Assessment of Intangible Cultural Heritage Value of Baishatun Matsu Pilgrimage

Shu-Ya Ou* and Ya-Wen Chiueh**

Abstract

Located in the town of Dongxiao in Miaoli County, Baishatun is a small coastal village. Like other seaside settlements in Taiwan, agriculture and fishing are the main sources of livelihood; residents also worship the goddess Matsu. Each year, the Baishatun Matsu makes a pilgrimage to Beikang; this is what is considered the Baishatun Matsu incense-offering ritual. This annual event is a longstanding one and steeped in tradition. The believers walk and offer incense; the route of the ritual is different each year as it is "as per instructed by the goddess."

The intangible cultural heritage benefits brought about by the Baishatun Matsu Pilgrimage cannot be measured by the regular market goods prices; it can only be calculated using non-market good assessment methods. The Baishatun Matsu's incense promotion activity is to maintain its non-use value and use value through Pilgrimage activities. Which means that the Pilgrims (who have use value) maintain the non-use values of the non-users (non-Pilgrims). Consequently, the travel cost method has become the assessment method for evaluating non-use value of intangible cultural heritage. The Travel Cost Method (TCM) generally cannot

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assess non-use value. However, only if the Baishatun Matsu Pilgrimage keep on conduct, the use value could have connected with option value, existence value and bequest value, the nonuse value. This article uses the Travel Cost Method (TCM) to evaluate the intangible cultural heritage benefits of the Baishatun Matsu Pilgrimage activity, and creates a new benefit evaluation aspect of the travel cost method.

Moreover, the study uses TCM to assess the intangible cultural heritage benefits of the Baishatun Matsu Pilgrimage and combines it with the multi-criteria decision-making method (MCDM) to understand the proportion of six major values: "spiritual satisfaction," "passing the torch," "leisure and tourism," "hometown sense of belonging," "physical and mental exercise," and "emotional exchange" in the hearts of the ritual participants to come up with the benefits brought about by the Baishatun Matsu Pilgrimage.

The study uses the travel cost method as a base and utilizes the truncated Poisson model as the analytical tool to calculate the consumer surplus (CS) of ritual participants. Results show that, combined with the proportion obtained from the multi-criteria decision-making method, the direct use value of each person each time is NT$17,623 and non-direct use value is NT$30,174. What makes this different from the other studies is that the use of the multi-criterion decision-making (MCDM) weights with the assessment results of the travel cost method (TCM) to estimate indirect use value, which negated the limitation of the travel cost method only being able to calculate direct value. It is hoped that the results of this study may serve an important reference for Baishatun Gong-Tian Temple or government agencies in making policies for the protection and preservation of intangible cultural heritage.

Keywords: Baishatun Matsu Pilgrimage, Baishatun Matsu Incense-offering Ritual, Intangible Cultural Heritage, Travel Cost Method (TCM), Non-use Value

JEL Classification: I31, Q51, Q57, Z1, Z12

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I. Introduction

Taiwan is an island and as such, the worship of the goddess Matsu is prevalent and widespread. Temples devoted to the worship of the goddess can be seen in parts of Taiwan. The birthday of Matsu is on the 23rd day of the third month of the lunar calendar. Every year, from the first to the third month of the lunar calendar, aside from organizing celebratory activities, Matsu temples also hold incese-offering and pilgrimage activities. Among these, the Baishatun Matsu Pilgrimage, the Dajia Matsu pilgrimage, and the Beikang Chaotian Temple Matsu reception are the three major religious activities and have been designated as intangible cultural heritage (Bureau of Cultural Heritage, Ministry of Culture, 2020a, 2020b, 2020c). Baishatun is a small coastal fishing village in Miaoli County's Dongxiao Town. During the reign of the emperor Qianlong, the colonizing ancestors of Baishatun enshrined a cotton made Matsu in common civilian families until construction of the Gong-Tian Temple was completed in the second year of the reign of the emperor Tongzhi when the temple became the center of faith (Lin, 2014). It is not clear when the Baishatun Matsu Pilgrimage started, but the activity has been going on for more than 150 years (Yu, 1996; Tsai, 2005).

Although the incense-offering ritual in many times have undergone transformations over the years, the Baishatun Matsu Pilgrimage has retained its original tradition of walking to offer incense. The route of the incense-offering ritual is not fixed; worshippers walk according to the instructions from the goddess. This unique feature has not only attracted more and more

believers to participate in the activity, but it also continues to serve many religious purposes such as fulfilling personal wishes, "paying back," and asking for peace and prosperity, accompanying Matsu on her trip, witnessing miracles, seeking a break from stress, practicing physical and mental relaxation, caring for fellow believers, coming of age for young believers, bringing relocated worshippers closer to their roots (Tsai, 2005; Lu, 2008). Consequently, the value of the Baishatun Matsu Pilgrimage may be categorized into six types, "spiritual satisfaction," "passing the torch," "leisure and tourism," "hometown sense of belonging," "physical and mental exercise," and "emotional exchange." In addition, the faith and traditions of Matsu have been registered with the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as an intangible cultural heritage of mankind, acknowledging the value of such heritage to human civilization. How, then, should the Ministry of Culture and Gong Tian Temple work to preserve and pass down this intangible cultural heritage?

Non-market good have no market price; because the value includes use and non-use values, its value must be estimated using non-market valuation method and goods. The travel cost method (TCM) and the contingent valuation method (CVM) are the most frequently used methods in assessing non-market wealth and goods. TCM is a revealed preference assessment method; it looks at the value of the travel costs incurred by the traveler going to the recreational area to participate in travel activities and uses the consumer surplus (CS) to assess recreational benefits. The contingent valuation method is a stated preference assessment method; it seeks to understand expenditure preferences of the traveler or selection preferences in the number of commercial products purchased through direct surveys (Liu, 2013). In terms of natural resources, aside from assessing use and non-use values, the CVM can also assess the different benefits of natural resources. TCM is not only unable to assess the non-use value of natural resources; it can also only assess the use value of the recreational aspect when assessing the use value of natural resources.

The intangible cultural heritage benefits of the Baishatun Matsu Pilgrimage have never been assessed. There is also a disparity in the definition of cultural preservation benefits and non-use value of natural resources. This means that, being different from the regular natural

resources, a religious activity such as the Baishatun Matsu Pilgrimage should have the participation of worshippers in order to maintain its "heritage" and, through this, maintain its non-use value. This is why participants of this ritual not only receive use value, but also maintain non-use value at the same time.

　　This study is the first to assess the non-market benefits of the Baishatun Matsu Pilgrimage and the first to use the TCM. It conducts a survey on the participants and uses the information to calculate the use and non-use values of the activity, hoping to break through the limitations of only using the CVM to calculate the non-use value of resources. The study looks forward to its results being an important reference for Baishatun Gongtin Temple or government agencies in making policies for the protection and preservation of intangible cultural heritage.

II. Analysis of the Baishatun Matsu Pilgrimage

　　Steeped in tradition, the most unique feature of the Baishatun Matsu Pilgrimage is walking in routes "directed by the goddess" to offer incense. Not only is it annually the most important activity in Baishatun, but it is also one of the most significant religious activities in Taiwan. In 2008, the Bureau of International Tourism of the Miaoli County government designated it as part of intangible folk cultural assets and related artifacts (National Cultural Heritage Database Management System, 2020a). In 2010, the Bureau of Cultural Heritage of the Ministry of Culture designated it as important cultural assets and related folk heritage (National Cultural Heritage Database Management System, 2020b).

A.　History and Status of the Baishatun Matsu Pilgrimage

　　Due to a lack of written history in the early days, the exact origins of the Baishatun Matsu

incense-offering pilgrimage to Beikang are unknown. According to interviews conducted by Yu (1996) and Tsai (2005) with town elders and leaders of Gong Tian Temple, the ritual has a history of more than 150 years. Located in the town of Dongxiao in Miaoli County, Baishatun is a small coastal village. Like other seaside settlements in Taiwan, agriculture and fishing are the main sources of livelihood; residents also worship the goddess Matsu. According to the elders, during the reign of the emperor Qianlong, the colonizing ancestors of Baishatun enshrined a cotton made Matsu in common civilian families; this means that the worship of the goddess Matsu has been there longer than Gong Tian Temple (Lin, 2014).

Baishatun Matsu making the pilgrimage to Beikang to offer incense has had a long history. In the early days, because transportation was inaccessible, Baishatun residents could only do the pilgrimage walking; the route was also unplanned. The whole trip was carried out as per the instructions from the goddess; she alone decided where to go, when to rest, and where to spend the night, creating a process of offering incense dependent on Matsu directing from her palanquin. Under the goddess' guidance, "legs of incense burner" go forward, one step at a time. Even in this day and age, the Gong Tian Temple still goes on the pilgrimage using the same traditions of "offering incense by walking" and "doing the goddess' instructions." Baishatun residents believe that offering incense by walking is their way of keeping with tradition and a sign of their commitment to the goddess (Chen, 2014). It is also because of this unique feature that many "miracle" stories happen on the road. These incidents have spread the reputation of Matsu's feats, attracting more and more devotees to join in this activity (Lu, 2008). This is why the Baishatun Matsu Pilgrimage, which used to be exclusive to Baishatun residents, have spread to the whole of Taiwan. The number of participants has increased steadily, growing to more than ten thousand devotees in 2014-2019.

The Ministry of Culture establishes the Bureau of Cultural Heritage (hereinafter the "Bureau") to implement and supervise the conservation, maintenance, utilization, education, promotion, research and incentives with respect to cultural heritage. The Cultural Heritage Preservation Act is enacted to preserve and enhance cultural heritage, ensure the universal and equal right to participate in preserving cultural heritage, enrich the spiritual life of the citizenry, and promote the cultural diversity.
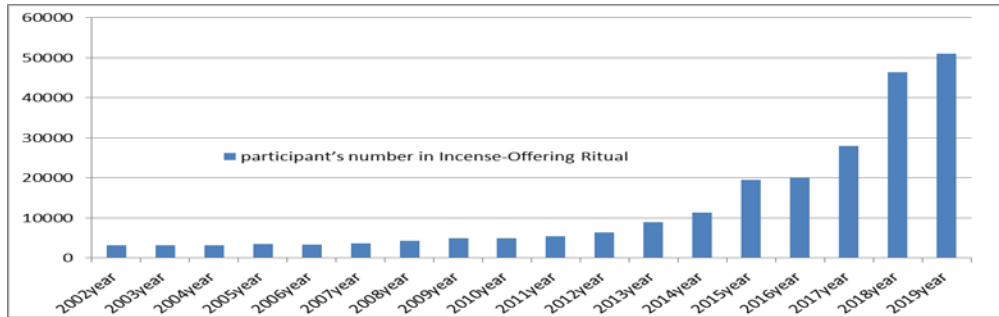
Fig. 1 　2002~2019participant's number in Value (consumer surprise) (bar chart)

Source: information from arch Gong Tian Temple offerings

"The folklore referred to in Item 4 of Subparagraph 2 of Article 3 of the Act includes various social practices in which ethnic groups or geographic regions voluntarily and collectively participate, that contribute to shaping social relationships and recognition, for example, customs of food, clothing, housing, transportation, education, and entertainment, as well as rites, ceremonies, and festivals related to traditional customs of life, seasonal rituals, and religious beliefs. "

(The Enforcement Rules of the Cultural Heritage Preservation Act: Article 12)

The Article 2 of the "Measures for the Registration and Abolition of Folk Customs" promulgated by the Ministry of Culture, "Folk Customs" should have a traceable history and a track of continuous accumulation and development. Article 3 of the law also mentions the registration of "important folklore", which is higher than "folklore". In addition to meeting the three criteria of "folklore," it must also have significant significance and high cultural representation. Integration: 1. It has cultural vitality under historical and social changes, and it continues to inherit and practice. 2. To participating places, communities or ethnic groups see it as an important part of social life or cultural identity.

Under this concept, if Taiwan 's folklore activities can be considered for its intangible cultural heritage status, scientific economic benefits are suggested to prove that its folklore activities are an important part of social life recognized by the participating places,

communities or ethnic groups, will provide members of the Cultural Assets Review Board with more powerful evidence reflecting the true local culture. The folk custom the Baishatun Matsu Pilgrimage is not simply a religious activity, but an impartment intrinsic value of the people in Taiwan.

B. Analysis of the Non-Market Benefits from the Baishatun Matsu Pilgrimage

a. Function of the Baishatun Matsu Pilgrimage

Lu (2008) and Tsai (2005) explored the functions of the Baishatun Matsu Pilgrimage based on his observations from participating in the ritual three times as well as interview results. Wang and Yang (2007), Chen and Lee (2017) explored the functions of the Dajia Matsu incense-offering ritual. The study believed that as far as the Baishatun residents are concerned, because their living environment are far from ideal and life was hard, they hope that they can participate in the incense-offering ritual and pray for a better life. Aside from this, when life is not going on smoothly, whether it is health or career problems, or it is just merely to be blessed by the goddess, residents will join the ritual activity to ask Matsu for help in solving the problems or to fulfill their wishes. In addition, some older residents join Matsu on her pilgrimage to give show their gratitude for past blessings. Yu (1996), Lu (2008), Tsai (2005), and Lin (2014) have all mentioned that, to Baishatun residents, accompanying Matsu on her pilgrimage to Beikang is not only an important tradition, it is also a "rite of passage" for young people. Most of the older people hope that, after fulfilling the mandatory military service for the males and before marriage for the females, they can go on the pilgrimage to give thanks for smooth sailing during the service for the former and to avoid being unable to join the pilgrimage due to a hectic family schedule or difference in the religious beliefs of the husband for the latter. Lin (2014) believed that, not planning the incense-offering route beforehand is an exercise in facing the future with courage. Moreover, it can provide a closer

emotional link with the hometown deity. There will always be a strong sense of belonging, whether one marries and moves far away or leaves home to work. This is why the Baishatun Matsu Pilgrimage is of major importance to the residents of Baishatun.

Many of the devotees of the Baishatun Matsu sign up to join the pilgrimage to ask Matsu for favors, ranging from peace within the family, success in business and career, health and physical wellbeing, and others. Participating in the incense-offering ritual is a way of showing devotion to the goddess (Tsai, 2005). Lu (2008) pointed out that the Baishatun Matsu incese-offering ritual relies on "palanquin trek" to determine the route, as well as the stops for resting and spending the night. Consequently, there are supposedly many "feats of miracle" occurring along the way, which have become the best forms of publicity to attract devotees. Some participants of the pilgrimage join because they either read about the miraculous incident involving "walking through ZhuoShui River" on the newspapers or watched about it on television. Attracted by this incident, some devotees hope that they can also experience the same miracle by joining the pilgrimage (Tsai, 2005) From this, it can be known that miraculous incidents occurring during the pilgrimage are one of the main factors attracting participants to join the activity.

According to the observations of Tsai (2005), some pilgrimage participants are theater performers. They use the incense-offering ritual as a way to cleanse their minds and spirits; some see it as a spiritual test, joining the pilgrimage to break through the physical and emotional limits. They believe that only by completing the journey can they pass the physical and emotional tests they have set for themselves.   Offering incense by walking is not an easy endeavor; it requires stamina and a strong will. Some devotees will actually do stamina training for one or two month prior to the event (Lu, 2007). During the long trek of the incense-offering journey, devotees take care of each other, mindful of the difference in level of physical and mental stamina of each person. Support is readily given, whether for physical discomfort or just a need for assistance. These acts of mutual caring and support are what allow devotees to continue moving forward (Lu, 2008; Lee and Lee, 2012).

From the abovementioned, it can be known that the functions of participating in the Baishatun Matsu Pilgrimage include devotees "fulfilling personal wishes and paying back;"

going through a "rite of passage" for young people; mutual caring among the devotees; religious bonding between relocated residents and their hometown; the devotees experiencing miraculous feats; the devotees' efforts to break through their limits, and; theatrical performers cleansing mind and body.

b. Value Analysis of the Baishatun Matsu Pilgrimage

The absence of monetary transactions in goods and services are considered non-market good, for example, natural environmental resources or cultural resources. To find the real value of these resources, aside from its value in economic markets, economists also assess the economic value of non-market good like cultural and natural environmental resources (Chen, 2013). Plaza (2010) believed that the economic value of cultural heritage includes market and non-market benefits. The value can be categorized as use value and non-use value; non-use value includes option value, existence value, and bequest value. Huang (1990) pointed out that the effects or satisfaction produced as a result of the consumers' (travelers) use of the resources are called benefits. The Baishatun Matsu Pilgrimage covered in this study does not merely satisfies the needs of the devotees to pray, give back, or travel (Tsai, 2005). In the process of offering incense, the physical exhaustion brought about by walking and the emotional bond established through mutual caring fulfill the function of physical/mental training as well an emotional exchange. To Baishatun residents and those who have relocated to other places, the Baishatun Matsu Pilgrimage is an important local festival. More than a source of pride, it is religious bond tying relocated residents to their hometown (Lu, 2008). Consequent, aside from participating annually in the pilgrimage, this activity is also an important heritage handed down to future generations. From this, it can be known that the value brought about by the different activities of the Baishatun Matsu Pilgrimage may be directly or indirectly used by people. This is why the study categorizes the values it brings about into two major types: use and non-use values, with the definitions and descriptions below.

(a) Use value

Refers to the value produced as a result of the participation of Pilgrims (visitors) in the

Baishatun Matsu Pilgrimage.

1. Direct value:

Refers to the value obtained through the use of the resource (Chen, 2013). Ho and Chiueh (2015) looked into traveling through Sinpu Village the recreation benefit visitors derived from the Sinpu trip is direct use value. Lopez-Guzman and Santa-Cruz (2016) analysis the relationship between the recreation value and intangible cultural heritage. The incense offering activity of this study can be considered a religious and cultural journey. Its direct use value is the benefit derived from use of the resource when devotees participate in the Baishatun Matsu Pilgrimage. The walking journey participants embark on in the name of the Baishatun Matsu Pilgrimage, trekking along numerous small towns and villages, producing travel and recreation value.

2. Indirect use value:

Refers to the value obtained indirectly when experiencing the resource activity (Lun, 2008). Gürlük and Rehber (2008) use the Manias National Park as a case study; the indirect use value provided by the wetlands is the benefit of ecological system, e.g. wood production. The indirect use value of the study is the benefit derived from indirect use of this activity when devotees take part in the Baishatun Matsu Pilgrimage. For example, by joining the walking journey of the incense-offering ritual, devotees feel spiritual satisfaction.

(b)Non-use value

The "Non-use value" can be categorized into option value, existence value, and bequest value.

1. Option value:

The "Option value" refers to the potential value derived from future use (Chen, 2013). Liu (2013) used the contingent valuation method to study the economic benefits of Hsinchu City's coastline. The benefit derived from visitors who have not been to Hsinchu City's coastline, but who are reserving the right to do so later is the option value. If the Baishatun Matsu Pilgrimage can continue on, devotees from all over Taiwan will be able to participate in the activity in the future. Consequently, the option value refers to the benefit derived from devotees reserving the right to be able to choose to participate in the Baishatun Matsu Pilgrimage in the future.

2. Existence value:

If people know that a certain environmental resource exists and can be protected, they would feel more emotionally satisfied. This emotional satisfaction and the willingness to pay the price is called existence value (Liu, 2009). Chen and Chiueh (2014) used the contingent valuation method to study the evaluation made by Hsinchu City residents on the Expo Taiwan Pavilion. The presence of the Expo Taiwan Pavilion unites the residents in a sense of identity, and makes the residents have feelings of fortuitousness and pride in the place they live, which is considered existence value. The public knows that the Baishatun Matsu Pilgrimage continues to exist, and feels emotionally satisfied about it, from which benefit is derived. For example: If the Baishatun Matsu Pilgrimage continues to exist, local residents who have left their hometown to work in other places may maintain their bonds with the hometown by joining this incense-offering activity.

3. Bequest value:

The "Bequest value" refers to that people who are willing to pay the price of protecting certain environmental resources for the future generation (Liu, 2009). For example, Ruijgrok (2006) used the CVM to calculate the bequest value of Holland's cultural heritage. To local people, The Baishatun Matsu Pilgrimage of this study is also connected to "coming of age." They hope that their descendants would be able to continue the tradition. To the rest of the public, they hope that this activity will continue to exist in the future so that their descendants may have a chance to join.

(c)The six major values of the Baishatun Matsu Pilgrimage

The researcher categorizes the Baishatun Matsu Pilgrimage into six types namely six major values: "spiritual satisfaction," "passing the torch," "leisure and tourism," "hometown sense of belonging," "physical and mental exercise," and "emotional exchange," as shown in Fig. 2. Among these, "spiritual satisfaction," "passing the torch," and "hometown sense of belonging" are the non-use values of the resource, which include option, existence, and bequest values.

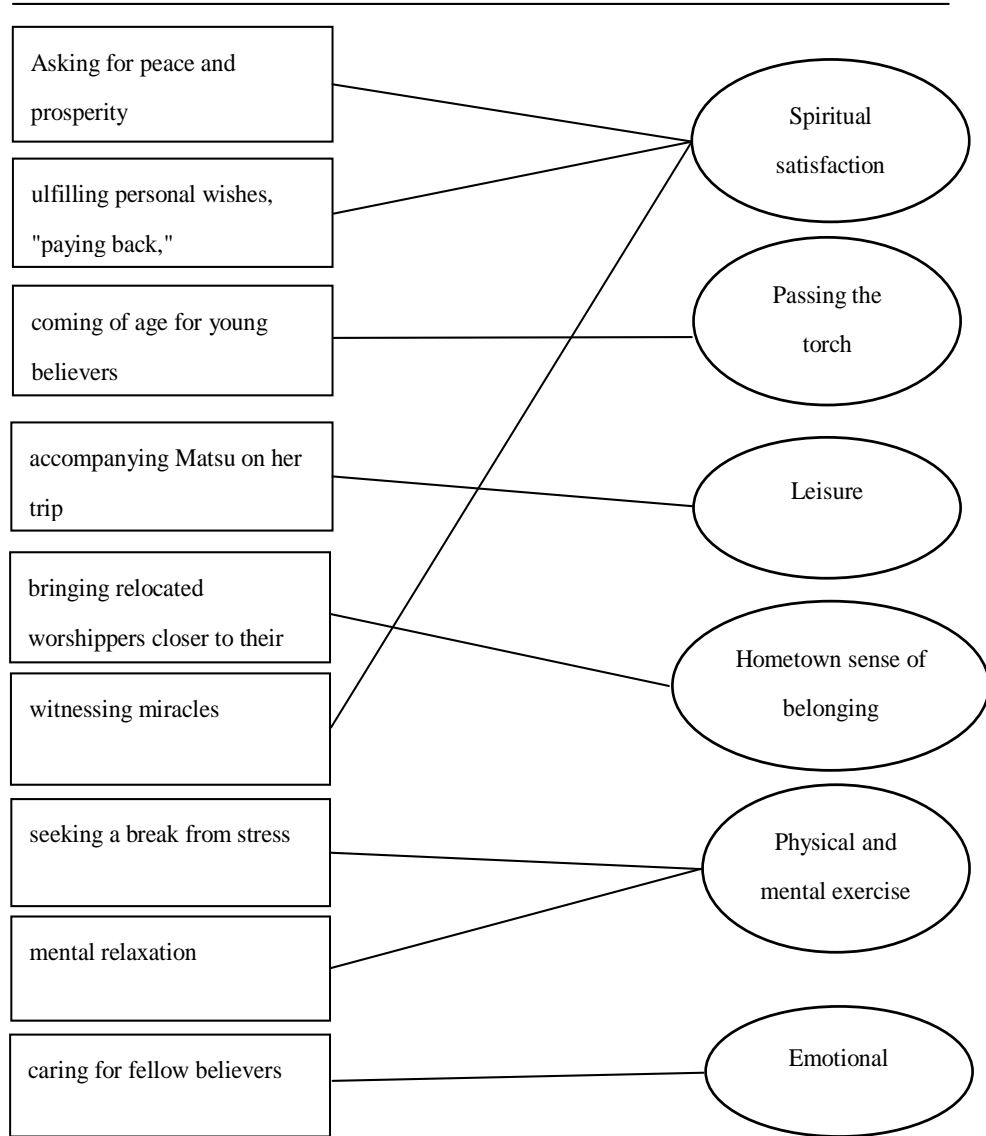|	
Asking for peace and prosperity	Spiritual satisfaction
ulfilling personal wishes, "paying back,"	Passing the torch
coming of age for young believers	Leisure
accompanying Matsu on her trip	
bringing relocated worshippers closer to their	Hometown sense of belonging
witnessing miracles	
seeking a break from stress	Physical and mental exercise
mental relaxation	
caring for fellow believers	Emotional

Fig. 2   Relationship Diagram of Benefits and Functions of Baishatun Matsu Pilgrimage

Source: Tsai (2005), Lu (2008) and collated by the study

The researcher categorizes the benefits provided by the functions of the Baishatun Matsu Pilgrimage into six types namely six major values: "spiritual satisfaction," "passing the torch," "leisure and tourism," "hometown sense of belonging," "physical and mental exercise," and "emotional exchange" to explore and understand the value of the activity.

1. Spiritual satisfaction

To express their inner faith, devotees participate in the walking journey of the Baishatun Matsu Pilgrimage, meeting the need to ask for favors and to pay back. Moreover, in this walking journey, they gain spiritual satisfaction when witnessing the miraculous feats of the Baishatun Matsu.

2. Passing the torch

Locally, the Baishatun Matsu Pilgrimage is not only a religious activity, but is also considered a "coming of age" activity for young people. Completing this journey represents that they would use a better attitude in facing life's responsibilities and challenges.

3. Leisure

The walking journey of the Baishatun Matsu Pilgrimage starts from Miaoli County and goes through Taichung, Changhua, and Yunlin. Participants are able to visit many small towns and villages, which also makes it a leisure and tourism trip.

4. Hometown sense of belonging

Baishatun residents, who have moved away for either work or marriage, consider Matsu as an important symbol of their faith. The annual pilgrimage is a grand event; no matter how busy they are, they would go back home and participate. Through coming home and joining the incense-offering ritual, they reinforce their connection to their hometown and deepen their emotional attachment to it.

5. Physical and mental exercise

The Baishatun Matsu Pilgrimage is primarily a walking journey, with no preplanned route; everything is done according to the instructions from the goddess. To the participants, this unknown walking trip is not only a test of physical endurance, but also, by following the footsteps of Matsu, they leave the stress of life behind and gain some spiritual peace of mind.

6. Emotional exchange

　　Devotees participating in the Baishatun Matsu Pilgrimage will encourage and care for each other during the trip. From strangers to slowly becoming acquaintances, and finally friends, making plans to meet up annually during the ritual.

　　In summary, the researcher considers "leisure and tourism," "physical and mental exercise," "emotional exchange," "spiritual satisfaction," and "passing the torch" as the use values of the Baishatun Matsu Pilgrimage; devotees participating in the activity can gain these benefits directly or indirectly. Aside from this, the researcher believes that devotees who participate in the activity, only when Gong-Tian Temple continues the tradition of walking and following the dictates of the goddess as the main traditions of the activity can they satisfy their need or other's need to ask for favors or pay back, come home to participate in this activity and hand this tradition down to their descendants in the future to gain the benefit of "spiritual satisfaction," "hometown sense of belonging," and "passing the torch." Consequently, the researcher categorizes "spiritual satisfaction," "hometown sense of belonging," and "passing the torch" as non-use values, as shown by Table 1. Only if the Baishatun Matsu Pilgrimage keep on conduct, the use value could have connected with option value, existence value and bequest value, the nonuse value. So in the special case of the Baishatun Matsu Pilgrimage, we can adapt the Travel Cost Method to evaluate the value of participating in Matsu Pilgrimage Event.

Table 1　The Value association of the Baishatun Matsu Pilgrimage

Whole Value of Baishatun Matsu Pilgrimage					
Category of value	Use value		Nonuse value		
	Direct use value	Indirect use value	Option value	Existence value	Bequest value
Contents of value	Leisure and tourism Physical and mental exercise Emotional exchange	Spiritual satisfaction and Passing the torch	Spiritual satisfaction and Hometown sense of belonging	Spiritual satisfaction and Hometown sense of belonging	Passing the torch and Hometown sense of belonging
			Only if the Baishatun Matsu Pilgrimage keep on conduct, the use value could have connected with option value, existence value and bequest value, the nonuse value.		
Assessment methods	Travel Cost Method				

Basically, natural resources have non-use values (Chiueh, 2005). Previous studies used the contingent valuation method to estimate non-use values. For an intangible cultural heritage such as the Matsu pilgrimage activities, the Pilgrims (user) is required to maintain option, existence, and bequest non-use values the non-users the choice exists, bequests and other non-use values. Therefore, intangible cultural heritage and natural resources are similar in that they both have non-use values. However, intangible cultural heritage requires actual participation by people to maintain the benefits. With the Matsu incense-offering activity, Pilgrims need to participate to maintain cultural heritage and benefits. Consequently, when the Pilgrims participate in the Baishatun Matsu Pilgrimage and enjoys its use values, as well as gain and maintain the intangible cultural heritage non-use values from this activity, the study uses the TCM to assess the use value brought about and non-use values maintained by the Baishatun Matsu Pilgrimage.

III. Review of Related Literature

A. Benefits Assessment of Cultural Heritage and Relevant Thematic Research

a. Benefits Assessment of Cultural Heritage

The cultural heritage is the non-market goods. It is not easy to obtain pricing information from the market; it becomes difficult to evaluation the value of cultural heritage. This is why it becomes necessary to use non-market good assessment methods to evaluate their value (Fonseca and Rebelo, 2010; Dong et al., 2011; Del Barrio et al., 2012; Chen, 2013). Generally, there are two ways to assess non-market good. The first is using "Revealed Preferences Techniques," which observe the preferences of the interviewees, indirectly assessing the value of the non-market good. Also called "indirect observation method," some of the more frequently used are the TCM and hedonic price method (HPM). The second is using "Stated Preferences Techniques." Because they use hypothetical questions to ask interviewees directly about the value of non-market good so it is also called "direct observation method." The most frequently used for this type is the CVM (Lin, 2008; Liu, 2009; Choi et al., 2010; Chen, 2013; Armbrecht, 2014). Both preferred preferences and stated preferences techniques have been used in evaluating the economic value of cultural resources.

Chen and Lin (2002) surveyed Taipei City residents, using the TCM and CVM to assess the use value and preservation value of the city's thirty-nine architectural relics. Results from the study showed that the use value of Taipei City architectural relics to its residents has a compensatory variation of 547 NT\$ /person and equal variation of 524 NT\$/person; the price residents are willing to pay for relic preservation is 595 NT\$/person. Chen et al. (2007) used the CVM and surveyed the residents of Lukan Town and Tainan's Aping District to understand

their viewpoints on the preservation of cultural heritage as well as the amount of money they are willing to put into it. They also analyzed the factors affecting the residents' willingness to pay. Results from this study showed that in terms of the price residents are willing to pay for the preservation of cultural heritage: for Lukan, it was NT$564; for Aping District, it was NT$502. Furthermore, many interviewed residents recognized the importance of preserving cultural heritage. Dong et al. (2011) surveyed visitors to Tainan City's Level 1 architectural relics and found that the total recreational benefits from visits to Tainan City's Level 1 relic amounted to NT$6 billion. Lee and Huang (2011) studied the Dalongdong Baoan Temple, which won the UNESCO Heritage Conservation Award and applied factor analysis to extract the cognitive factors of visitors towards the instinctive value of cultural heritage. Using cluster analysis to divide different intrinsic value cluster groups, the study used the TCM to estimate the tourism benefits gained by visitors to Dalongdong Baoan Temple. Results showed that individual spending each time is NT$13,209 annually. Moreover, the tourism benefits gained by "affective artistic" visitors are more than the other instinctive value cluster groups. Chang and Chiueh (2012) used the TCM combined with analytic hierarchy process (AHP) to estimate the recreational benefits of Looking's cultural heritage. Results obtained showed that individual spending each time is NT$6,006 in the last year. Lin et al. (2013) used the CVM to conduct an economic assessment of reusing a tobacco plant in Pingtung as a cultural park. Results recommend that future park operational strategies should include raising visibility and focusing on artistic performances and historical education as the main business. Salazar and Marquez (2005) applied the CVM to assess the social benefits of the ancient Arabic tower in Valencia, Spain. Ruijgrok (2006) used the HPM and the CVM to assess the value of living comfort and recreation, bequest value of Holland's cultural heritage. Results clearly showed that the economic benefits of protecting cultural heritage far outweigh the cost. Choi et al. (2010) used the choice model to estimate the different economic values of Canberra's Old Parliament House. Báez and Herrero (2012) used the CVM to assess the willingness to pay of the visitors and residents for the cultural heritage of Valdivia, Chile. They also used the cost-benefit analysis to design a cultural policy that addresses the revival of cultural heritage there.

From the above literature, it can be known that scholars have used non-market assessment methods to evaluate cultural heritage. However, using non-market assessment methods to assess intangible cultural heritage is very rare. Hence, this study endeavors to do this.

b. Intangible Cultural Heritage

The "intangible cultural heritage", is manifested inter alia in the following domains: (1) oral traditions and expressions, including language as a vehicle of the intangible cultural heritage; (2) performing arts; (3) social practices, rituals and festive events; (4) knowledge and practices concerning nature and the universe; (5) traditional craftsmanship. (United Nations Educational, Scientific and Cultural Organization, 2015). In 2009, UNESCO recorded "Matsu belief and customs" on the Representative List of the Intangible Cultural Heritage of Humanity (United Nations Educational, Scientific and Cultural Organization, 2009). Consequently, the study conducts an assessment on the benefits of the intangible cultural heritage the Baishatun Matsu Pilgrimage.

In relevant studies on intangible cultural heritage, Huang (2012) used the viewpoints of spatial research in cultural anthropology on the yoiyama activity of Geon Mature held in Kyoto, Japan to study the preservation and innovation of intangible cultural heritage. Huang (2014a) focused on the "Mei-ge Restoration" project of the Lolo people in Southwest China. "Mei-ge" are the songs passed down by the Lolo people, which were almost wiped out during the Cultural Revolution. In the process of rescuing and protecting this body of music, it was designated by the Chinese State Department as part of the second batch of intangible cultural heritage to be protected in 2008. Referring to field ethnography, using the "flower making" culture of the Miao people in Shading, Ho (2014) tried to understand the inheritors of intangible cultural heritage and exploring its impact in the legacy and changes in the clothing culture of the Miao people. Using the traditions and music of Korea's Jongmyo Shrine (Jongmyo's rituals and music have been added to the UNESCO World Heritage as well as Oral History and Intangible Cultural Heritage lists), Huang (2014b) explored the issue, in the discussing the preservation of intangible cultural heritage, is the performance of tangible

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cultural heritage the basis for original condition or is it the power behind the show of creativity?

From the above literature, one can see the diversity of intangible cultural heritage; there are songs, temple rituals, and others. Research usually focuses on the preservation, legacy, change, and innovation of intangible cultural heritage. There have not been any studies conducted on benefits of "Matsu belief and customs." Consequently, the study uses this as the theme and benefits assessment as the focal point for exploring intangible cultural heritage.

B. Travel Cost Method

a. Origins of Travel Cost Method and Research Focus

The travel cost method is a typical form of revealed preference assessment method. First presented by Hoteling in 1949, it observes travel distance and rate of travel participation from different residential areas and is used to arrive at the recreation demand function, which in turn estimates recreation benefits (Clawson ,1959). It was until Clawson (1959) that TCM model became more solidified and applied in empirical assessment of studying the recreation benefits of national parks in the US. Revised and improved by J.L. Ketch et al in 1964, it was in the 1980s that TCM was widely used to estimate the value of outdoor recreational activities (Shaw et al., 2002; Lun, 2008; Dong et al., 2011; Huang and Chen, 2011; Tsai, 2011).

TCM can be classified into two models: zonal model and individual model, according to difference in variable (Fleming and Cook, 2008; Gürlük and Rehber, 2008; Martínez-Espiñeira and Amoako-Tuffour, 2009).

The difficulties encountered by TCM when evaluating non-market finances can be categorized into multi-purpose, multiple-destination travel (for specific purpose or just passing by), length of travel time (one-day or multiple-days), substitution value of travel time, factors of travel costs, etc. (Fleming and Cook, 2008; Gürlük and Rehber, 2008). Using Ilan's recreational farm visitors as research subjects, Huang and Chen (2011) used the On-site

Poisson model to estimate travel demand and complement it with zonal multi-purpose travel to establish three types of travel cost weights methods and one type of clustering method to evaluate the impact of travel for specific purpose and that of merely passing by on recreational benefits. Study results show that recreational benefits are underestimated if multi-purpose or "passing by" travel issues is not considered. Jeng (1998) used three functional models, regular TCM, M&S, and shadow time value, for calculating time value and utilized truncated Tobit model to calculate the consumer surplus and willingness-to-pay values of visitors to the Aogu Waterfowl Sanctuary. Results from that study showed that in the shadow time value model, the equilibrium foundation of travel time value changes according to the differences in the visitors' socio-economic backgrounds. Using age, educational level, and number of family members, the consumer surplus is lower than the results obtained from the M&S model by 35%. Cheng (2014) used TCM to assess the recreational benefits of Shicao Lake; the study found that recreational benefits (NT$3,784/person/year) estimated by models that do not include time costs is almost four times less than the recreational benefits (NT$15,015/person/year) estimated by models that include time costs, thereby proving that time costs have a great impact on the calculation of recreational benefits. It is therefore recommended that it is imperative that travel time costs be diligently calculated. From this, it can be known that when using TCM to assess non-market finances, multi-purpose, multiple-destination travel (for specific purpose or just passing by), length of travel time (one-day or multiple-days), substitution value of travel time, factors of travel costs, etc., are important issues to consider.

Many researches have made use of TCM to assess benefits; their focuses are also of a wide breadth. They can primarily be classified into natural environmental resources and recreational areas (Jeng, 1998; Chen and Lin, 2004; Chen and Liaw, 2007; Huang, 2007; Huang and Chen, 2011; Lee et al., 2013; Liu, 2013; Ho and Chiueh, 2015), festivals and activities (Huang et al., 2006; Lee and Chen, 2007; Lee, 2008; Lee and Huang, 2009; Lee, 2011; Lee, 2012; Yang, 2014), and cultural heritage (Chen and Lin, 2002; Dong et al., 2011; Chang and Chiueh, 2012; Lee and Huang, 2011).

There are numerous studies that have made use of the TCM in assessing non-market good. Fleming and Cook (2008) assessed the recreational benefits of Lake McKenzie on Australia's

Fletcher Island. Gürlük and Rehber (2008) assessed the recreational benefit of Turkey's Manyas Lake. Results showed that the annual recreational benefits are higher than operational costs. Therefore, improving the situation at Manyas Lake is beneficial. Chae et al. (2012) assessed the recreational benefits of Britain's Lundy Island and found that although the estimated benefit value was high, majority of the visitors did not revisit Lundy Island within a number of years. High-income earners may choose to spend less or same amount of time going overseas, hence, bypassing Lundy Island. In their study on Canada's Gros Morne National Park (designated by UNESCO as a World Heritage Site in 1987), Martínez-Espiñeira and Amoako-Tuffour (2009) found that, the number of visits made to the national park within the year is smaller due to its remote location. Consequently, it used the number of visits made to the national park within the last five years as the dependent variable.   The results of this study showed that multi-destination travel reduces consumer surplus estimates. In the empirical application of the travel cost method, the choice of strain number is primarily the number of times interviewee visits the site within the year. However, considering the study site factors, it chose the number of visits made within the last five years as the dependent variable, which is a valuable point of reference, given its uniqueness. Zhang et al. (2015) used the individual travel cost method to study the recreation use value of the beaches on Australia's Gold Coast.

Aside from the abovementioned assessments of the recreational benefits of natural environmental resources, there are also numerous studies on cultural heritage. Poor and Smith (2004) used the zonal travel cost method (ZTCM) to assess the visitor benefit of the historic St. Mary's City in Maryland in the United States from 1999-2001. Using linear, semi-logarithmic, and double logarithmic functions to calculate consumer surplus (CS), the study found that the consumer surplus per person each year is between US$8 and US$19.26. Bedate et al. (2004) calculated the demand curve and consumer surplus (CS) of four of Spain's cultural heritage (Iberian Organ Festival, The Walled Ensemble of Urueña, Museo de Burgos, and the Valencia Cathedral). Fonseca and Rebelo (2010) calculated the demand curve of the Lamego Museum, situated in the northern Douro region (classified by UNESCO as a World Heritage Site in 2001). Results of their study showed that travel costs had a negative correlation as expected and level of education and the female gender had positive correlations. Raharjo and Gravitiani

(2012) assessed the total visitor benefit of the Sangiran Museum in Java, Indonesia and their willingness to pay (WTP) for additional facilities. The results of their study showed that visitors are willing to USD1.23 for the museum's additional facilities. Tourkolias et al. (2015) used ZTCM to calculate the consumer surplus (CS) of Poseidon Temple located in Greece.

Based on the above researches, it is known that the travel cost method is widely used to assess the use of non-market financial value. The focus of local researches is more geared towards evaluating the natural environmental resources or holiday festivities; less is devoted to the study of cultural heritage, which is not only a public asset, but also has important significance in terms of the nation's cultural heritage and therefore, worth being evaluated. In addition, travel cost method is often used to assess the use value, and not the non-use value, of recreational resources and cultural heritage. However, because Baishatun Matsu incense-offering activity, the cultural heritage covered by the study is a case where the users maintain the non-use values of the non-users. Consequently, the travel cost method has become the assessment method for evaluating non-use value of intangible cultural heritage.

The study uses the travel cost method to evaluate the intangible cultural heritage benefits of the Baishatun Matsu Pilgrimage. However, the choice of dependent variable is equally important, as in the case of Martínez-Espiñeira and Amoako-Tuffour (2009), who chose the number of visits within the last five years as the dependent variable due to the remoteness of the Gros Mourne National Park in Canada. The Baishatun Matsu incense-offering activity is held only once a year and taking into account the timeframe visitors can remember travel details, the study also chose the number of visits made within the last five years.

b. Assessment Model and Travel Cost

From the above literatures, it can be found that the models used by the travel cost method include Tobit, Poisson, negative binomial distribution, linear, semi-logarithmic, and double logarithmic estimation function.   The dependent variable of on-site sampling serves as count information, which possess the features of non-negative integer, truncation, and endogenous stratification. As a consequence, the truncated Poisson model and the On-site Poisson, which

can simultaneously revise truncation and achieve endogenous stratification, are considered to be the optimal selection model.

Studies using truncated Poisson model to conduct benefit assessment include Chang and Chiueh (2012). Those using On-site Poisson include Lee (2008), Huang and Chen (2011), Liu (2013), as well as Ho and Chiueh (2015). There are also studies that used a different model for comparison. For example, Dong et al. (2011) used truncated Poisson model, negative binomial distribution, and On-site Poisson to do an estimation of the recreation benefits; the results of the study show that the ones derived from the truncated Poisson and On-Site Poisson models were the most ideal.

The dependent variable selected by the study is the number of participation in the Baishatun Matsu incense-offering activities over the last five years. Consequently, it has chosen to use the count data model as the econometric model for estimating the demand function. Moreover, because the interview subjects are participants of the Baishatun Matsu incense-offering activity who have at least joined more than once, the dependent variable of the demand function should be greater than 0 and at least equals to 1 to coincide with the information characteristics of the count model. Furthermore, the design of the survey questionnaire, "How many times have you participated in the Baishatun Matsu Pilgrimage in the last five years," is based on the Poisson distribution wherein there's a number of occurrences for a specific timeframe. The frequency of participation is the non-negative integer truncated at 0. Therefore, the study uses the Truncated Poisson Model as the tool for analysis.

In terms of calculating travel costs, "the number of trips" is used the dependent variable, it should include ticket prices and travel time costs as the monetary costs that should be incurred to reach the destination (Huang, 2007; Chiueh and Huang, 2011). McConnell (1975) pointed out that if the cost of time is ignored, the shadow prices produced as a result of the cost might be underestimated. In later relevant researches, many scholars made appropriate adjustments on the research contents by adding room and board, ticket prices, as well as on-site expenses to the transportation expenses and time opportunity costs when calculating travel costs. For example, the calculation of travel costs in the studies conducted by Lee et al. (2013) and Lee and Huang (2011) included transportation costs, time opportunity costs, and the expenses

incurred during that single trip. In the study conducted by Chang and Chiueh (2012), calculation of travel costs included transportation costs (cost of gas), cost of time, and ticket prices. The calculation of travel costs in the study conducted by Huang (2007), Ho and Chiueh (2015) included transportation costs (cost of gas) and Time opportunity costs.

Accordingly, the calculation of travel costs of this paper is twofold: one for transportation costs and the opportunity cost of time, and the second for the transport costs, the opportunity cost of time and the total cost to participate in the Baishatun Matsu Pilgrimage and incense-offering activities. The costs of the two trips are then computed to compare their effectiveness values.

C. Multi-Criteria Decision Making Theory

Due to the needs of the individual study or to the limitations of the method per se, it has become necessary to combine the TCM with other methodologies when using it to evaluate recreation benefits. In studies conducted by Chang and Chiueh (2012) as well as Ho and Chiueh (2015), because the TCM is unable to directly calculate the unique characteristics of single-site multi-destination travel, the AHP was used to resolve this issue. Liu (2013) categorized the value area of the Hsinchu coastline into five major values and used the TCM and the valuation method combined with the multi-criteria decision-making method (MCDM) to understand the proportion of importance the five major values have in the minds of the travelers, before arriving at the economic benefits brought to Hsinchu City. The study divided the value areas of the Baishatun Matsu Pilgrimage (Baishatun Matsu incense-offering activity) into six types, namely, "spiritual satisfaction," "passing the torch," "leisure and tourism," "hometown sense of belonging," "physical and mental exercise," and "emotional exchange," which display use values maintaining non-use values. Consequently, the results of combining performance values derived from the TCM and the proportion of importance of the six major values derived from the MCDM will sow the use and non-use values of the Baishatun Matsu incese-offering activity. The study strives to give a better understanding of MCDM below:

In 1997, Zimmermann believed that decisions are based on multiple objective functions,

replacing previously used single criterion or objective function. This evolution method using quantitative analysis is called the MCDM (Zimmermann, 1990; Lai et al., 2010). MCDM refers to the use of mathematical programming to find the best course of action when people have to make decisions, given limited resources or multiple-targets to be met (Zimmermann, 1990). It can be categorized into several types and methodologies. In the study of Zimmermann (1990), the author classified MCDM into qualitative and quantitative multi-criteria decision-making methods, as well as a mixture of both, including AHP, additive weighting method (SAW), data envelopment analysis (DEA), and permutation method.

In the simple additive weighting method (SAW), the decision maker decides or uses other methods to arrive at the corresponding weights of the assessment indicators before multiplying them with performance value of each criterion to obtain the weighted performance value of each project. After ranking the projects, the one with the highest performance is adjudged the most appropriate project (Zimmermann, 1990).

After using the simple additive weighting method to calculate the six major value weights, the study will multiply the performance values produced by the travel cost method and the weights to come up with the use value and non-use value of the Baishatun Matsu incense-offering activity.

IV. Theoretical and Empirical Models

The study uses a combination of the TCM and multi-criterion decision-making theory (MCDM) to estimate the economic benefit of the Baishatun Matsu Pilgrimage.

A. Travel Cost Method

The travel cost method looks at the relationship between the expenses incurred by a traveler during a specific recreational activity and the number of times the trip is made. This

method establishes a travel demand function, which is based on the observable actual behavior of the consumer and is founded on the theory of consumers seeking utility maximization. The study uses the costs of participating in the Baishatun Matsu Pilgrimage and other consumption of goods as well as the number of participation times in the incense-offering ritual to pursue utility maximization. The consumer model formula is as follows:

$$Max \ \ U_i(T_i, X_i)$$

$$s.t. \ \ \ \ M_i = TC_iT_i + X_i \tag{1}$$

In empirical studies, aside from travel cost, the explanatory variables affecting travel demands may include personal socio-economic characteristic variables. Consequently, the study establishes the demand functions below:

$$T_i = f(TC_i, X_i, SINC_i, SE_i) \tag{2}$$

T_i : The number of times the "i-th" respondent has participated in the Baishatun Matsu Value (consumer surprise) in the last five years

X_i : Other wealth and goods purchased by the "i-th" respondent; the hypothetical value is 1

TC_i : Transportation and time costs as well as expenses incurred by the "i-th" respondent during actual participation in the Baishatun Matsu Pilgrimage

$SINC_i$: Personal monthly income of interviewee "i-th"

SE_i : Socio-economic background of interviewee "i-th"

The above formulas (2) are used to establish demand functions for different travel costs. The travel costs of Formula (2) include transportation and time costs as well as expenses incurred in the actual participation of the incense-offering ritual.

The travel demand function is the function of travel cost, other wealth and goods, total family income, and socio-economic background. After finding the demand function, the

consumer surplus (CS) can then calculated. The study modifies the consumer surplus formula presented by Freeman (1993) as follows:

$$CS_i = \int_{P_i}^{P_M} f(TC_i, X_i, SINC_i, SE_i)dTC_i \qquad (3)$$

CS_i are the benefit ratio value of the "i-th" incense-offering participant, where P_M is the choke price, which is the lowest travel cost when the "i-th" participant stops participating in the Baishatun Matsu Pilgrimage. The travel time (T) in this instance is 0; P_i is the actual travel cost of the "i-th" incense-offering participant.

Then from the calculation of consumer surplus (*CS*), the study will be able to come up with the benefit of the Baishatun Matsu Pilgrimage . The clacultion formula is as follows:

$$CS\ value/person\ in\ the\ last\ five\ years = -\left(\frac{No.\ of\ travel\ times\ in\ the\ last\ five\ years}{Travel\ cost\ factor}\right) \qquad (4)$$

$$Annual\ CS\ value/person = -\left(\frac{No.\ of\ travel\ times\ in\ the\ last\ five\ years}{Travel\ cost\ factor}\right) \div 5 \qquad (5)$$

$$CS\ value/person/participation$$
$$= -\left(\frac{No.\ of\ travel\ times\ in\ the\ last\ five\ years}{Travel\ cost\ factor}\right) \div No.\ of\ travel\ times\ in\ the\ last\ five\ years \quad (6)$$

Using the MCDM weights calculation method, the study was able to calculate the importance weights of "spiritual satisfaction," "passing the torch," "leisure and tourism," "hometown sense of belonging," "physical and mental exercise," and "emotional exchange." Then, combining the results with the TCM, it was able to calculate the consumer surplus (CS) to come up with the direct use and indirect use value of the Baishatun Matsu Pilgrimage.

B. Questionnaire Design

The survey questionnaire is divided into two parts. The first part concerns the behavior of the participants of the Baishatun Matsu Pilgrimage. The second part presents the socio-economic background of the respondents.

a. Behavior of Participants of the Baishatun Matsu Pilgrimage

This part is for understanding the various behaviors of the participants of the Baishatun Matsu Pilgrimage. This would include the number of participation times in the last five years, the latest year of participation, the time of participation in the incense-offering ritual in the last five years, modes of participation in the incense-offering ritual and in the trip to Beikang, the transportation time and mode of transportation to Baishatun from the point of origin, number of accompanying people, whether going to the trip specifically or just passing by, reason for participating, as well as expenses including registration fee, tour bus fares, purchase of red banners, triangular yellow flags, local delicacies, and souvenirs. then there's meals, accommodations, incense-oil money, transportation charges, incense-table displays to welcome Matsu, and providing visitors with meals and/or beverages. The respondents are also asked about their willingness to participate in the incense-offering ritual in the next five years and the number of times they would participate. Finally, they area asked about the importance of the different values of the Baishatun Matsu Pilgrimage.

b. Socio-Economic Data

This part tries to understand the various socio-economic data affecting the number of times a person would participate in the incense-offering ritual. Data includes age, gender, domicile, educational level, religious background, number of members of the family occupation, family monthly income, and whether he or she is from Baishatun.

V. Analysis of Survey Questionnaire and Empirical Results

A. Sampling Design

The study used as research subjects' residents of Baishatun who are usually involved with the Matsu pilgrimage as well as their circle of friends and relatives, conducting convenient and purposive sampling methods. It also designed an online questionnaire, asking those which have participated in the Baishatun Matsu Pilgrimage to go up to the Internet and fill it out. The interview timeframe was March and April 2015, within which 420 print version of the questionnaire were distributed and 322 came back. Subtracting 91 questionnaires, those with incomplete answers or irrational ones, there were a total of 231 valid questionnaires.

Table 2　The Sampling

	Distribution	**Response**	**Deduction**	**Valid Questionnaires**
Convenience sampling	262	216	40	176
Purposive sampling	158	101	51	50
Online survey	-	5	0	5
Total	420	322	91	231

B. Analysis of Survey Results Statistics

a. Statistical data on the socio-economic backgrounds of incense-offering visitors

From the data of the 231 questionnaires, it is seen that the respondents are between 31 and 40 years of age, female, primarily living in Baishatun, Miaoli County; educational level pegged at high school and predominantly Taoist; number of family members living together is 5. Visitors mainly belong to the service industry, family expenditures at NT$20,000 - NT$30,000 and monthly family income at NT$30,000 - NT$40,000.

b. Estimated Results from Empirical Model

We categorize empirical results into three parts: sources of data and setting of variables, analysis of empirical results, and benefit assessment of the intangible cultural heritage of the Baishatun Matsu Pilgrimage for further explanation.

(a) Source of Data and Setting of Variables

1. Travel Cost (TC)

The travel costs of the study include the transportation and time costs incurred by the participants from point of origin to Baishatun Gong-Tian Temple, as well as the various expenses incurred during the participation in the incense-offering activity. The reasoning behind the numerical values are as follows:

(1) Transportation costs:

Transportation costs＝distance back and forth×fuel consumption per kilometer×price of oil/liter. The distance back and forth refers to the distance from the administrative center (township/municipal/village hall) of the respondent's point of origin to Baishatun Gong Tian Temple. Most participants of the activity use small vehicles or scooters/motorcycles as the major modes of transportation. According to the "2012 Small Vehicle Use Status Survey

Report of the Ministry of Transportation and Communication," when small vehicles use their air-conditioning systems, fuel efficiency rate is 9.3 kilometer on regular roads and 11.8 kilometers on the freeway or the expressway; average fuel efficiency rate is calculated at 10.55 kilometers. In addition, according to the "2011 Scooter Use Status Survey Report," the average fuel efficiency rate of scooters and motorcycles is 22.3 kilometers; fuel prices in March 2014 during the Baishatun Matsu Pilgrimage that year were NT$35.1/liter for 95 unleaded petrol. Consequently, the study uses the following formula for calculating the transportation cost.

$$Transport\ costs = \frac{The\ dis\tan ce\ between\ po\operatorname{int}\ of\ departure\ and\ Baishatun\ Gong\ \text{-}Tian\ Temple}{cars\ and\ locomotives'\ fuel\ per\ liter \times Oil\ prices\ per\ liter}$$

(7)

(2) Time costs:

The time costs of the study include transportation time and participation time. Transportation time is the time spent by the respondent in going to Baishatun Gong Tian Temple from his or her point of origin, while participation time is the length of time the respondent spends in the participating in the Baishatun Matsu Pilgrimage. The hourly wage is calculated from the respondent's monthly salary. If the respondent did not fill in his or her monthly salary, then hourly wage will be derived from the information on monthly family income. According to the "2014 Manpower Survey Results," the labor participation rate was 58.39%. The study used Formula (8) to obtain the personal monthly income and then use this to derive the hourly wage.

$$Personal\ monthly\ income = \frac{Monthly\ household\ income\ survey\ questionnaire\ of\ this\ article}{(Number\ of\ family\ members\ \text{-}\ Minor\ population) \times 58.39\%}$$

(8)

Wage rate is based on the concept of 1/3 of wages being designated as time opportunity cost, which was presented by Cesaris (1976) after reviewing many empirical studies (quoted from Xiao et al., 2002). Consequently, the study's formula for calculating time opportunity cost

is

$$Time\ Costs = (Transportation\ Time + Participation\ Time)?\ Hourly\ Pay\ ?\ Wage\ Rates(33\%)$$

(9)

(3) Various expenses incurred in participating in the CS (consumer surprise):

Expenses incurred by the respondents participating in the Baishatun Matsu Pilgrimage include: incense-offering expense (registration fee), tour bus fares, purchase of red pilgrimage banner and yellow triangular flags, accommodations, incense-oil money, purchase of local delicacies and souvenirs, transportation expenses, incense tables to welcome Matsu, as well as snacks and beverages for the visitors.

2. Variable setting

After removing sample correlations, the study chose the following variables, as shown in Table 3.

c. Analysis of Empirical Results

The study uses the TCM to estimate the intangible cultural heritage benefit of the Baishatun Matsu Pilgrimage and utilizes Limdep 9.0 truncated Poisson model to conduct the calculations. It found that the factors which influence the number of times devotees participate in the Baishatun Matsu Pilgrimage include travel cost (*TC*), time of participation in the activity in the last five years (*PT*), mode of participation in the activity - going to Baishatun on the day of the goddess' return to the temple to participate in the festivities (*PW2*), mode of participation in the activity - putting up incense tables along the route taken by the goddess (stopping or staying the night) to welcome her (*PW3*), number of times of participating again in the activity in the next five years (*RPNU*), and service industry as the main occupation (*OCCUP13*), as shown in Table 4.

Table 3 Table of Variable Terms

Assessment Method	Variable	Meaning
Travel Cost Method (TCM)	*FRE*	Dependent variable: the number of participation times in the Baishatun Matsu Pilgrimage in the last five years
	TC	Travel costs, including transportation costs, time opportunity costs, and total expenses incurred during the incense-offering activity
	PT	Participation time for the Baishatun Matsu Pilgrimage in the last five years
	PW1	Mode of participating in the Baishatun Matsu Pilgrimage - joining the trip to Beikang or ride tour bus to Beikang to offer incense
	PW2	Mode of participating in the Baishatun Matsu Pilgrimage - join the celebratory activities held on the day Matsu returns to the temple
	PW3	Mode of participating in the Baishatun Matsu Pilgrimage - setting up incense tables on the places Matsu will pass by (stopping or staying) to welcome the goddess
	YBST	Yes, is a resident of Baishatun
	FAITH	Participating in incense-offering activity is part of personal faith (belief in Matsu)
	VOTIVE	Reason for participating in incense-offering activity is to pay back favor granted by Matsu
	VALUE4	The value of "preserving the incense-offering activity for future generations" of the Baishatun Matsu Pilgrimage
	RPNU	Number of times of repeat participation in the Baishatun Matsu Pilgrimage in the next five years
	REL3	Religion – Taoism
	OCCUP5	Occupation - Traditional industry
	OCCUP8	Occupation - Self-employed
	OCCUP13	Occupation - Service industry
	FINC	Monthly income of family members living together

In Table 4, travel cost (*TC*) is negative. This means that the lower the travel costs are, the higher is the number of participation times. The time of participation in the activity in the last five years (*PT*) is positive. This means the longer the time the devotee participates in the Baishatun Matsu Incense-offering; the more times he or she is liable to participate. This shows that the higher level of participation is, the more the times of participation is.

For the mode of participation in the activity being going to Baishatun on the day of the goddess' return to the temple to participate in the festivities (*PW2*), the symbol is positive. This shows that devotees participating in this mode have more participation times, implying that Matsu returning to the temple is a one-day activity, which involves ceremonies including changing of the palanquin, grabbing and putting the first incense, eat snacks, return to the temple and placed in position, and worship Tian Gong. One only needs a day for experiencing many aspects of the pilgrimage; hence, number of participation times for this activity is higher. For the mode of participation in the activity being putting up incense tables along the route taken by the goddess (stopping or staying the night) to welcome her (*PW3*), the symbol is positive as well. This shows that devotees joining the activity in this mode of participation are more because, for the people who live where the goddess will pass or those who do not have enough time to participate in the walking journey, being able to set up incense tables along the route the goddess will take and pray for blessings and favors takes less time. Hence, the number of participation times is high. For the number of times of participating again in the activity in the next five years (*RPNU*), the symbol is positive. This shows that the higher the number of times the Baishatun Matsu Value (consumer surprise) is held in the next five years, the higher is the number of participation times in the next five years of the devotees. This shows that the higher the willingness to participate in the activity is, the higher the number of participation times will be. For the service industry as the main occupation (*OCCUP13*), the symbol is positive. This shows that devotees who are in the service industry participate more often in the incense-offering ritual. This implies that people in this industry hope to gain favor with the goddess for more business by participating in this activity. Or it may be that this industry offers more flexible working hours, which would allow devotees to arrange for participation in the activity; hence, the higher number of participation time.

Table 4   Empirical Result

Variable	Coefficient (t)
Constant	0.31785335 (1.564)
TC2	**−0.0000209216 (−2.443)****
ALLCOST	**−**
PT	0.00053850 (3.614)***
PW1	0.08173716 (0.817)
PW2	0.13167822 (1.687)*
PW3	0.19846190 (2.691) ***
YBST	0.07764471 (0.916)
FAITH	−0.04713328 (−0.587)
VOTIVE	−0.11490235 (−0.937)
VALUE4	−.01835601 (−1.012)
RPNU	0.19080894 (6.862)***
REL3	0.10977350 (1.516)
OCCUP5	0.12016768 (1.230)
OCCUP8	0.14603869 (1.240)
OCCUP13	0.19810995 (2.021)**
FINC	0.000000343134 (0.454)

Table 4　Empirical Result (continue)

Variable	Coefficient (*t*)
Log likelihood function	−399.3618
Restricted log likelihood	−454.2483
Chi-squared	109.7730
Degrees of freedom	15
Number of samples (people)	231
average	3.67
Standard deviation	1.648

d. Intangible Cultural Heritage Benefit of the Baishatun Matsu Value (Consumer Surprise)

(a) Consumer Surplus (CS)

　　Consumer surplus (CS) can be used to assess benefit. According to the abovementioned results, calculations using formulas (4), (5), (7), (8), and (9) can yield the benefit of the Baishatun Matsu Pilgrimage, as shown in Table 5. For TC, the consumer surplus for every person is NT$175,465 in the last five years, NT$35,093 annually, and NT$47,797 each time.

Table 5 The Value of Baishatun Matsu Pilgrimage

	TC2
Each people per time (NT dollars)	47,797
Each people per year (NT dollars)	35,093
Each people recently 5 years (NT dollars)	175,465

Table 6 Each Value's Proportion of Importance

Category of value	Direct use value			Indirect use value		
	Leisure and tourism	Physical and mental exercise	Emotional exchange	Spiritual satisfaction	Passing the torch	Hometown sense of belonging
The proportion of importance	0.1133	0.1253	0.1301	0.2494	0.2567	0.1252
Total		0.3687			0.6313	

Table 7 Direct Use Value and Indirect Use Value

Category of value	Direct use value			Indirect use value		
	Leisure and tourism	Physical and mental exercise	Emotional exchange	Spiritual satisfaction	Passing the torch	Hometown sense of belonging
Each people per time (NTdollars)		17,623	47,797		30,174	
	5,415	5,989	6,218	11,921	12,269	5,984
Each people per year (NTdollars)		12,939	35,093		22,154	
	3,976	4,397	4,566	8,752	9,008	4,394
Each people recently 5 years (NTdollars)		64,694	175,465		110,771	
	19,880	21,986	22,828	43,761	45,042	21,968

(b)The Intangible Cultural Heritage value of the Baishatun Matsu Pilgrimage

 The study uses the TCM with the MCDM theory to assess the benefits of the use value of the intangible cultural heritage of the Baishatun Matsu Value (consumer surprise) as well as maintenance of its non-use value. It also utilizes the MCDM theory to acquire the proportion of 0.1133 for "leisure and tourism," 0.1253 for "physical and mental exercise," 0.1301 for "emotional exchange," 0.2494 for "spiritual satisfaction," 0.2567 for "passing the torch," and

0.1252 for "hometown sense of belonging." Proportion of importance of direct use value is 0.3687 and that for indirect use value is 0.6313.   Combining the travel cost model with the MCDM weights, the direct use value of each person each time is NT$17,623 and indirect use value is NT$30,174. What makes this different from the other studies is that the use of the MCDM weights with the assessment results of the TCM to estimate indirect use value, which negated the limitation of the travel cost method only being able to calculate direct value.

VI. Conclusion and Recommendations

The study conducts an assessment on the intangible cultural heritage benefits of the Baishatun Matsu Pilgrimage by using the TCM to measure the consumer surplus of the devotees participating in the activity. Moreover, it also combines consumer surplus (CS) with the benefit values of "spiritual satisfaction," "passing the torch," "leisure and tourism," "hometown sense of belonging," "physical and mental exercise," and "emotional exchange" using the MCDM. The study makes the following conclusions in accordance with the framework of the study and empirical results:

The respondents are mostly females, high school graduates who are primarily in the service industry. Main religion is Taoism and the major reasons for participating in the Baishatun Matsu Pilgrimage are personal belief (faith in Matsu) and praying for the goddess' protection.

More than one-half of the respondents have participated five times in the incense-offering ritual in the last five years; the number of participation times is likely to go up in the next five years.

Respondents has a very favorable response to the value of "spiritual satisfaction," "passing the torch," "leisure and tourism," "hometown sense of belonging," "physical and mental exercise," and "emotional exchange." The importance of "passing of the torch" is higher than "spiritual satisfaction," proving that being able to hand down the tradition of

attending the Baishatun Matsu Pilgrimage to their descendants is more important than inner personal satisfaction.

In terms of using travel cost model (TCM), which include expenses incurred in the duration of the incense-offering activity in the travel costs, to assess the consumer surplus (CS) of devotees participating in the Baishatun Matsu Pilgrimage, the consumer surplus for every person is NT$175,465 in the last five years, NT$35,093 annually, and NT$47,797 each time. Based on the calculations using the MCDM weights obtained empirically by the study, the direct use value of each person each time is NT$17,623 and indirect use value is NT$30,174.

The study uses the TCM with the MCDM to assess the benefits of the use value of the intangible cultural heritage of the Baishatun Matsu Pilgrimage as well as maintenance of its non-use value. This is a breakthrough in the application of benefit assessment methods and proves that combining two theoretical methods to conduct a study is not only appropriate but also effective.

The following recommendations are made based on the results of the study:

The study's empirical results find that the consumer surplus (CS) for every person is NT$175,465 in the last five years, NT$35,093 annually, and NT$47,797 each time. This means that the benefit assessment results are higher than those for natural environment and other cultural resources, which can be an important reference for Gong-Tian temple or government agencies when choosing policies for the protection and continuation of this intangible cultural heritage.

The study focuses on the actual participants (users) to the Baishatun Matsu Pilgrimage, using the TCM to conduct a benefit assessment of the activity. What makes this different from the other studies is that the use of the MCDM weights with the assessment results of the TCM to estimate indirect use value, which negated the limitation of the travel cost method only being able to calculate direct value.

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白沙屯媽祖進香活動之無形文化遺產效益評估

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摘　要

　　苗栗縣通霄鎮的白沙屯，是一個濱海小村落，和臺灣其他臨海聚落一樣，以農漁業為主要的經濟方式，供奉媽祖為守護神。每年，白沙屯媽祖都會前往北港進香，是為白沙屯媽祖進香活動。白沙屯媽祖進香活動歷史悠久，且承襲傳統，以徒步進香為主，進香路線不固定具有「以媽祖旨意為依歸」的獨特性。白沙屯媽祖進香活動之無形文化遺產效益無法使用一般財貨市場交易價格衡量，必須使用非市場財貨評估法來加以估算，其中非使用價值一般而言並無法使用旅行成本法 (travel cost method, TCM) 評估，但白沙屯媽祖進香活動在繞境之中同時能維繫其各項非使用價值與使用價值，本文利用旅行成本法來評估白沙屯媽祖進香活動之無形文化遺產效益，開創旅行成本法的新的效益評估面向，並結合多準則決策理論 (multi-criteria decision-making, MCDM) 來瞭解「心靈滿足」、「薪火相傳」、「休閒與觀光」、「家鄉歸屬感」、「身心鍛鍊」、「情感交流」這六大價值在進香客心目中的比重，再分別算出其為白沙屯媽祖進香活動帶來的效益。本研究結合白沙屯媽祖繞境以進香行動維繫無形文化遺產的特性，及嘗試以五年為旅行成本法之評估周期，讓旅行成本法適用於評估無形文化遺產。

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　　本文以旅行成本法為基礎，使用截斷 Poisson 模型為分析工具，計算出進香客的消費者剩餘 (consumer surplus, CS)，結合多準則決策之權重可算出每人每次之直接使用價值為 17,623 元，非直接使用價值為 30,174 元。實證結果亦發現白沙屯媽祖繞境之文化效益高，期望本文結果可為白沙屯拱天宮或公部門在保護、傳承此一無形文化遺產的政策選擇時提供參考。