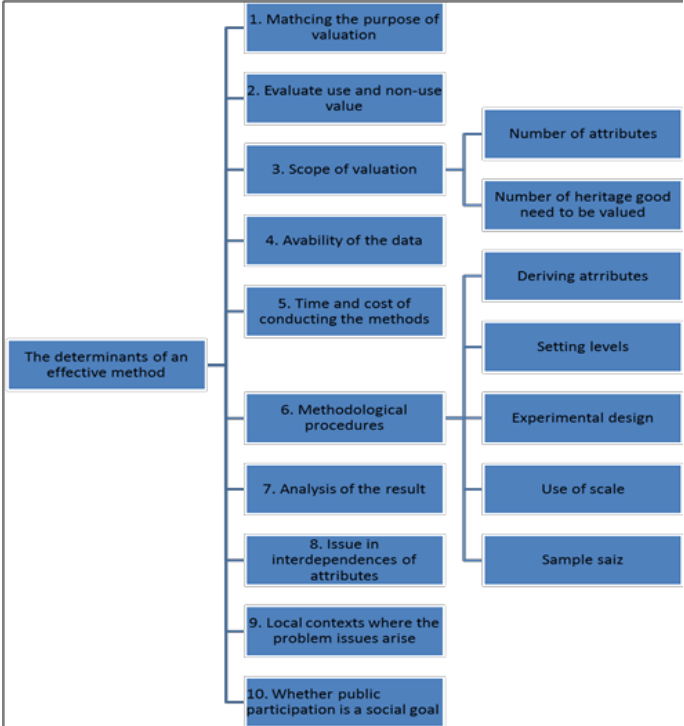


Figure 2. The Determinants of an Effective Method for Heritage Asset Valuation

#### 4.1 Matching the Purpose of Valuation

The objective of valuation of heritage building is to obtain the monetary figures, to prioritize preference or alternatives and, to elicit the relative of importance of different attributes (Yung et al., 2013). If the assessment is being conducted for monetary purposes, all the stated preference (SP) methods and revealed preference (RP) will be used. Lately, the consideration of public preference shows the rising attention in heritage building valuation (Yung et al., 2013). It is important to consider the public preference because it contributes to the added value of heritage building and it will reflect its true values. The method that takes into account the monetary value and public preference is contingent valuation (CV) method. This method is under the SP method.

#### 4.2 Evaluate Use Value and Non-Use Value

The types of values to be obtained will determine the type of methods that will be used. There are two types of value involve in valuing heritage building value. The values are use value and non-use value. Travel cost method (TCM) can only measure the use value because this method takes into account the actual costs to reach the site. The method that considers both value is CV method (Yung et al., 2013).

#### 4.3 Scope of Valuation

##### a) Number of attributes

The method used should measure the multi-attributes contained in the heritage building. In the use of travel cost method (TCM), the heritage building is valued as a whole without decomposing it based on attributes. In contrary, the CV method can value the attributes of heritage building individually (Yung et al., 2013).

##### b) Number of heritage good need to be valued

Some conservation decision involves choosing the most preferred site from a list of historic sites. Thus, the more the method can handle the heritage building at each time, the method is consider good. For instants, TCM can only handle one site at a time comparing to CV method. In addition, the CV method is also able to evaluate multiple sites by asking the respondents to ranking the sites from best to worst (Yung et al., 2013).

#### 4.4 Availability of the Data

Data for the valuation of heritage building is mainly divided into two types, either revealed from the market or stated in the actual cost surveys or hypothetical survey. Data for the hypothetical survey can be obtained using the CV method and the data for revealed can be obtained from TCM (Yung et al., 2013).

#### 4.5 Time and Cost of Conducting the Methods

Difficulties in the selection of environment, the ability of individuals in a complex decision-making and impact in all elections should be considered in conducting the heritage building valuation. It has been argued that the choice set which contains more than three alternatives will increase complexity (Bennett & Blamey, 2001). Analytical hierarchy process (AHP) is seen to have advantages compared with the CV method because AHP can deal with more attributes. Generally, AHP requires less time to complete the questionnaire over the CV method. However it should be noted that the AHP method only measures the use value only, while CV method can measure the use value and non-use value (Yung et al., 2013).

#### 4.6 Methodology Procedure

##### a) Deriving attributes

It is difficult to comprehensively define the attributes of heritage building, particularly to measure the values that involve public preference. The application of SP - CV method, attributes are usually obtained by researchers through a literature review and from expert's opinion's. In RP method, the determination of attributes is dependent on the availability of the survey data. Therefore, some attributes may be omitted (Yung et al., 2013).

##### b) Experimental design

SP methods, like CV method, requires the use of experimental design. Researchers have to choose between a full factorial design with a fractional factorial design (Yung et al., 2013).

##### c) Use of scale

Since the valuation of heritage building involve the tangible and intangible values, it is very difficult to use the absolute scale. When assigning ratings, what is the meaning of the numbers? So the problem arises. First, ratings must be adjusted so that a

common metric is used across individuals (Yung et al., 2013).

#### d) Sample size

Sample size is a matter that should be considered in choosing the effective methods for heritage building valuation. For instance, CV method requires large sample sizes to obtain large variance of WTP and involve large costs (Yung et al., 2013).

#### 4.7 Local Contexts : here the Issue Arise

There are some drawing issues raised in the selection of the valuation method for heritage building: 1) management stage and 2) what should be conserved? In previous studies, the CV method is normally used to obtain WTP. It is noted that, TCM is not feasible to assess the heritage building in the compact city. This is because the places to visit are close to each other. Therefore, the distance travelled is not reflecting the actual cost of travelling (Yung et al., 2013).

#### 4.8 Whether Public Participation is a Social Goal

Public involvement is seen rising and becoming important in heritage conservation. It claims that stated preference methods can enhance the public participation because it requires the involvement of large respondents (Yung et al., 2013).

#### 4.9 A Conceptual Framework for an Effective Economic Valuation of Heritage Building

Valuation of heritage buildings is an interesting topic to be discussed, especially the methodological aspects. Based on previous studies, contingent valuation (CV) method is the most popular method used in valuation of cultural heritage asset. The advantage of CV method, compared to other methods, is its strength that takes into account the use value and non-use value. However, there have been criticisms on the use of this method with respect to the effectiveness of the results obtained, particularly content validity and the development of questionnaires. The development of the questionnaire of CV method is a critical part and should be designed properly. Errors in the development of questionnaires will lead to the bias in value estimation.

In addition, it is not clearly proven that the better content for CV survey instrument may leads to more accurate and reliable value estimation. Therefore, the aims of this study is to fill the gap by establishing an improved CV survey instrument towards development of an effective method for heritage building valuation by using rasch measurement model. The use of rasch model in the development of the questionnaire is very interesting because it takes into account the effective criteria of reliability, validity and

practicality. Therefore, the use of CV method and rasch model for economic valuation of heritage building is seen to be the contribution of the study. Figure 3 shows the steps in forming an effective economic valuation for heritage building using contingent valuation method and rasch measurement model.

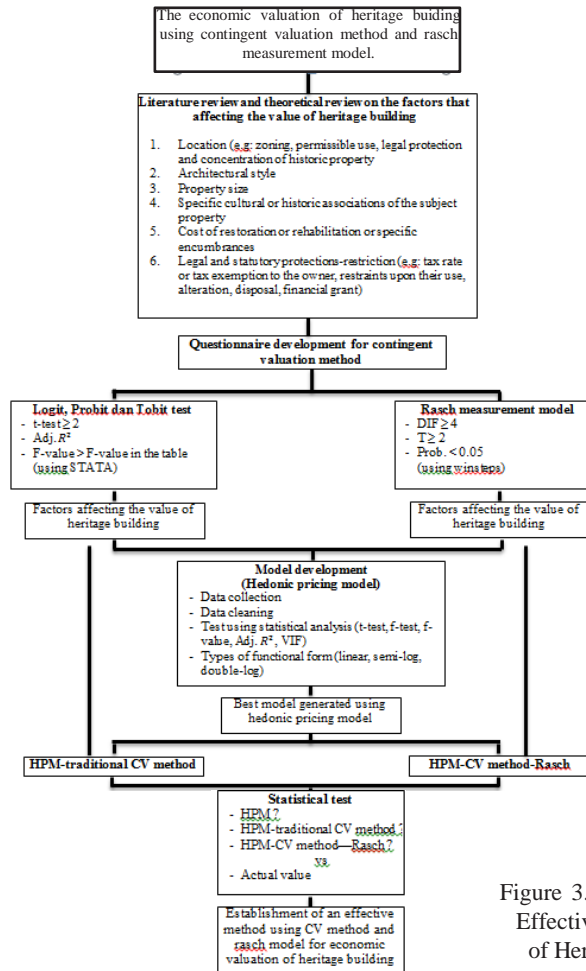


Figure 3. The Steps in Forming an Effective Economic Valuation of Heritage Building based on CVM.

## **6.0**

### **Conclusions**

This paper has presented a conceptual framework for an effective economic valuation of heritage building in order to improve the existing CV method. In line with the recommendation made by Yung et al. (2013), this paper has identified six methodological issues of CV method namely 1) inaccurate and unreliable results, 2) improper questionnaire design stage, 3) misunderstanding the questionnaire, 4) missing important factors, 5) lack of suitable instruments, and 6) improper application of CV method. It is indicated that validity and reliability of CV method warrants serious attention from the researchers. This is due to the anticipation that it may lead to other problems. Therefore, this paper has proposed a conceptual framework for economic valuation of heritage building using CV method and rasch measurement model. This framework provides an effective way in valuing heritage building and further research will test the result based on empirical study.



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