

## Conference Paper

# **A Sustainability Framework of River-based Tourism in Panay Island**

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**Abstract:** This study aimed to determine the impacts of river-based tourism destinations sustainability of Panay Island in terms of economic viability, socio-cultural equity, and environmental conservation. The study used a quantitative approach using purposive sampling in the selection of target destinations and stratified random sampling in determining the sample respondents. There were 400 respondents classified as tourists, residents, the business sector, DOT, DENR, and LGU officials. Frequency distribution, rank, percentage, mean, standard deviation and ANOVA were utilized as statistical tools in the study. Results revealed from across four provinces, river-based tourism destinations in Panay Island have high economic, socio-cultural, and environmental significance among its stakeholders. When rank in terms of the sustainability indicators, data showed that the most favored response in the economic viability revealed to “create income opportunity” while “increase in self-esteem and pride of host community” as the highest rating on socio-cultural equity, and “promotes reduce reuse and recycle mentality” as the topmost priority in the environmental conservation. Responses may differ from one province to another as noted, thus the null hypothesis of no significant difference in the perceived impacts of river-based tourism destinations in Panay Island in terms of economic viability, socio-cultural equity, and environmental conservation was rejected.

**Keywords:** Economic viability, environmental conservation, river tourism, socio-cultural equity, sustainability

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## **Introduction**

Tourism is considered one of the largest and fastest growing industries all over the world. From an economic viewpoint, tourism is heralded as bringing income to local communities, but from an ecological standpoint, tourism poses a threat to sensitive environments (Williams and Fennell 2002). With these developments, a massive exploration of tourism has opened the venue for tourism product portfolio which

includes the appearance of riverfront parks, the land near rivers as highly desirable for tourism attraction and thus leads to another emerging form of tourism called river tourism that includes rivers, lakes, watersheds or water reservoirs. The economic importance of tourism has encouraged many countries to invest more in coastal tourism development which also includes river tourism development. River tourism allows visitors to travel at a different level, taking the time to admire the countryside. This allows the visitors and potential visitors to discover the vast culture and heritage which borders the region's waterways, canals and coastal areas (Prideaux et al, 2009).

In this aspect of the rapid growth of river-based tourism development must be guarded and must be sustainable in particular, concentrated in the Eco-tourism criteria. Sustainable criteria of economic development, socio-cultural justice, and environmental integrity are the approaches to developing a river-based tourism plan. Similarly, Igbojekwe, Ukabuilu, and Uzoho (2014) found out that the adoption of river tourism strategies has significantly affected sustainable economic development in Nigeria. Though tourism development contributed positive gains in the host community, its negative impacts cannot be discounted especially in the sustainability dimensions of the destinations (Yazdi, 2012). On this dimension, this paper was inspired by the aspect of the three pillars of sustainability such as economic, social and environmental protection. Several approaches have been presented over time, hence tourism planning founded on the pillars of sustainability appeared to one of the most extensive and most recognized approached.

Philippines' Department of Tourism (DOT) through its Region Office VI have identified potential river ecotourism sites such; Bugang River in Antique Province; Iloilo River in Iloilo Province; Aklan River, Province of Aklan; Connecting Palina, Cadimahan, and Culajao Rivers in Capiz Province. Tourism can influence the direction and options for local tourism development. With globalization, different parts of the world have increased similarities in facing these challenges, thus it transcends to national political and economic systems upon stakeholders. The question of whether tourism can be sustainable that is, whether it can contribute to local and regional sustainable development in the long run.

It is apparent that river-based tourism is one of the many important aspects of the world's tourism industry. Hence, this is the very reason for this research, to determine the impacts of river-based tourism destinations sustainability of Panay Island in terms of economic viability, socio-cultural equity, and environmental conservation attempting to create a sustainable development framework for river-based tourism considering their physical, biological, ecological and social aspects.

## Literature Review

### Sustainable Tourism

The concept of sustainable tourism, as developed by the World Tourism Organization (WTO, 2014) in the context of the United Nations sustainable development process, refers to tourist activities “leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems”. Likewise, Saarinen (2001) defined sustainable tourism as tourism that results in developments capable of sustaining the environmental quality of destinations, the quality of tourist experiences, and the social and cultural systems of local people. In this regards, sustainable criteria of this study are based on economic development, socio-cultural justice, and environmental integrity are the approaches in developing a river-based tourism planning. Sustainable development is, therefore, is an important aspect of this study. Creating a better life for humanity in ways that will be as viable in the future as they are at present.

Ibimilua (2009) cited that the need for sustainable tourism requires the conservation of landscapes, community services, and development of national parks, provision of attractive services and facilities as well as the development of roads, forestry, water supply, industry, and agriculture and other sectors of the economy. On this note, both private and public participation in tourism development is advocated for the exploitation of the rich and exotic tourist attractions of the state. Moreover, Candrea and Ispas (2009) believed that achieving sustainable tourism is a continuous process and requires constant monitoring of impacts, introducing the necessary preventive and/or corrective measures whenever necessary. Sustainable tourism should also maintain a high level of tourist satisfaction and ensure a meaningful experience to the tourists, raising their awareness about sustainability issues and promoting sustainable tourism practices among them.

### Sustainable River Tourism Development

Planning and development of tourism destinations should not be taken for granted. Tourism destinations should be noted as part of the sustainable development of the stakeholders alongside other tourism activities. UNWTO and World Travel & Tourism Council (WTTTC) adapted the concept of sustainable development for travel and tourism in the publication *Agenda 21 for the Travel and Tourism Industry “Towards an Environmentally Sustainable Development.”* The three pillars of sustainable tourism are Environmentally friendly practices, Support for the protection of cultural and natural heritage, and Tangible economic and social benefits to local people in host destinations”. The issues at hand may be less about strategies to grow tourism and more about containing tourism growth and developing sustainability (WTO, WTTCEC, 2014).

The main component of river-based tourism is the feature of water, one of the most popular natural settings for rest and recreation. Like many other water bodies, rivers have become an important venue for travel and leisure, heritage and cultural tourism, sports tourism and other water-related activities.

Rivers constitute a major tourism resource cited by Copper and Prideaux (2009). In Pergau River, Jeli, which is located at the southwest of the state of Kelantan shown that the river has many resources which are favorably in providing the river-based tourism activities resources as the basis for the prospect for a new potential place for river tourism area (Hafizudin, Nasarudin, Muchtar, and Bahar, 2013).

### **Rivers in Panay Island**

Panay Island in Region VI is located in Central Philippines. The Island is composed of five provinces namely Aklan, Antique, Capiz, Guimaras and Iloilo Province. Panay Island is the home of ports and airports and is well-kept to facilitate and accommodate the inflow and outflow of commodities and tourists in the Island. Department of Tourism Western Visayas identified potential river ecotourism sites, namely Bugang River located in Antique, Iloilo River in the Province of Iloilo, Aklan River in Aklan; Palina and Cadimahan and Culajao Rivers in Capiz (DOT, 2005).

*Bugang River.* Bugang River was awarded the “Dangal ng Ilog” during the First National Summit on the State of Philippine Rivers in 2005. While in 2006, proclaimed as Gold Winner in the International Green Apple Environment for Environmental Best Practice, Local Authorities, and Ecotourism category in London. The River is supported by several springs. It passes through several of Pandan’s barangays and is around 6 kilometers long. The Bugang Community- Based Eco-Tourism Organization offers a Bugang River nature, cultural, and adventure tour to travelers. This aims to exhibit Pandan’s beautiful sites, and at the same time showcase the cultural heritage of the community and environment (Guzman & Capaque, 2017).

*Iloilo River.* The river waterhead is at Oton, Iloilo named as Batiano River, which is also a creek that flows through Iloilo City passing by districts of Lapuz, Lapaz, Mandurriao, Molo, Arevalo and the city proper, before emptying into the Iloilo Strait. Along Iloilo River, the famous river park in Iloilo and hub for dining, leisure, and recreation is Iloilo River Esplanade. Iloilo River wharf and Muelle Loney in the City Proper was used to be the center for trade and business harbor. At present The Iloilo River Esplanade has ongoing development project the construction of Esplanade 2 a new venue for recreation and an attraction for locals and visitors (CPDO, Iloilo, 2010).

*Aklan River.* Aklan River Watershed encompasses seven (7) municipalities of Aklan, namely; Libacao, Madalag, Malinao, Lezo, Banga, Kalibo, and Numancia. Aklan River was proclaimed as a watershed on June 28, 1990, under Presidential Proclamation No. 600 Mandating the Establishment of the Aklan River Watershed Forest Reserve.

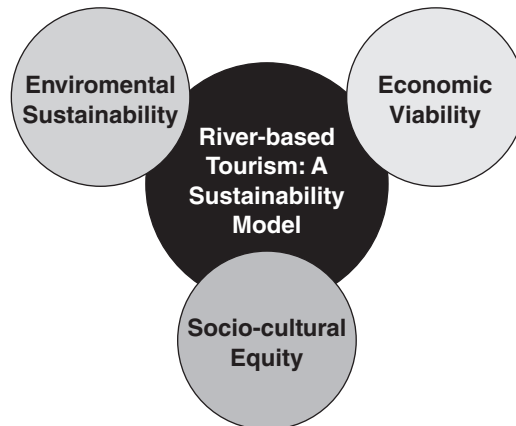
The proclaimed watershed covers the municipalities of Madalag and Libacao in the province of Aklan having an aggregate area of 20,554 hectares and it ranked number four (4) among the priority watersheds in the Region (DENR, 2005).

*Palina, Cadimahan and Culajao Rivers.* A three-venue for tourism destinations but one water flows in Palina and Cadimahan and Culajao a connecting river flowing out to Sibuyan sea. Abundant mangroves grew along the river. The local provide the tourists with a river cruise using bamboo rafts providing seafood and music to enjoy the river view. The river cruising is run by Palina River Development Association. Within the same area, there are tours and trips that cover the Cadimahan and Culajao river areas. Palina Greenbelt Ecopark has a different association where they provide the same services for tourists (DENR, 2005)

### Conceptual Framework

This study moved towards anchoring a sustainable development model embraced by the World Summit on Social Development (2005). The model helps in understanding the concepts of sustainability better. Achieving sustainable development requires more effective, open, and productive association among the people themselves. The model help gathers, share, and analyze, coordinate, and educates stakeholders and policymakers in general.

In this investigation, the researcher considered “three circles model” as basis for “A Sustainability Model for River-based Tourism” with economic to be economic viability to explore the market capability of the site, social to be socio-cultural equity for the opportunities and challenges relatively encountered in the development of the site, and environmental to be environmental conservation to protect the river sanctuaries from potential negative impacts of mass tourism development. The researcher’s notion of sustainable development is associated with this study is reflected in Figure 1.



**Figure 1.** A sustainability model for river-based tourism

## Methodology

This research study used descriptive methods for applying the quantitative approach to research design. Respondents of this study were the tourists, residents, the business sector, DOT officers, DENR officers, and LGU officials. The parameter and boundary of the study were limited to the river-based tourism destinations that were recognized by the Department of Tourism Region Office VI, as part of local tourist's spot. The identified river destination namely: Aklan River for Aklan Province; Bugang River for Antique Province; Cadimahan, Palina and Panay River for Capiz Province; and Iloilo River for Iloilo Province.

The research instrument was developed based on the various literature and studies on the three pillars of sustainability World Summit on Social Development (2005). Consequently, the researcher-made instrument was validated and tested for reliability with the help with the help of experts resulted in the internal consistency of the Cronbach Alpha value of 0.89 and found valid and reliable. The survey questionnaire comprised of the pillars of sustainability for river-based tourism destinations in terms of Economic Viability; Socio-Cultural Equity; and Environmental Conservation.

The participants of the study consisted of 400 respondents determined using Slovin's formula with the confidence level set at 95 percent and giving a margin error of 0.05. as the basis for the selection was based in the 2015 census population of each province. Adding the total population with respect to each subgroup the sample population in reference to the total population in every province were sixty (60) for Aklan and Antique, seventy-nine (79) for Capiz, and two hundred one (201) (see Table 1). Stratified random sampling technique was used in the distributing questionnaire to tourists' and residents' participants.

**Table 1.** Distribution of respondents

Category	Site				Total
	Aklan	Antique	Capiz	Iloilo	
Tourist	12	11	14	42	79
Resident	16	16	22	60	114
Business Sector	10	11	15	42	78
DOT	7	7	8	12	34
LGU	8	8	12	34	62
DENR	7	7	8	11	33
<b>Total</b>	<b>60</b>	<b>60</b>	<b>79</b>	<b>201</b>	<b>400</b>

## Results and Discussion

### Economic Viability

The perceived impact of river-based tourism destinations development in Panay Island as to economic viability (see Table 2). Results revealed that the economic viability of the perceived impacts of river-based tourism destinations has a “Great Extent” when rated by respondents in Panay Island, with an overall mean score of 3.37 (SD: 0.44).

**Table 2.** Perceived impacts of river-based tourism destinations across provinces in terms of economic viability

Site	Economic Viability		
	Mean	Description	SD
Aklan	2.84	Great Extent	0.44
Antique	3.80	Very Great Extent	0.19
Capiz	3.53	Very Great Extent	0.33
Iloilo	3.33	Great Extent	0.35
<b>Overall</b>	<b>3.37</b>	<b>Great Extent</b>	<b>0.44</b>

On the other hand, the respondents from Aklan and Iloilo rated that the economic viability of the perceived impacts of river-based tourism destinations has a “Great Extent”. These respondents gave the mean score rating of 2.84 (SD:0.44) and 3.33 (SD: 0.35) respectively. However, the respondents in the provinces of Antique and Capiz found the perceive impacts of river-based tourism destinations in Panay Island to have “Very Great Extent” with the mean scores of 3.80 (SD: 0.19) and 3.53(SD: 0.33) respectively.

Based on these results, it can be explained that river-based tourism destinations in the provinces of Antique and Capiz are capable of providing better livelihood to the local people compared to the river-based tourism destinations in the provinces of Aklan and Iloilo. Correspondingly tourism has grown substantially over recent decades as an economic and social phenomenon. This makes it possible to form a link to the supply side of the tourism industry through the identification of tourism commodities and hence to the industries which are characteristic of or connected to, tourism and to the calculation of their relative dependence on tourism generated demand as discussed by Dwyer and Spurr (2010).

Table 3 showed that the host communities in terms of economic viability were relatively viewed by respondents in every area, although the overall results do not translate much to what was expected. To some extent, “create income opportunity” was the indicator that was favored much by respondents. This means if the business potential considering the marketing and promotion, financing and investments, and

market segment aspects were improved, there will also be a high possibility of high economic viability. Other indicators are expected to have the same positive high impacts. Likewise, economic development is also viewed as a tool that has potential to enhance local quality of life, sense of pride in local culture and heritage in addition to being a source of employment and income (Crompton and Lee 2000).

**Table 3.** Perceived impacts of river-based tourism destinations as to economic viability

<b>Indicators</b>	<b>Mean</b>	<b>Description</b>	<b>SD</b>
1. Create source of regional revenues.	3.42	Great Extent	0.63
2. Contribute to the increase tax collection.	3.26	Great Extent	0.76
3. Create source of regional income.	3.42	Great Extent	0.64
4. Create opportunity for employment for locals.	3.52	Very Great Extent	0.62
5. Create job opportunity without discrimination by gender, race, and disability or in other ways.	3.46	Great Extent Great Extent	0.64 0.70
6. Increase labor level of pay and conditions of service.	3.45		
7. Create income opportunity for residents.	3.54	Very Great Extent	0.57
8. Create opening for shopping stores.	3.33	Great Extent	0.69
9. Increased cost of land and housing for sale and rentals.	3.22	Great Extent	0.74
10. Increase in general prices of goods and services.	3.20	Great Extent	0.73
11. Creates rental houses as a source of income.	3.26	Great Extent	0.72
12. Scarcity of essential goods during season.	3.12	Great Extent	0.78
13. Enhance of current livelihood.	3.38	Great Extent	0.62
14. Promotes of local products both locally and abroad.	3.39	Great Extent	0.63
15. Creates stability and diversity of markets.	3.36	Great Extent	0.65
16. Degradation of cultural and commercial goods.	3.16	Great Extent	0.72
17. Increases the number of hotels.	3.26	Great Extent	0.73
18. Increases the number of resorts.	3.33	Great Extent	0.71
19. Contribute to improvement of tourism infrastructures.	3.51	Very Great Extent	0.59
20. Change commercial view point of local people.	3.43	Great Extent	0.60
21. Produce good trading conditions among consumer, retailers and suppliers.	3.46	Great Extent	0.65
22. Contribute to careful planning and management of tourism enterprises and infrastructure.	3.45	Great Extent	0.62
23. Enhance of the entrepreneurial spirit among the locals.	3.48	Great Extent	0.58
24. Ensure the viability and competitiveness of tourism destinations and enterprises.	3.44	Great Extent	0.58
25. Contribute to formulation and adoption of local tourism master plan.	3.38	Great Extent	0.65
<b>Overall</b>	<b>3.37</b>	<b>Great Extent</b>	<b>0.44</b>



### Socio-Cultural Equity

Perceived impact of river-based tourism destinations in Panay Island as to socio-cultural Equity when rated by respondents across provinces (see Table 4). Results revealed that in terms of socio-cultural equity the perceived impacts of river-based tourism destinations in Panay Island have a “Great Extent” when rated by respondent from the provinces of Aklan, Antique, Capiz and Iloilo with mean scores of 2.73 (SD:0.44), 2.86 (SD:0.05); 3.47 (SD:0.36); and 3.24 (SD:0.36) respectively. Thus, the overall mean score rating given by the respondents of 3.15(SD: 0.43) has been described to be of “Great Extent “as well.

**Table 4.** Perceived impacts of river-based tourism destinations across provinces in terms of socio-cultural equity

Site	Socio-cultural Equity		
	Mean	Description	SD
Aklan	2.73	Great Extent	0.44
Antique	2.86	Great Extent	0.05
Capiz	3.47	Great Extent	0.36
Iloilo	3.24	Great Extent	0.36
<b>Overall</b>	<b>3.15</b>	<b>Great Extent</b>	<b>0.43</b>

These results imply that the respondents in the province of Akan, Antique, Capiz, and Iloilo have a parallel view of the perceived impact of river-based tourism destinations in the Island as to socio-cultural equity. Wherein the impacts can affect the local people’s lives and their socio-cultural inclination in proportion to how they participated in the activities, programs, projects that have been initiated as a result of such development. Respondents favored the Sandeep and Vinod (2014) argument that the socio-cultural impacts attributed to tourism can be looked at from two perspectives: indirect influences operating through larger economic and cultural changes in a community and direct person-to-person interaction.

Table 5 showed that in terms of perceived impacts, the “increase in self-esteem and pride of host community” was regarded to have the highest impact, while activities in relation to drug abuse and gambling that were viewed to have the least impact. This may imply that drugs and gambling as two of the most prominent negative impacts of mass tourism had not reached yet the rural areas where the river-based tourism destinations are located. This is contrary to the explanation of Mason, (2003) that the expansion of tourism causes cultural commercialization, increase in crime rate, gambling, drug abuse, prostitution.

**Table 5.** Perceived impacts of river-based tourism destinations as to socio-cultural equity

<b>Indicators</b>	<b>Mean</b>	<b>Description</b>	<b>SD</b>
1. Increase in density of population.	3.18	Great Extent	0.71
2. Increase demand for police protection.	3.04	Great Extent	0.83
3. Increase incidence of discrimination.	3.06	Great Extent	0.84
4. Commercialize of tradition and customs.	3.07	Great Extent	0.76
5. Improve standard of living.	3.06	Great Extent	0.74
6. Change in occupational structure.	3.19	Great Extent	0.64
7. Opportunity in gender and ethnic employment.	3.02	Great Extent	0.75
8. Develop pilgrimage sites.	3.19	Great Extent	0.67
9. Develop of this cultural centers.	3.17	Great Extent	0.69
10. Allows respect for indigenous intellectual property.	2.53	Great Extent	1.00
11. Spread of epidemics.	2.86	Great Extent	0.90
12. Encourage active participation of local social organization towards the facilities of tourists.	2.66	Great Extent	1.00
13. Increase the activities of drug abuse and gambling.	2.43	Low Extent	1.03
14. Increase the activities of prostitution.	2.81	Great Extent	0.88
15. Duel pricing system and attitude towards bargaining.	2.94	Great Extent	0.80
16. Change in values, norms and custom.	3.14	Great Extent	0.74
17. Awaken general awareness towards the preservation of cultural heritage and traditions.	3.32	Great Extent	0.64
18. Empower local communities through education.	3.27	Great Extent	0.62
19. Establishes tourism and conservation associations.	3.31	Great Extent	0.62
20. Learning culture and customs of other people.	3.34	Great Extent	0.61
21. Respect and enhance the historic heritage, authentic culture, traditions and distinctiveness of host communities.	3.48	Great Extent	0.61
22. Utilize income from tourism to support social programs.	3.31	Great Extent	0.63
23. Reduce negative perceptions and stereotypes.	3.29	Great Extent	0.60
24. Promote socio-cultural exchange among tourist and the people.	3.31	Great Extent	0.58
25. Ensure effective management and conservation of cultural and historic heritage sites.	3.33	Great Extent	0.61
26. Enhance of pride, appreciation, understanding, respect and tolerance for each others culture.	3.36	Great Extent	0.60
27. Maintain and strengthen the quality of life in local communities, including social structures and access to resources, amenities and life support systems, avoiding any form of social degradation or exploitation.	3.38	Great Extent	0.58
28. Increase self-esteem and pride of host community.	3.56	Very Great Extent	0.62
29. Create psychological satisfaction with interaction.	3.44	Great Extent	0.63
30. Promote domestic culture.	3.46	Great Extent	0.65
<b>Overall</b>	<b>3.15</b>	<b>Great Extent</b>	<b>0.43</b>

## Environmental Conservation

Results revealed that as to environmental conservation the perceived impacts of river-based tourism destinations in Panay have a “Great Extent” when rated by respondent across provinces, with the overall mean score of 3.36 (SD: 0.46). The respondents from provinces of Aklan and Iloilo rated environmental conservation the perceived impacts of river-based tourism destinations development have a “Great Extent”, with the mean score rating of 2.79 (SD:0.45) and 3.35 (SD: 0.39) respectively. On the other hand, the respondents in the provinces of Antique and Capiz found the perceived impacts of river-based tourism destinations in Panay to be of “Very Great Extent” with the mean scores of 3.79 (SD: 0.06) and 3.52 (SD: 0.32) respectively (see Table 6).

**Table 6.** Perceived impacts of river-based tourism destinations across provinces in terms of environmental conservation

Site	Environmental Conservation		
	Mean	Description	SD
Aklan	2.79	Great Extent	0.45
Antique	3.79	Very Great Extent	0.06
Capiz	3.52	Very Great Extent	0.32
Iloilo	3.35	Great Extent	0.39
<b>Overall</b>	<b>3.36</b>	<b>Great Extent</b>	<b>0.46</b>

With these, results imply that the river-based tourism destinations in the province of Antique and Capiz had paved the awareness of the local people towards sustainability of the river-based tourism destinations like Bugang River and Panay, Cadimahan and Palina River. Furthermore, results also express that stakeholders have a better understanding of the benefits that it can provide them especially in the economic aspect that is why stakeholders also made efforts to protect it from deterioration and exhaustion. Tourism can significantly contribute to environmental protection, conservation, and restoration of biological diversity and the sustainable use of natural resources. Because of their attractiveness, pristine sites and natural areas are identified as valuable and the need to keep the attraction alive can lead to the creation of national parks and wildlife parks as explained by Afrin et al. (2013).

Table 7 revealed that the “promotes reduce reuse and recycle mentality” have been agreed by most of the respondents to have an impact in river-based tourism destinations in terms of environmental conservation. This is because these principles or environmental practices are the easiest, cheapest, and most frequently practiced environmental conservation practices. Likewise, it is also recommended, and mandated by the government. Thus, coordination of policies, pro-active planning,

acceptance of limitations on growth, education of all parties involved, and commitment to a long-term viewpoint, are prerequisites to the successful linking of tourism and sustainable development mentioned by Butler, (2009).

**Table 7.** Perceived impacts of river-based tourism destinations as to environmental conservation

<b>Indicators</b>	<b>Mean</b>	<b>Description</b>	<b>SD</b>
1. Create water resource depletion.	3.06	Great Extent	0.84
2. Create solid waste that residents generate.	3.20	Great Extent	0.82
3. Create population exposed to noise and light.	3.13	Great Extent	0.89
4. Ecosystems and natural vulnerability.	3.30	Great Extent	0.75
5. Increase fecal coliform counts in waters with a high recreational activities.	3.23	Great Extent	0.83
6. Promote development and management of river tourism.	3.48	Great Extent	0.65
7. Contribute to environmental assessment.	3.45	Great Extent	0.67
8. Damage to natural heritage.	2.94	Great Extent	0.94
9. Promotes awareness on environmental conservation.	3.50	Great Extent	0.65
10. Raise visitor awareness of biodiversity.	3.45	Great Extent	0.66
11. Promote a reduce, reuse, recycle mentality.	3.52	Very Great Extent	0.64
12. Promote the use of more sustainable transport.	3.48	Great Extent	0.64
13. Reducing the use of environmentally damaging chemicals.	3.45	Great Extent	0.64
14. Protect plant and animal communities.	3.32	Great Extent	0.65
15. Improve of flora and fauna including plants and animals.	3.46	Great Extent	0.66
16. Control in unsustainable development practices.	3.38	Great Extent	0.71
17. Control over indiscriminate waste disposal.	3.44	Great Extent	0.65
18. Maintain and enhance the quality of landscapes, both urban and rural, and avoid the physical and visual degradation of the environment.	3.49	Great Extent	0.63
19. Minimize the use of scarce and non-renewable resources in the development and operation of tourism facilities and services.	3.42	Great Extent	0.62
20. Minimize the pollution of air, water and land and the generation of waste by tourism enterprises and visitors;	3.48	Great Extent	0.62
21. Support the conservation of natural areas, habitats and wildlife, and minimize damage to them.	3.45	Great Extent	0.57
<b>Overall</b>	<b>3.36</b>	<b>Great Extent</b>	<b>0.46</b>

From these results, it can be presumed that the respondent's perceived impacts of river-based tourism destinations on the Island in terms of environmental conservation are not the same. The reasons may be the river tourism destinations in Panay have different characteristics, activities, and services. Tourism is considered a valuable economic development opportunity for many countries (Choi & Sirakaya, 2006). There is increasing agreement on the need to promote sustainable tourism development with the aim of minimizing environmental and socio-cultural impacts, while commensurately maximizing economic benefits for tourist destinations (Cole, 2006).

### **Economic Viability Results of Hypothesis Testing**

Results revealed that ratings of the respondents across provinces were significantly different at a given level of significance of 0.05, with an F value of 86.882 and a critical p-value of 0.000, from which the critical p-value is less than 0.05. These, therefore, showed that the null hypothesis of no significant difference in the ratings of the respondents in perceived impacts of river-based tourism destinations in Panay in terms of economic viability is not accepted or rejected (see Table 8).

**Table 8.** One-Way ANOVA result for differences in perceived impacts of river-based tourism destinations in terms of economic viability

Sources of Variation	SS	df	MS	F	p
Between Groups	30.447	3	10.149	86.882	.000
Within Groups	46.258	396	.117		
<b>Total</b>	<b>76.705</b>				

### **Socio-cultural Equity Results of Hypothesis Testing**

One-Way Analysis of variance results revealed that the respondents from different river-based destinations viewed that perceived impacts of river-based tourism in Panay in terms of socio-cultural equity significantly differs, with an F value of 71.174 and a critical p-value of 0.000. Results revealed the critical p-value is less than 0.05, thus conclusively was significant at 0.05 level of significance. With this existing evidences, therefore, the null hypothesis of no significant difference in the perceived impacts of river-based tourism destinations in Panay in terms of socio-cultural equity is also not accepted or rejected (see Table 9).

**Table 9.** One-Way ANOVA result for differences in perceived impacts of river tourism destinations in terms of socio-cultural equity

Sources of Variation	SS	df	MS	F	p
Between Groups	25.478	3	8.493	71.174	.000
Within Group	47.253	396	.119		
<b>Total</b>	<b>72.731</b>				

From these results, it can be concluded that the ratings of the respondents are different or not the same from one province to another. These results further manifest cultural diversity affecting how every local community perceives the impacts of tourism or in this case river-based tourism destinations to their respective cultures. Thus, social parameters become the dominating factor for tourism development, the necessity of having a harmonic relationship between host communities and tourists exist as described by Ahmed (2015).

### Environmental Conservation Results of Hypothesis Testing

Table 10 reveals that there exist significant differences in the perceived impacts of river-based tourism destinations in Panay in terms of environmental conservation at 0.05 level of significance. Results reveal an F value of 84.362 and a critical p-value of 0.000, less than 0.05. Thus, the null hypothesis of no significant difference in the perceived impacts of river-based tourism destinations in the Island in terms of environmental conservation when rated by respondents across provinces is not accepted or rejected.

**Table 10.** One-Way ANOVA result for differences in perceived impacts of river tourism destinations in terms of environmental conservation

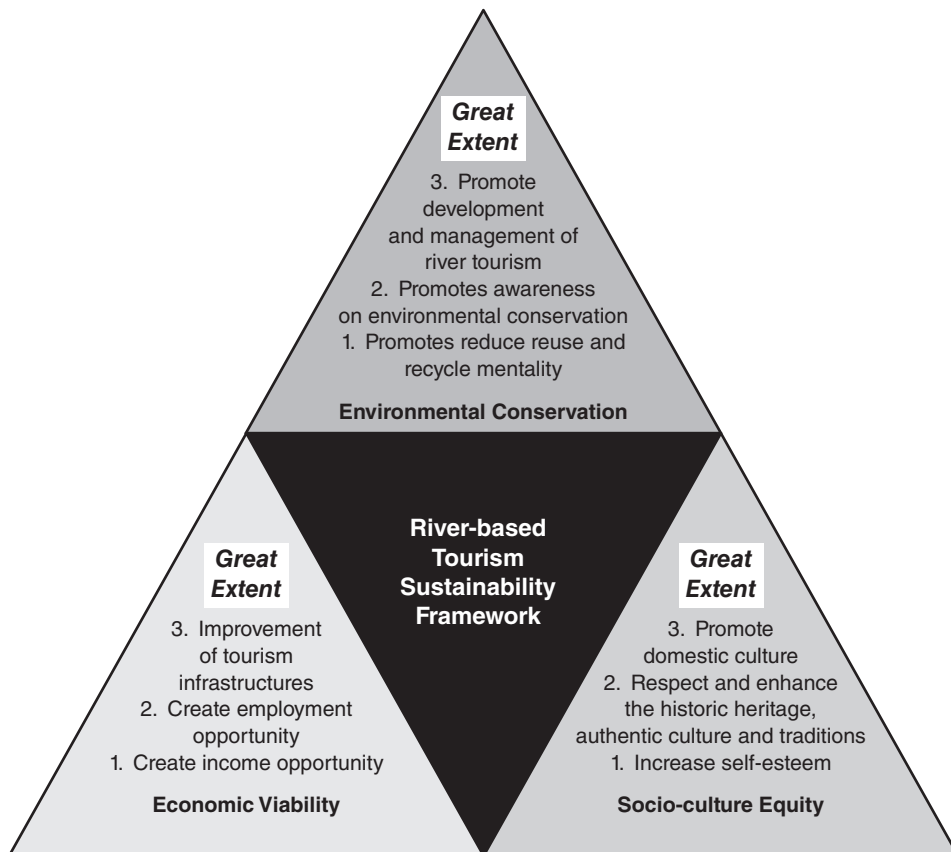
Sources of Variation	SS	df	MS	F	p
Between Groups	32.823	3	10.941	84.362	.000
Within Group	51.357	396	.130		
<b>Total</b>	<b>84.180</b>				

These results are noticeable that the ratings of the respondents are different or not the same from one province to another as to this variable. Likewise, these results imply that every province has different views on environmental conservation that may control measures for implementation, thus affecting its perceived impacts to the river-based tourism destinations in respective communities. Ayten and Dede (2012) noted that sustainable tourism development is important for increasing the cultural interaction between countries as well as for making significant contributions to their respective economies. The need for sustainable tourism requires the conservation of landscape, community services, and development of national parks, provision of attractive services

and facilities as well as the development of roads, forestry, water supply, industry, agriculture and other sectors of the economy as stressed by Ibimilua (2009).

### Conclusions

Based on the foregoing results and presentations a sustainability framework was drawn for rivers in Panay Island. The concept of sustainability was conceptualized to address the different challenges, ranging from the planning of sustainable river tourism projects to sustainable livelihoods, sustainable agriculture and fishing, and to the efforts to develop common standards in Panay Island. The diagram shows the position of three triangles of environmental conservation, economic viability, and sociocultural equity. Sustainability framework is modeled on these triangles as the component of the bigger triangle comprising its sustainability aspects. This model is called “Sustainability Framework of River-based Tourism in Panay Island”. Figure 2 shows the sustainability framework.



**Figure 2.** Sustainability framework of river-based tourism in Panay Island

Panay Island has magnificent river-based tourism destination that relatively plays an important part in the tourism development in across four provinces. The perceived impacts of river tourism destinations development in Panay Island conclusively showed a positive implication towards the life of the local people.

Economic viability viewed by stakeholders as an approach for improvement of tourism infrastructures to increase tourist arrivals. Hosts communities likewise were confident that in spite of the tourist influx there is still a need to preserve and enhance the history culture and traditions of the locals as a way to promote domestic culture. Environmental conservation hence promotes development and management of river-based tourism while promoting awareness of environmental conservation and stimulates reduce re-use and recycle mentality amongst stakeholders.

These results also foresee positivity as to river-based tourism stakeholders that will also play a big part in the sustainable development and continuous socio-economic, cultural, and environmental benefit to the entire community. Conclusively, the collaborative efforts of the government agencies namely DOT, DENR, and LGU have commanded a significant impact in the life of the people in the river tourism destinations areas.

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