

# Donations for Cultural Heritage Protection against Floods: A Case Study of Ayutthaya World Heritage, Thailand

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This study focuses on how donation can be used as additional finance to fund the structural and non-structural measures against floods in Ayutthaya historic city. The objectives of study are to analyze tourists' characteristics, which have an impact on their willingness to pay for Ayutthaya cultural heritage preservation and to estimate the annual amount of contribution regarding the first objective. Individual willingness to pay was analyzed by using Contingent Valuation Method (CVM) with Tobit model. According to 128 collected questionnaires, the amount of willingness to donate money was approximately 190 Baht (5.4 US. Dollars) per person per visit.

**Keywords:** *Contingent Valuation Method (CVM), Cultural Heritage Protection, Donations from Tourists, Willingness to Pay (WTP)*

## 1. The Importance of Donation in Cultural Heritage

Nowadays, 878 world heritage sites have been enrolled in the 2007 UNESCO list, and 4 out 878 of these are located in Thailand. Noticeably, the most well-known cultural heritage of Thailand is "Historic City of Ayutthaya and Associated Historic Towns" registered as a world heritage site in December 13, 1991<sup>1</sup>. This historic city contains a plenty of ancient Buddhist temples and royal palaces founded in Ayutthaya empire period, approximately 500 years ago. The Thai government has tried to renovate it, since it was considered as a national treasure as a national treasure. Since the substantial renovation project implemented in 1977, the historic city has been a famous tourist attractive place among domestic and international tourists. The tourists figures of Ayutthaya had been dramatically increasing from 0.93 million visitors in 1997 to 1.39 million visitors in 2008 (Data based on total number of visitor in five archeological sites; Phra Si Sanphet temple, Maha That temple, Ratchaburana temple, Phra Ram temple and Chaiwatthanaram temple)<sup>2</sup>.

Flooding is defined as a major threat to the historic city. A number of heritage protection projects have been proposed in order to reduce flood damages, but a few of them were implemented because of the limited budget. Even the Fine Arts Department has tried to collect monetary donations from local residents and private firms, the received money is not enough for maintaining the historic city. In order to solve this financial liquidity, additional financial instruments such as increasing an admission fee, creating attractive tourism activities, and calling for donations from tourists are taken into consideration.

Thailand where is a Buddhist country, a plenty of old temples are also sustained by the kindness of Thais'

donation. It can signify that Thais are still willing to donate their money or any precious goods to the society, and this desire makes calling for donation to Ayutthaya heritage conservation become possible.

Therefore, this study aims at exploring tourists' willingness to donate money and the amount of tourists' donations, as well as preferable donation methods of tourists. The data were collected through a structured questionnaire survey of 128 visitors from 5 archaeological sites in the Historic City of Ayutthaya and Associated Historic Towns (location of 5 archaeological sites are illustrated in figure 3). Contingent Valuation Method (CVM) was adopted for estimating the amount of annual donations. Consequently, the results of this study can provide a new guidance on seeking another source of funds for the Office of Ayutthaya Historic City in financing prevention and mitigation measures against flood loss.

## **2. Utilizing economic valuation methods in an estimation of donation**

The government budgets for cultural heritage conservation may nowadays be lower than values that the local residents and visitors have perceived from an existence of the heritage; however, those budgets may be either lower or higher than the actual preferences of the local community and visitors whose taxes or admission fees are financing the conservation and prevention measures. Hence, individual preferences in preserving the heritage should be analyzed in order to demonstrate, at the margin, where we should invest resources for achieving "best values of heritage conservation"<sup>3)</sup>.

In economics, each heritage has its own cultural capital, which could be analyzed through economic processes, but the characteristics of cultural capital are different from other sorts of capital that market goods have. Each cultural heritage integrates principals of economic (physical value of space usage as an ordinary attribute) and cultural characteristics (historical, social, aesthetic, spiritual, and symbolic value as extraordinary attributes). The notion of the economic value focuses on physical value as an ordinary attribute of every building, but the cultural capital focuses more specifically on extraordinary attributes such as intangible value of heritage itself.

Cultural heritage conservationists apply economic valuation methods to heritage sites similarly as environmentalists apply that to estimate economic values of ecosystem and environmental services. The types of economic value attributed to heritage assets can be divided into use- and non-use values<sup>4)</sup> (see table 1). The use value refers to the value placed upon direct consumption of goods and services that the goods provides such as, the admission fee which visitors pay for entrancing archeological sites. Whereas, the non-use value refers to indirect valuation of the assets' services related to the value that people want to preserve the cultural heritage even if they might not be able to consume its services tangible goods and services.

There are three well-known approaches to estimate those values: Market Value, Surrogate Market-Value and Hypothetical Market Approaches. Nevertheless, a preferable approach for assessing cultural heritage's value is Surrogate Market-Value approach, which can be divided into two methods: Travel Cost Method (TCM) and Contingent Valuation Method (CVM). Meanwhile, TCM has its own weakness of assessment. Firstly, it can determine only use value, and secondly, individuals' single travel trip might have more than one purpose, which is difficult to estimate travel costs only for visiting the cultural heritage without mixing another point. Therefore, a number of scholars use CVM to reflect the cultural heritage values given by people in the society. In order to evaluate cultural values in terms of use- and non-use values based on CVM, a number of cultural heritage studies adapted "willingness to pay (WTP)" technique, which shifts CVM from theoretically plausible to operational feasible. Thus, the actual value of cultural heritage for society can conceptually be indicated by the sum of individuals' willingness-to-pay (WTP) in the society<sup>4)</sup>.

In sum, the willingness to pay can measure both of the non-use value and the use-value. This study uses CVM to estimate monetary donation in protecting Historic City of Ayutthaya and Associated Historic Towns against flood damages. Meanwhile, WTP technique will also be adopted. The estimation in the study does not involve the price of market purchases and may not involve direct cost of respondents to come to the historic city, but this study uses of CVM method to estimate the amount of donation by asking respondents to

indicate their given values to the historic city. By this way, the valuation can reflect a stated preference in Ayutthaya's cultural heritage rather than inferring values from actual choices, as the “revealed preference” methods do.

Table 1: The conclusion of economic appraisalment (source: by authors)

Economic Value \ Method	Contingent Valuation Method	Travel Cost Method	Hedonic Pricing Method
Use value	Direct use value	√	√
	Indirect use value	√	√
Non-use value	Existence value	√	-
	Bequest value	√	-
	Option value	√	-

### 3. Research Approaches

The study approaches is based on a quantitative analysis using a questionnaire survey with respondents of both Thai and foreign tourists whom are respected as potential donors. A questionnaire survey was conducted for investigating the relationship between characteristics of tourists and the willingness to donate. In addition, an individual donation was analyzed in order to determine an annual amount of donation collected from tourists for constructing or performing flood mitigation measures of the Historic City of Ayutthaya and Associated Historic Towns. The measures here refers to both structural measures - such as levee constructions or reservoirs – and not structural measures such as flood prevention programs or pre-schemes for flood control operations.

The target group for completing the questionnaire was a random sample of 128 tourists who visited Historic City of Ayutthaya and Associated Historic Towns during August to October 2008, before the Thailand’s flood crisis in 2011. The proportion of sample-size was set with regard to the actual ratio of domestic tourist to foreigner tourists of Ayutthaya’s heritage sites: the respondents of this study included 70 Thai tourists and local residents (54.69 %) and 58 foreign tourists (45.31%).

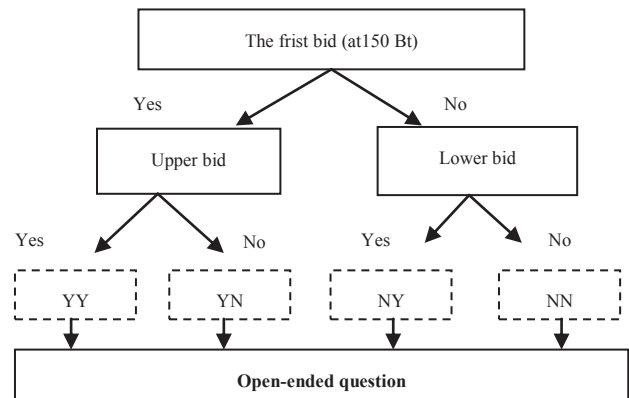
In the questionnaire, all of the questions were categorized into three parts regarding the contents and the method of statistical analysis: questions asking about individuals’ WTP, personal attitudes to Ayutthaya historic city and associated towns, and personal socioeconomic characteristics including sightseeing behaviour. Finally, the study used SPSS program (version 15) and Limdep program to analyze the data. The results were reported in the form of descriptive and substantive statistics.

The first part of the questionnaire mainly interrogated about respondents’ willingness to donate money. In addition, WTP questions were constructed under the double-bounded dichotomous choices integrated with bidding technique in order to 1) increase the validity of the WTP assessment, 2) to avoid associated bias in the use of CVM in terms of getting exaggerated and understated the WTP amounts, and 3) to verify the significance of cultural heritage preservation through indicative values. To let respondents imagine how their donated money will be spent for, respondents were informed about the flood situation and rock-fill dams along the river bank that already constructed by local authorities to protect the heritage from flood risk, in the beginning of this part. The donated money hence would be spent for the improvement of those flood mitigation measures as well as for the construction of new structural measures. Some respondents who still doubted were understood clearer by the small discussion between the examiner and an examinee. According to the bidding technique in the questionnaire, the mean, mode and minimum WTP deriving from the pre-survey - where 30 visitors in the historic city were respondents - were utilized in order to set the bidding price in the three-step bidding technique. The first bidding began with asking whether respondents were willing to donate 150 Baht, which was an average WTP based on the pre-survey in March 2008. Then the second bid would rise to 400 Baht (the mode WTP from pre-survey) or drop to 70 Baht (the minimum WTP from pre-survey) depending on whether their willing to donate at the first bidding price or not (see Fig. 1). For example, if the respondents were willing to donate at the first bidding price, the second bidding step

would offer a higher price than the first bid, but if they were unwilling to donate at the first time, the second bidding step would price lower. The last question of this part was an open-ended question, which allows respondents to freely state the actual amount of money that they were willing to donate.

The second and the third parts of the questionnaire were about personal attitudes to the historic city and individuals' socioeconomic characteristics including with sightseeing behavior respectively. The questions towards individual attitudes to the historic city and willingness to participate in heritage conservation could indicate the levels of participation. The study adapted four levels of participation out of seven levels of Arnstein model, A ladder of citizen participation: based on the assumption that individuals' willingness to participate potentially influence an individual's WTP. Reliability of questions this part was analyzed though the coefficient alpha of Cronbach.

The test calculated a value at 0.703 Cronbach coefficients, which means average reliability. The reason of prioritizing questions about awareness in the cultural heritage after the WTP question is to avoid overstated- WTP value or understated one, which could be intervened by answering questions related to individual preferences in donation system and willingness to participate in heritage conservation.



**Fig. 1: A bidding technique adapted to the questionnaire**  
Source: by authors

#### 4. Results of the Study Findings and Discussions

##### (1) Influences of Socioeconomic Characteristics of Tourists on Willingness to Pay

According to tourists' characteristics among 128 respondents, the average ages of respondents were 33 years old for Thais and 30 years old for foreigners. 66.60% of Thai and 50.80% of foreigner respondents. Around half of the respondents, 53.70% of Thai and 62.7% of foreigners, educated from undergraduate school. According to the matter of education, literature reviews on WTP studies emphasized that high-educated persons might be willing to donate much money rather than low-educated persons. Besides, differences in nationalities of respondents could also be a crucial factor contributing to vary in prospective WTP. The sampling of international tourists, therefore, consisted with various respondents who came from different continents: European 44.64 %, Asian 21.43%, American 8.93%, and Australian 1.79%.

In order to analyze potentials of socioeconomic characteristics on WTP, the study focuses on comparing mean differences of WTP among different groups of respondents categorized by individual socioeconomic characteristics. Those comparisons used both direct WTP indicated by respondents and indirect WTP (donation scores) invented by recoding stated WTP into four intervals; one score for the amounts of donation during 1-70 Baht, two scores for donation at 71-150 Baht, three scores for donation at 151-399 Baht, and four scores for donation at least 400 Baht. To avoid a large standard deviation in a comparison of WTP and emphasize the different WTP between respondent groups, the indirect WTP would be used when a standard deviation of direct WTP categorized by groups is higher than one fourth of its mean. With an alpha level of 0.10 for all statistical tests, the study found that there are five socioeconomic characteristics of tourists significantly dominating over their willingness to pay (see table 2).

One of those factors is different WTP among domestic and international tourists. WTP of foreign tourists was higher than that of Thais: the donation score of foreigners was about 2.81 score higher than 2.35 score of Thais. In fact, when we focus on whether respondents were willing or unwilling to donate, the percentage of unwilling to donate of Thai tourists was lower than that of foreign tourists.

**Table 2: Different Willingness to Pay among Tourists** (source: survey by authors in 2008)

Factors	Categories	Numbers of respondents	Mean of donation scores	Statistical value	p-value
Nationalities*	Thai	68	2.35	2.618 ( T-test)	0.010*
	Foreigners	48	2.81		
Gender*	Male	68	2.73	1.771 ( T-test)	0.080*
	Female	48	2.41		
Age*	Lower than 25 years old	40	2.28	-1.988 ( T-test)	0.050*
	Equal or over 25 years old	71	2.63		
Income (only Thais)*	Not excess 15,000 baht per month	45	2.13	-2.603 ( T-test)	0.014*
	Over 15,000 baht per month	19	2.89		
Education level*	High school or lower	33	2.21	5.232 (F-test: One-Way ANOVA)	0.06*
	Undergraduate School	56	2.48		
	Graduate School	21	3.05		

Note : \*Significance level at 0.10

Donation scores (Decimal points were used to describe the use of donation scores):

- 1 = willing to donate in a range of 1-70 baht per time per year      3 = willing to donate in a range of 150-399 baht per time per year  
 2 = willing to donate in a range of 71-150 baht per time per year      4 = willing to donate in a range of 400 baht per time per year

**Table 3: Percentage of respondents who were willing to donate to total respondents** (source: survey by authors in 2008)

	Tourists' willingness	(Percent %)	
		Thai	Foreigners
Willingness to donate		97.14	86.21
- 1-70 Baht		21.43	3.45
- 71-149 Baht		40.00	20.69
- 150-399 Baht		15.71	46.55
- equal or over 400 Baht		20.00	12.07
Unwilling to donate		2.86	17.24
- Do not want to protect Ayutthaya heritage from flood damages.		1.43	5.17
- Do not have enough money to donate.		-	3.45
- This problem should be solved by government support rather than donation systems.		1.43	1.72
- The admission fees should include every cost of maintenances. It is no needs to call for donation.		-	1.72
- They do not trust in donation managements.		-	5.17

Table 3 revealed that 17.24 % of the foreign tourists were not willing to donate to Ayutthaya historic city, whereas a mere 2.86 % of Thai tourists were unwilling to donate. In addition, a gender difference significantly affected to personal WTP. Namely, men had higher donation score at 2.73 than a 2.41 score that women had, which means men tended to donate much money than women. On the other hand, the amount of donation money of high-educated respondents was higher than that of low-educated respondents who had no college degree and middle-educated respondents who obtained a college degree but had on master degree. The respondents, who have been taught in graduate schools, had a 3.05 donation score, which is higher than a 2.21 donation score of respondents who had no a college degree. According to income differences, Thai tourists having income over 15,000 Baht per month had higher donation score (2.89) than that of the lower.

## (2) Sightseeing Behavior Dominating Over Donation Willingness

These expected factors were the frequency of visiting Ayutthaya historic city, the duration of time spent at the historic city, and donation behaviors to existing donation boxes in the historic city. With each of these factors, the study divided respondents into two groups, for example, first-time visitors versus returning visitors, and Chi-square analysis and T-test were taken into account of comparing different WTP between two groups of respondents. As the result, tourists' willingness to pay to existing donation boxes has no significant effect on their willingness to pay for preserving Ayutthaya historic city from flood risks.

However, the frequency of visiting Ayutthaya historic city and the duration of time spent at the historic city were crucial factors influencing on tourists' WTP. According to the frequency of visiting Ayutthaya historic city, returning visitors had more willingness to donate money rather than first-time visitors had ( $r = 0.16$ ,  $p$ -value = 0.09). Namely, returning visitors would be willing to donate money about 211 Baht. On the other hand, the much time tourists spent on visiting at the historic city, they would be willing to donate less. Respondents who spent over two hours obviously had lower donation score (donation score = 2.40) than that of other respondents who spent their time less than two hours (donation score = 2.72).



### (3) Estimated annual amount of donation

In order to estimate the annual amount of monetary donation, the study used Tobit model (See Fig. 2). The result shows that tourists would be willing to donate approximately 189.56 Baht for Thais and 191.66 Baht for foreigners. Instead of socioeconomic characteristics, the Tobit model pointed that the frequency of visiting the historic city was a crucial factor affecting to individuals' donation willingness.

The average amount of individuals' donation can lead to an estimation of the annual amount of monetary donation, which the historic city would get after the donation program for preserving Ayutthaya historic city from floods. There are two scenarios of donation estimation. The first scenario focuses on the status of individuals' donation willingness to the existing donation boxes of the historic city, which are not for preventing the historic city from floods. While, the second scenario emphasizes on the future state of individuals' donation willingness, which respondents mentioned in the questionnaire whether or not they would be willing to donate for preserving the historic city.

According to a target group of this study, persons who would be potential donors are all of visitors to the historic city both visitors of the cultural heritage sites and users of recreation areas and another leisure activities. However, some cultural heritage sites in Ayutthaya historic city require users to pay an admission fee, while some places especially recreation areas are freely open to the public. The number of visitors is important for an estimation of the amount of monetary donation. The study used information about the number of visitors, which was derived from two different sources, in the estimation: 1) a figure of visitors based on the volume of admission ticket sales at five heritage sites of Ayutthaya historic city in 2008; and 2) a figure of visitors of Ayutthaya Province in 2008, with an assumption that every visitor to the province stopped by the heritage sites in the historic city. Table 4 projects the annual amount of monetary donation, if the donation program for preserving Ayutthaya historic city from floods is launched. The amount of money that the Office of Ayutthaya Historic City can get from the monetary donation is at least 76 million Baht, and it can rise to 576 million Baht varying by numbers of tourist and the percentage of willingness to donate of visitors (See fig. 3).

$$E(cvm) = \Phi\left(\frac{Z}{\sigma}\beta\right)Z\beta + \alpha\phi\left(-\frac{Z}{\sigma}\beta\right)$$

$\Phi$  is CDF of Standard Normal  
 $\phi$  is PDF of Standard Normal  
 $Z$  is Average of socio-economic variables  
 $\beta$  is Socio-economic coefficients  
 $\sigma$  is Sigma values

**Fig. 2 Tobit Formula**  
(source: udomsakseenprachawong, nd) <sup>5)</sup>

*Scenario 1: Minimum donation*  
 Sum = (WTP<sub>th</sub>\* N1<sub>th</sub>\* W1<sub>th</sub>) + (WTP<sub>f</sub>\* N1<sub>f</sub>\* W1<sub>f</sub>)

*Scenario 2: Maximum donation*  
 Sum = (WTP<sub>th</sub>\* N2<sub>th</sub>\* W2<sub>th</sub>) + (WTP<sub>f</sub>\* N2<sub>f</sub>\* W2<sub>f</sub>)

Sum = Total amount of monetary donation  
 WTP<sub>th/f</sub> = The average amount of donated money per person for Thai (th) or forigner (f)  
 N1<sub>th/f</sub> = Number of Thai/foreign visitors with regard to admission ticket sales in 2008  
 W1<sub>th/f</sub> = The percentage of Thais/foreigners who were willing to donate to the existing donation boxes  
 N2<sub>th/f</sub> = Number of Thai/foreign visitors with regard to the number of visitors of Ayutthaya Province in 2008  
 W2<sub>th/f</sub> = the percentage of Thais/foreigners who mentioned in the questionnaire that they are willing to donate

**Fig. 3 A formular for the estimation of monetary donation**  
(source: by authors)

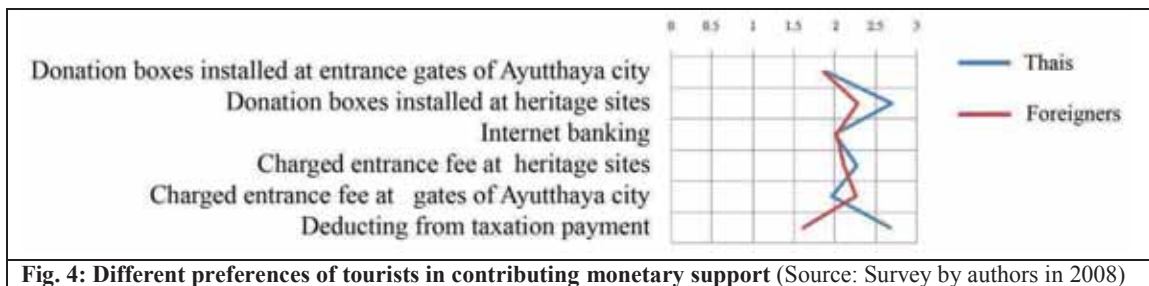
**Table 4: An estimation of donation amount** (source: a survey by authors in 2008)

Scenarios	Amount of donation (Baht/ Year)		Donation willingness rate (Percent)	
	Bottom margin	Top margin	Thai	Foreigners
Estimation based on real tourists' donation in current donation boxes on the survey dates	76,935,421	243,994,937	54.3	10.34
Estimation based on individual mention on willingness to donate in the questionnaire	242,386,825	576,031,684	97.14	86.21

**(4) The scenario of calling for monetary donation**

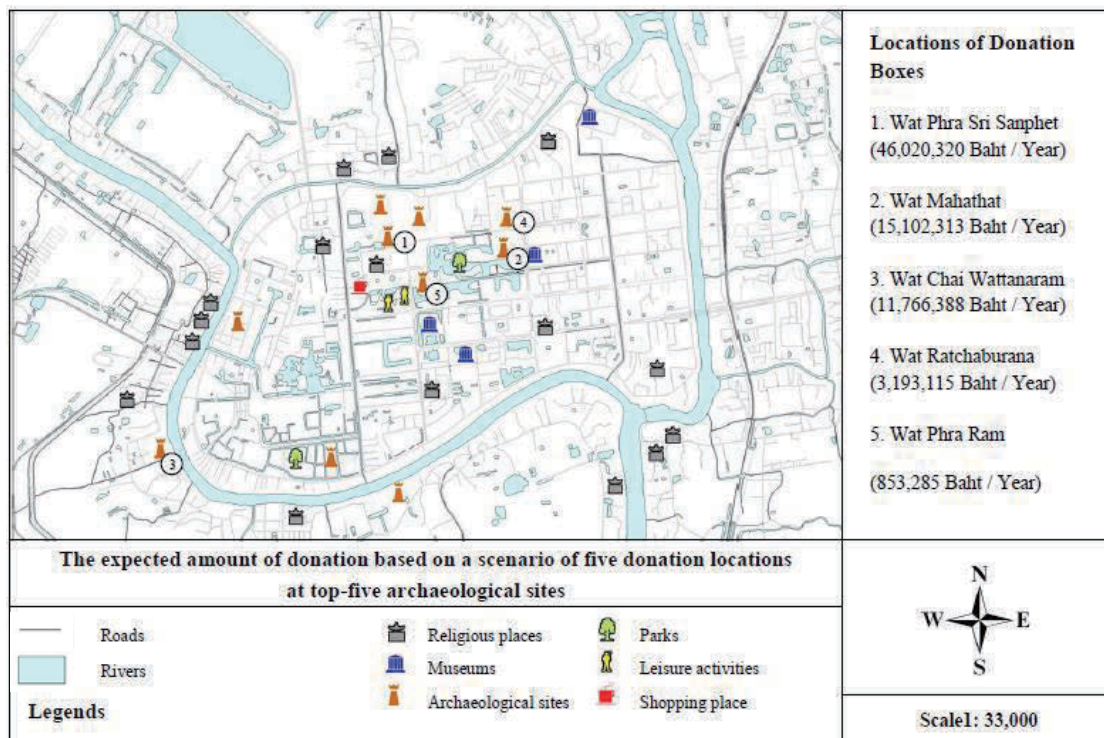
The study focuses on the preference of tourists in various donation methods to identify potential alternatives so than the Office of Ayutthaya Historic City can implement it. In the questionnaire, Respondents were asked whether they prefer five donation methods as follows; 1) installing donation boxes either at entrance gates of Ayutthaya Island or at each heritage site, 2) paying through Internet-banking, 3) increasing admission fees of each heritage site, 4) collecting the city admission fee of Ayutthaya Island (the historic city covering almost half of the island), and 5) adding taxation for preserving the historic city (see Fig. 4).

As a result, the study found that tourists both Thai and foreigners all agreed to the installation of donation boxes at each heritage site as the most common donation method that they preferred. Most of respondents argued that the voluntary donation through a donation box was the best way to collect extra financial support from tourists without brothing unwilling persons to pay more through an increase in admission fees, while some respondents gave a reason that they wanted to keep the admission fees low in order to make it affordable for everyone. In addition, 102 out of 128 respondents noticeably stated that they would prefer to donate to the specific donation boxes indicated the purposes of donation: for example, donation boxes for an electricity fee, a water supply fee, physical improvements, and flood mitigation strategies. The study recommended installing donation boxes at 5 heritage sites. In this way, the administrative office could gain at least 76.935 million Baht(See fig. 3 and table 4): more than half of the donation would be agglomerated at Wat Phra Sri Sanphet, a temple number 1 in figure 5.



**Fig. 4: Different preferences of tourists in contributing monetary support** (Source: Survey by authors in 2008)

Note: Strongly agree = 3, agree = 2, disagree = 1 and strongly disagree = 0



**Fig. 5: The study area and the expected amount of donation based on top-five archaeological sites** (source: by authors)

## 5. Conclusions

The idea of receiving monetary donation for protecting the Historic City of Ayutthaya and Associated Historic Towns from flood risks is implementable. There are a plenty of pathways to collect the money from tourists, instead of focusing only donations from local residents. In order to ensure the annual amount of monetary donation and the factors which influence on tourists' donation willingness, the questionnaires were distributed. The study developed an integrated technique for exploring donation willingness through the mixture utilization of a bidding technique for setting double-bounded dichotomous choice and ending up with the open-ended question in order to avoid exaggerated answers. Data from a questionnaire distribution were analyzed by using Tobit model, compare mean statistical tests and a descriptive statistic. Contingent Valuation Method (CVM) with Tobit model was used to indicate tourists' willingness to pay (WTP). With the valuation mattering for effective financial management policies towards conservation strategies against floods, the estimated annual donation was at least 76.935 million Baht varied upon the number of tourists and the proportion of donation willingness.

On the other hand, donation willingness of tourists also depends on individual socioeconomic characteristics, personal perception on the historic city and their sightseeing behaviour. The differences in nationalities, ages, monthly income, levels of education are defined as significant factors dominating on their donation willingness. Whereas, the tourists, who spend over 2 hours in the historic city, tend to have low satisfaction in travelling and low-donation willingness because of unattractive activities, lack of physical maintenance in some areas and lack of leisure infrastructure, for example, shadow of a tree on walkways, and another street furniture. As a result, those tourist perceptions on historical and aesthetic values in the historic city affect on their WTP. Therefore, we have to think out activities to increase tourists' perception in the historic city, which lead to an increase in WTP of tourists.

**Acknowledgment:** We would like to thank the various people who provided useful advices and helpful assistance during the several months in which this endeavor lasted. Furthermore, we are pleased to thank local government officers of the Office of Ayutthaya Historic City. Many thanks to: Ms. Puntita Tanwattana, Ms. Umpiga Shummattayan and Asst. Prof. Dr. Satoshi Otsuki for the valuable advices. Finally, never enough thanks can be given to anyone who discussed this project with us.

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