

Values of Ayutthaya Historical Park

Promoting Willingness to Pay for Flood Protection

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Values residents and tourists find in Ayutthaya Historical Park (AHP) for paying (donating) money for protecting AHP from flood had not been treated in the previous studies on economic valuation of AHP. This study found differences in cognitive factors which make people willing to pay for AHP among overseas and domestic tourists and local residents: domestic tourists evaluated AHP's historical and architectural value for WTP; overseas tourists evaluated AHP's cultural value and value as a World Cultural Heritage; and local residents value AHP as a famous tourism destination and a World Cultural Heritage. The findings form a foundation to find ways to raise their values.

Keywords : *Ayutthaya Historical Park, Flood, Value, WTP (Willingness to Pay)*

1. The 2011 Flood Struck Thailand Beyond Expectation

(1) Thailand as a Flood-prone Country

Thailand had been struck in 2011 by flood which it had experienced first time for some fifty years. Not only Thai private firms, but also many from overseas especially from Japan, which are located in the vicinity of Bangkok, had forced to close temporarily their business operation by inundation. Heavy rain combined with multiple tropical storms throughout the extended rainy season as well as increase in the amount of water drainage from dams in the north part of Thailand and a tidal wave, caused the extensive flooding^{1) 3)}. As shown in Figure 1, a geographical feature of the center of Thailand, or less elevation of altitude, slowed down water to go out to the sea. When we define damage as direct impacts on physical assets, products, raw materials, machinery, and properties; and loss as reduced or lost production opportunities, i.e. loss of income, reduced production efficiency, and increasing expenditures over a period of time, the total damage and losses from the flood amounted to as much as 1.43 trillion THB (some 46.5 billion USD), took its toll on more than 680 lives (mainly by electrocution) and affected the population estimated at 13.57 million people in 66 out of the country's 77 provinces¹⁾.

The map on the top left in Figure 2 shows a flood risk map in the center of Thailand. On the contrary, the top right map presents flooded areas in the same area as of 28th October, 2011. And as time went, the flooded area moved to the downstream as shown in the map on the bottom of Figure 2. These maps clearly show that the 2011 flood was beyond expectation.

Thailand is one of the flood-prone countries. The 1942 flood reached inundated level in Ayutthaya up to 5.51m and submerged Bangkok for two months, the 1983 flood brought about the country inundated for five

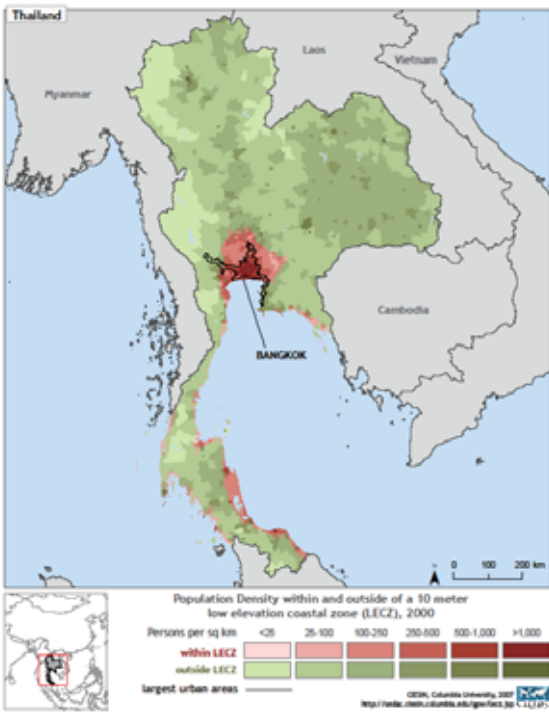


Fig. 1 Population Density within and outside of a 10 meter low elevation coastal zone⁸⁾

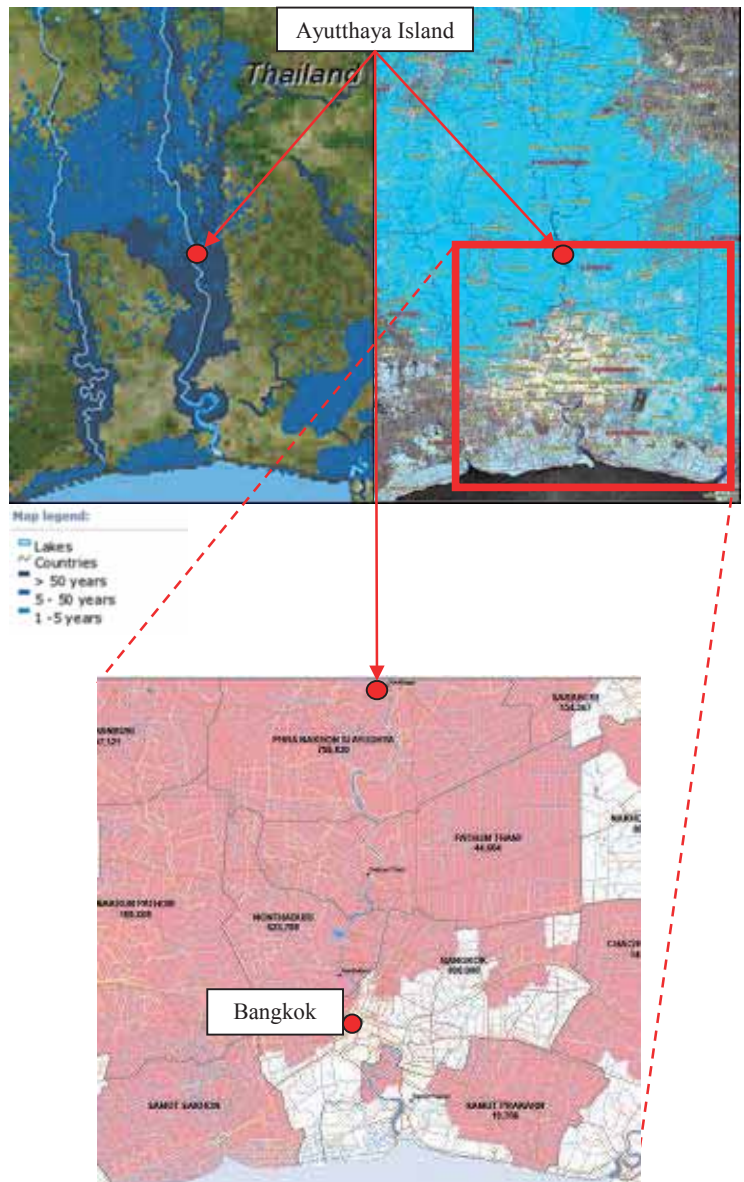


Fig. 2 Map of Thailand Related to Flood

Top left: Flood risk map in the center of Thailand, showing flood expected to happen lesser than once every 50 years as darkest blue, one happening every 5-50 years as blue, and one every year to every five years as blightest blue²⁾;
 Top right: Flooded areas in the center of Thailand as of 28th October, 2011 , showing inundated areas as blue (top right)⁹⁾;
 Bottom: Flooded areas shown as red color in and around Bangkok as of 10th November, 2011¹⁰⁾



Fig. 3 Cultural heritages fenced not to let tourists approach because of damage by the 2011 flood
 Source: Authors (taken in March, 2012)

months, and the 1995 flood witnessed unprecedented rainfall causing inundating the largest recorded area of 5,400m³. Even though the 2011 flood area was smaller than the one affected in 1995, its impact on life and the cost of damage was unprecedented¹⁾. Apart from such the big flooding, Thailand has experienced smaller but more frequent floods³⁾.

(2) Damage and Loss of Tourism Industry and Cultural Heritage

This massive disaster left damage and losses on tourism sector which revenue accounted for 10.14% of DGP in 2009¹⁾. According to GFDRR (Global Facility for Disaster Reduction and Recovery)’s rapid assessment¹⁾, the total damage on tourism sector by disaster effect is at 5,134.4 million THB, and losses at 89,673.4 million THB. It also caused damage and losses on cultural heritages in Thailand as much as 4,428.79 million THB and 3,076.48 million THB respectively. Among others, Ayutthaya Province has more than 60% of affected FAD (the Fine Arts Department [under Ministry of Culture]) sites¹⁾. According to an interview with an officer of FAD, the direct damage on cultural heritage in Ayutthaya Historical Park (AHP), designated as a World Cultural Heritage by UNESCO in 1991, amounts to about 700 million THB. Some of the cultural heritages damaged by the flood are presented by Figure 3.

2. Objective of the Study

(1) Lack of Study on Values Recognized by people for WTP

Previous studies have calculated economic value of AHP by using the Contingent Valuation Method (CVM) and Willingness To Pay (WTP)^{4) 7)}, however, they have not treated with what values residents and tourists find in AHP for paying (donating) money for protecting AHP from flood. Against this background, the purposes of this study is to present differences in cognitive factors make people willing to pay for AHP according to each actor which is defined later. After finding the differences in this study, we can go to the next step to identify policies or strategies needed for raise the economic value of AHP evaluated by the actors.

(2) Selected Case Areas and Sites

As mentioned above, making use of questions asking WTP and reasons why willing to pay, the study explores what cognitive factors respondents make priority of to protect AHP from flood. To do so, we had interviews with some key persons and distributed questionnaires to both of tourists and residents inside the

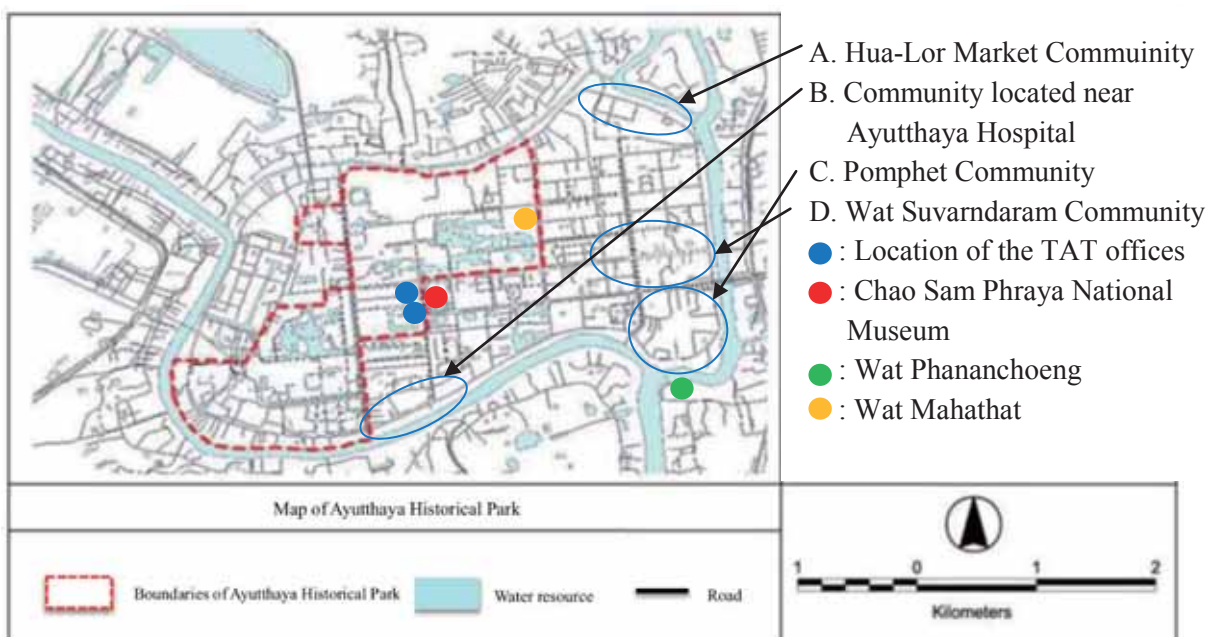


Fig. 4 Map of Ayutthaya Island Showing the locations of Interviews and Questionnaire Sueveysinside the Ayutthaya Island⁷⁾

island. As to tourists, we left the questionnaires in two offices of Tourism Authority of Thailand (TAT) in Phra nakhon Si Ayutthaya Office and asked TAT officers to distribute them to tourists visiting the offices. As for residents, we distributed residents in four communities with different characteristics to get a broad-range of respondents affected by tourism: A. *Hua-Lor Market Community* where mainly local people visit; B. *Community located near Ayutthaya Hospital* where mainly overseas tourists visit; C. *Pomphet Community* which is a residential area, and; D. *Wat Suvarndaram Community* where mainly local tourists visit. Their locations including some sites at which interviews were held are illustrated in Figure 4 and the numbers of respondent are in Table 1. Before going to the detail, as its background, the study introduces how the 2011 flood in Ayutthaya Island happened in the next chapter.

Table 1: Respondents of the Study

Respondent Type	Number of Sample	Breakdown	Number of Sample
Domestic Tourist	73	First Visit to Ayutthaya	22
		More than once	46
Overseas Tourist	61	First Visit to Ayutthaya	57
		More than once	3
A. Hua-Lor Market Community	73		
B. Community located near Ayutthaya Hospital	74		
C. Pomphet Community	50		
D. Wat Suvarndaram Community	50		

Note: Some respondents did not answer how many times they have visited AHP. Therefore the total number of samples and ones of breakdown do not agree with each other.

3. The 2011 Flood in Ayutthaya Island

(1) Causes of the Flood in Ayutthaya Island

According to interviews, held by the authors in March, 2012, with residents inside Ayutthaya Island and officers of Ayutthaya Municipality, following facts were identified in terms of inundation inside Ayutthaya Island.

Ayutthaya Island has a road running inside shores of the Island which functions as a dyke. It is every year that flooding outside the road happens in this island, but less often to get flooded the inside. Since 1995, the island had not experienced such the serious flood.

The Island has two water gates which let water run from the north river through the island to the south river. The water gate located on the northwest of the Island had been broken five or six months before the 2011 flood, keeping to close in the flood. One month before the water came into the island (as explained in detail later, it was on 7th October, 2011), Ayutthaya Municipality had brought soil to make dykes and put sandbags on the island's shore to prepare for the big amount of water coming. In addition, the water gates were also reinforced and dykes and gates were monitored for 24hours every day. Therefore dykes were keeping repaired every time when they got damage. However, there had been no announcement from the government about how many cm of flood was expected so that residents inside the island reacted based on the experience of the 1995 flood, or 40cm inundation. And another problem was that the municipality could not make thick dykes as it wants. In the northeast of the island, shop owners such as street vendors did not want to put sandbags or soil to keep their business space in the market along the river. Even though other residents put sandbags, shop owners replaced them who also live in the northeast of the island. Then, finally the shop owners admitted to put soil for dykes and sandbags on the northeast. Therefore, higher dykes at 1.5m height were built in the beginning of October, but with different materials of soil from the ones had been already prepared. Moreover, in this area, soil for higher dykes was put later than other areas, so they were not as solid as ones in other places.

Ayutthaya in 2011 has experienced the water height at 2m higher than usual. In addition, the government opened a dam, announcing 50cm higher water level and reaching Ayutthaya in three to five days. Even though water had already come into the island through pipelines, three to five days after the announcement, at the night of 7th October (10pm), soil dykes in the northeast were broken and eventually water came inside like rapid streams. It took only about 1 day for flood to reach from the northeast to the southwest of the island which is the lowest land in the island. All of land in Ayutthaya Island inundated from 50cm to 2m. It took two months for the island to get rid of all of the water.

(2) Influence of the Flood on the Number of Tourists

Interview with people related to cultural heritage sites, such as staff at ticket booths, found that the number of tourists has almost recovered already after the flood. The director of TAT in Ayutthaya Office mentioned the decrease in the number of tourists to 50% and its recover in March, 2012, which, however, was not at 100% yet. Staff of cultural heritage sites insisted the recover almost at 100% (staff at the ticket booth of Chao Sam Phraya National Museum), the decrease still in March, 2012 (a small shop owner in the site of Wat Phananchong), or the number more than usual inasmuch as some came to see the aftermath of flood (staff at the ticket booth of Wat Mahathat).

4. Values of Ayutthaya Historical Park for WTP of Residents and Tourists

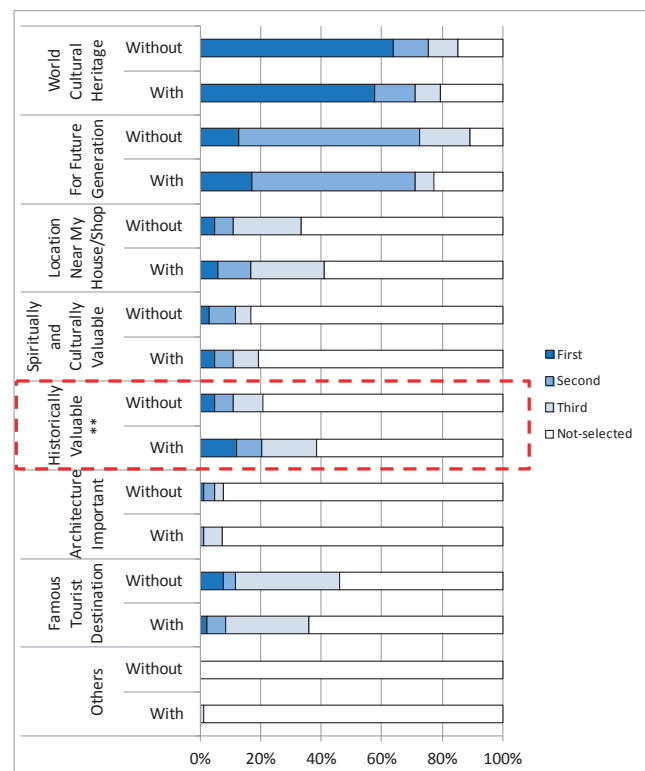
(1) Values Recognized by Residents for WTP

In terms of residents' WTP, previous studies mention the positive relation between WTP and income of residents living on evaluated site^{5) 6)}. With focus on a financial aspect, the study analyzed the relation of residents' family income in normal days (respondents filled out round yearly income at THB) to WTP to protect AHP from flood (0, 5 or less, 10, 20, 30, 50, 70, 100, 150, 200, 500, 1000 or more [unite: THB]). However, it is the weak relation, Table 2 shows the more family income residents have, the more money they are willing to pay for AHP, as previous studies found.

Among residents willing to pay for AHP regardless of whether to have any kinds of business or not (including both business related and unrelated to tourism), questionnaires asked respondents to rank appropriate reasons from the first to the third why they are willing to pay for AHP against flood. Frequently chosen reasons for willingness to pay are: because it is a world cultural heritage, because I want to conserve it for future generations, because is it located near my house/shop, and because it is known as a famous tourist destination, which detail results are shown in Figure 6 (though this paper has no space to show

Table 2 Result of Simple Linear Regression analysis of yearly family income and the amount of WTP for residents

Dependent Variable	Amount of WTP
Independent Variable	Yearly Family Income
R	0.247
Adjusted R Square	0.056
N	198
Sig.	0.000
t-value	3.568
Coefficient	8.677E-05
Standardized Coefficient	0.247
Constant	117.286
$Y (WTP) = (8.677E^{-5}) * (YearlyIncome) + 117.286$	



n=185 (Without: 83, With: 102)

**: $p < 0.05$ (t-test)

Fig. 6 Difference in reasons for WTP between residents with business in Ayutthaya Island and without

the detail result, among eight reasons, only “because it is a world cultural heritage” have positive correlation with the amount of WTP). The third frequently answered reason (location) correspond to a finding of the previous study on WTP⁵). However, it is influenced much by their residence location which we cannot intervene by policies or strategies. Therefore the study will not include it hereafter. In terms of the WTP reason on historical value, there can be seen a significant difference between those who have their business and without, but this reason itself is not a major reasons for WTP.

(2) Values Recognized by Tourists for WTP

In terms of tourists’ WTP, a previous study held in Ayutthaya shows no relation between their income and the amount of WTP in one trip⁴). With focus on a financial aspect again and divided samples into domestic tourists and overseas, the study analyzed, by simple linear regression analyses, relations between WTP (the same choices as the last section) and yearly income (all were converted into JPY based on the currency exchange rates as of 29th April, 2012), only to find no relation (many of them did not answer their income so the numbers of samples are small).

But it is made clear that the difference in the amount of WTP for AHP between domestic tourists who visited Ayutthaya first time and who have more than once, and overseas who visited first time (we eliminated overseas tourists having visited more than once for its number is only 3). More ratio of domestic tourists tend to be willing to pay significantly than that of overseas, especially domestic first-time visitors as shown in Figure 7 (left). However, in terms of the amount of WTP, Figure 7 (right) shows no significant difference (both of which were analyzed with analysis of variance [ANOVA]).

Even though the survey lacks of respondents who are overseas tourists having come to Ayutthaya more than once, Figure 8 made clear the difference in reasons why they are willing to pay for AHP by asking the same question as ones asked to residents. It was found by a nonparametric analysis for the small number of samples in domestic tourists visiting AHP first time. For many of domestic tourists regardless of having come to Ayutthaya only once or more, AHP’s architectural and historical value make them willing to pay. And also they are also willing to pay for

Table 3 Result of Simple Linear Regression analysis of yearly family income and the amount of WTP for tourists

Overseas	
Dependent Variable	Amount of WTP
Independent Variable	Yearly Family Income
R	0.044
Adjusted R Square	-0.057
N	19
Sig.	0.859
Coefficient	1.377E-06
Standardized Coefficient	0.044
Constant	99.298

Domestic	
Dependent Variable	Amount of WTP
Independent Variable	Yearly Family Income
R	0.138
Adjusted R Square	-0.035
N	20
Sig.	0.561
Coefficient	1.631E-05
Standardized Coefficient	0.138
Constant	48.371

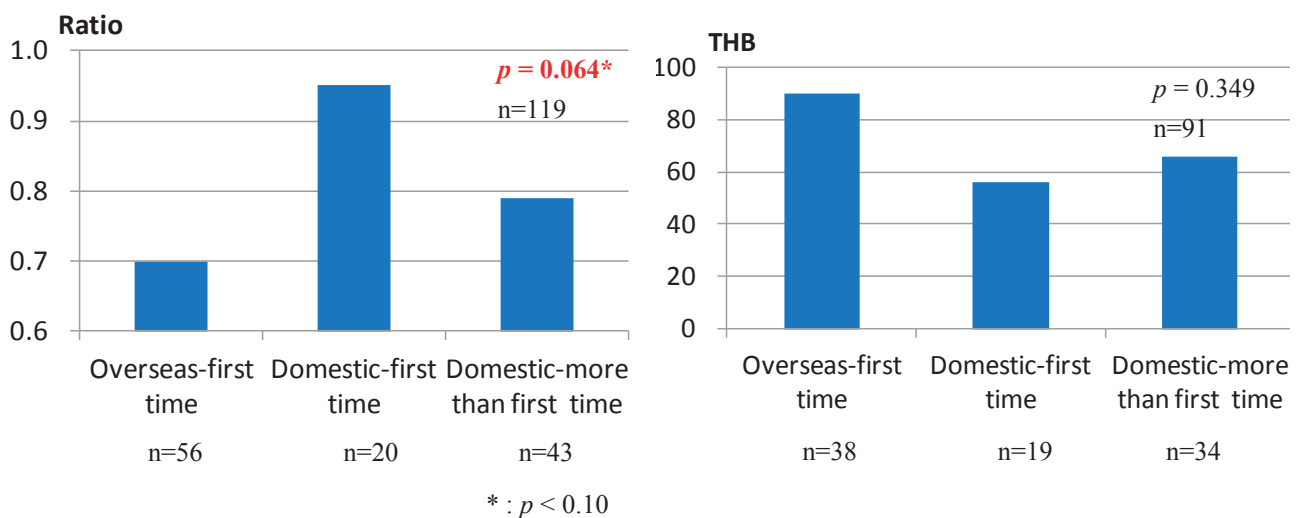


Fig. 7 Ratio of those who are willing to pay in each tourist category (left) and the mean of the amount of WTP in each tourist category (right)

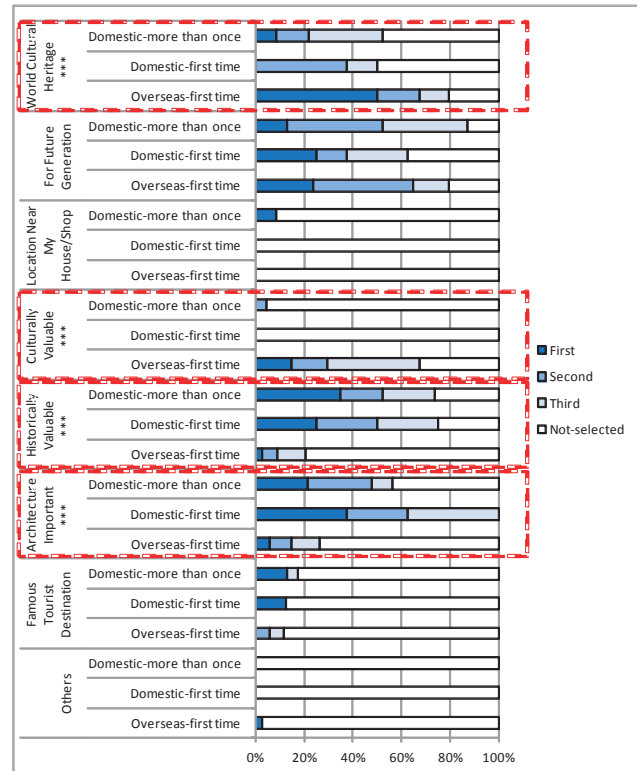
conserving AHP for future generations. On the contrary, for many of overseas tourists, AHP as a world cultural heritage and cultural value make them willing to pay, together with their willing to conserve AHP for future generations (though this paper has no space to show the detail result, among eight reasons, no reason has correlation with the amount of WTP in any tourist categories).

(3) Grouping Values for WTP among Local Residents and Tourists in Ayutthaya Historical Park

The previous sections showed that domestic tourists want to protect AHP by its historical and architectural importance, but, on the other hand, overseas tourists want because of its cultural importance and its designation as a World Cultural Heritage ('conserving for future generation' is not related to AHP's value so this section illuminates it). This comparison shows domestic and overseas tourists have different interests in AHP and therefore we need different approaches to raise the economic value of AHP evaluated by tourists. And the local residents do for its designation as a World Cultural Heritage and its feature as tourism destination (also illuminating 'conserving for future generation'). Even though this grouping cannot find ways to promote the values and it could not identify which factors have more effect on raising the amount of WTP, it clearly presents the necessary and different factors to be considered for the economic value of AHP, as shown in Figure 9.

5. Conclusion

In this study, we firstly showed the situation of the 2011 flood hitting Thailand which was beyond expectations. Against the background that previous studies on economic valuation of AHP have not treated with what values residents and tourists have in AHP for paying (donating) money for protecting AHP from flood, this study illustrated differences in cognitive factors make people willing to pay for AHP among actors. Then, it presented the necessary factors to be



n=65 (Domestic-more than once: 23,
Domestic-first time: 8,
Overseas-first time: 34)

***: $p < 0.01$ (nonparametric analysis [Kruskal-Wallis Test])

Fig. 8 Difference in reasons for WTP among tourist categories

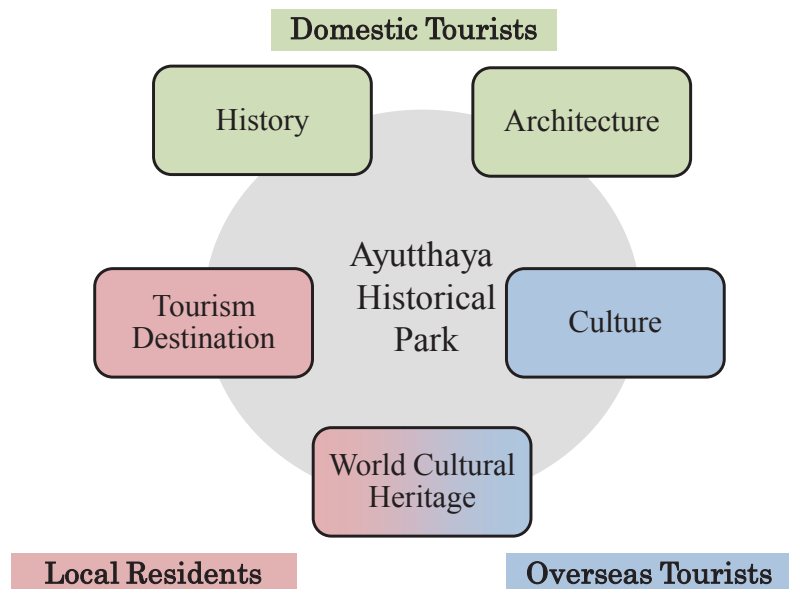


Fig. 9 Grouping Values for WTP among Local Residents and Tourists in Ayutthaya Historical Park

considered to raise the economic value: domestic tourists evaluated AHP's historical and architectural value for WTP; overseas tourists evaluated AHP's cultural value and make much of its designation as a World Cultural Heritage; and local residents value AHP in terms of its condition as a famous tourism destination and designation as a World Cultural Heritage.

These findings form a foundation of further study attempting to find policies and strategies to raise values of cultural heritages. Taking an example, making a brochure explaining more about culture of AHP for overseas tourists who put more value on it, would raise the total value of AHP evaluated by overseas tourists, by making the larger number of overseas tourists willing to pay for AHP. For domestic tourists, description on AHP's history and architecture would raise the total value of AHP evaluated by domestic tourists, by making the larger number of domestic tourists willing to pay for AHP. In addition, the more attractive for tourists AHP is, the higher value would be shown by local residents.

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