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An investigation of environmental impact of mountain tourism activities in the Hunza valley of Pakistan: a tourists' perspective

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Abstract

Environmental impact of tourism is a critical issue in the mountain regions around the world. This research aims to study the tourists' perspective on the environmental pollution about mountain tourism activities in Hunza valley northern mountainous part of Pakistan. The data was collected by a set of questionnaires distributed among 300 foreign tourists, who visited Hunza. Descriptive statistics along with one-way ANOVA was performed to analyze and test the hypotheses. The research outcomes revealed that eco-tourists identified more pollution in terms of human waste and animal litter, sanitation, scattered rubbish, noise pollution and crowding than mountaineers, trekkers and general tourists visiting Hunza. Tourists staying for more than a week felt more pollution than those who stayed in Hunza for less than a week. Furthermore, research revealed that group of more than 6 persons identified more pollution than those travelled in a small travel party size. Results of statistical analysis indicated that there are statistically differences in tourist's perception of environmental pollution in terms of tourist type, travel party size and length of stay during their sojourn in Hunza. Research concludes that mountaineers and trekkers directly get involved in adventure tourism and spend more days in the mountainous areas but they do not feel environmental impact as they can be part of this degradation some times. On the basis of results, researcher recommends to attract more eco-tourists in the Hunza valley because of their friendly nature towards the environment.

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Introduction

The debate of environmental realism vis-à-vis the postmodern view that the environment is purely a social construction is one that is pertinent to how nature is perceived, and subsequently managed (Dickens, 1996; Holden, 2003). The activity of tourism is dependent upon the perception of the environment of a destination as being desirable (Dickens, 1996; Holden, 2003). Majority of tourists identify environmental impacts in the mountain areas (Hillery *et al.,* 2001).

Mountains are particularly attractive destinations for exploration, expedition, penetration and outdoor recreation. They offer a wide range of activities options, like snowmobiling, trekking, mountaineering, mountain biking, water rafting, etc. The gradual development of mountain tourism, which today represents an important segment of the global tourism industry, according to European Commission (1998), 25% of European travelers, in 1998, chose mountains for their holidays (Maroudas *et al.,* 2004). Mountain landscapes are particularly fragile and vulnerable to change and degradation. Landslides, avalanches, lava flows, earthquakes, torrents and rock falls can alter the landscape unexpectedly. Mountain ecosystems include a wide range of small and unique habitats, with flora and fauna that may have very short growing and reproductive seasons, and may be particularly sensitive to disturbance by human activity. Tourism activities often involve the development and intense use of tracks, paths and sports slopes by vehicles, non-motorized transport and pedestrian traffic. Visitors presence is also usually concentrated in small areas, contributing to increased noise and waste. The negative environmental effects of poorly managed tourism activities can include vegetation clearing and soil erosion, removal of scarce habitat, altering of critical landscapes and water flows, water and air pollution, and wildlife relocation or behavioral changes. The introduction of exotic and invasive species and diseases can also have a significant negative impact on local plant and animal species (UNEP, 2007).

The large amount of solid waste left by the expeditions on all popular trekking routes and base camps is not only an eye sore for the tourists, but also serious threat to the natural environment. These mountain tourism activities (Climbing, mountaineering, trekking, and hiking etc.) also have negative impacts on these mountainous areas (Ata & Siddiqui, 1993; Karim *et al.,* 2014).

The most negative impact on the local environment associated with mountain tourism is caused by littering, solid waste, and bad hygiene (Gurung, 1991). The pollution of water sources from setting toilets too close to streams and drinking water sources (both lodge latrines and portable trekking toilet tents), use of chemical soaps for bathing, and the washing dishes and clothes in steams or close to water sources have been reported. Water pollution can also be caused by disposition of human waste directly into rivers and streams, as is customarily done by lodge owners, a common practice also of local people (Banskota & Sharma, 1995).

Studies focused on perceptions of the environment have found that tourists generally have limited perceptions of wear and tear impact but are more sensitive to the direct impact resulting from litter, human waste, and vandalism etc. (Lucas 1979; Marion and Lime 1986:229). More recent work (Hammitt, Bixler and Noe 1996:60) showed that tourists are still most observant of the direct impacts of other participants (trails use for more than one activity, litter etc.) but that they may also be growing more aware of other impacts on the environment (like trail erosion). The suggestion of increased awareness and sensitivity to environmental impact over the past decades (Lucas 1985; Hammitt *et al.,* 1996) highlights this issue in planning for a sustainable tourism industry into the future (Hillery *et al.,* 2001).

Several researches identified common findings on the environmental impact, their results identify that the tourism activities are main cause of the environmental degradation; some of them have also

identified that local people also responsible for the environmental vulnerability. Majority of researchers have focused on either on physical and visual pollution or local peoples' perceptions about impacts. This research aims to investigate the tourists' perceptions of environmental impact because these are the real users of the destination especially on the high altitude mountain areas in Hunza. It focuses on how different types of tourists perceive the tourism and its impact on environmental impact mountainous regions.

Material and methods

Study Area

The opening up of the Karakoram Highway in 1978 ended this isolation and saw a rapid pouring in of tourists. With an altitude of over 2,400m, Hunza receives an annual rainfall of 145 mm. April to August are the wettest months and October to March is the area's dry period. The Valley is divided into three regions, the lower (Shina) region, the central (brushal) region, and the upper (Gojal) region (Al-Jalaly *et. al,* 1995).

The Hunza valley with its high altitude mountains of the karakoram ranges attract different types of tourists, mountain trekkers, mountain climbers, eco-tourists etc. Some of the world's highest peaks are found here. These attract large number of mountaineers from all over the world. In between these peaks, there are heavenly valleys, the largest glaciers outside the polar areas, bubbling springs, blue lakes and rivers. The area is ideal for mountaineering, trekking and just nature walking (Ministry of Tourism, 2006).

Survey Method.

In order to conduct the research, a total of 345 questionnaires were distributed among tourists who participated in tourism activities and out of these, 300 questionnaires were filled by the tourists and 45 questionnaires were unusable. Researchers could have distributed more questionnaires but due to Islamic holly month of Ramadan, many hotels and lodges were closed during the time of data collection. Questionnaires were distributed at camps, lodges, hotels and trekking routes during 12 September, 2009 to 17 October, 2009 in Hunza. Data collection process took 35 days and on an average 9 questionnaires was distributed per day; one respondent took on an average 15 to 20 minutes to fill a questionnaire. Before distributing the questionnaire, researchers asked for respondents consent to fill the questionnaire and briefed them about the study. Questionnaire mainly comprised three parts; Part one was about demographic characteristics of respondents, Part two was about travel characteristics. Part three was about tourists' opinion of environmental pollution in Hunza expressed on a Likert Scale, 5-negligible, 4-low, 3-moderate, 2-high, and 1-very high.

Reliability Test / Pre-Test

Pretests are trail runs with a group of respondents for the purpose of detecting problems in a questionnaire's instructions or design (Zikmund, 2003).

At this stage, the researcher conducted a pilot study by distributing questionnaires to 30 tourists in Hunza. Raw data attained from this pre-test study was decoded and processed by the Statistical Package of Social Sciences (SPSS) programme, to find the reliability level.

If the reliability value exceeds 0.60, it is considered to be reliable (Sekaran, 1992), as the result of the reliability analysis from this study, .969 is the alpha scores of 9 items which is higher than 0.60 in all parts of the questionnaire, then it is being considered as reliable test. The results of the reliability test indicated that this questionnaire was reliable to investigate or examine the hypothesis (Table 3).

Results

Demographic Characteristics of the Tourists

Out of 300 respondents of this research, 37.3 percent respondents visiting Hunza were Asians. 52 percent were between the ages of 25-34, 59.3 percent were male; where as 42 percent had bachelors as their level of education and 51 percent of respondents were related to different professions (Table 4).

Table 1. Operationalization of Dependent Variable.

DependentVariable	Conceptual Definition	Operational Components	Level of Measurement
Tourist Opinion of environmental pollution in Hunza	Tourist judgment about the condition of environment in Hunza.	•Human waste and trails of animal litter • Left-over mountaineering gear • Containers • Damage to forest area • Sanitation condition at camp sites/lodges • Sanitation condition at peaks • Sanitation condition at trekking routes • Noise disturbance • Crowding	Interval Scale

Table 2. Operationalization of Independent Variables.

Independent	Conceptual Definition	Operational Components	Level of Measurement
Average Length of Stay	Number of days spent on destination	• 1-2 days • 3-4 days • 5-6 days • A week • More than a week	Ordinal Scale
Type of tourist	Tourist type is to classifying, segmenting and clustering (Hvenegaard, 2002)	• Mountaineer • Trekker (individual/group) • General Tourist • Eco tourist or nature tourist	Nominal Scale
Travel Party Size	Number of tourist traveling to any destination	• 1-2 • 3-4 • 5-6 • More than 6	Ordinal Scale

Travel Characteristics of the Tourists

The travel characteristics of the sample indicated that 49.3 percent of respondents, who visited Hunza were for pleasure purposes. 52.3 percent stayed in "lodges/guest houses". 45.7 percent of the tourists stayed for "more than a week", 43.7 percent tourists had mountain tourism experience for "1 to 2 years", 39.3 were "mountaineers". 39.7 percent of them traveled in a group of "1-2 persons". 39.7 percent of tourists "did not hire any guide or porter". Whereas 41.7 percent of tourists visited Hunza for "viewing natural scenes" and 47.3 percent tourists came for" recreational tourism" (Table 5).

Table 3. Reliability Test.

Cronbach's Alpha	No of Items
.969	9

Table 4. Statistics of tourists in terms of demographic characteristics.

	Percentage
Nationality (n=300)	10
North American	30.7
European	21
Australian	37.3
Asian	1
Other	
Age (n=300)	8
Less than 25	52
25-34	27
35-45	13
over 45	
Gender (n=300)	59.3
Male	40.7
Female	
Education (n=300)	11
High School	15.7
Diploma	42
Bachelors	19.7
Masters	3.7
Doctors	8
Other	
Occupation (n=300)	51
Professional	10.3
Sports person	2
Expedition Team Leader	36.7
Other	

Tourists' Perception of Environmental Impact

The tourists' opinion of pollution in Hunza about "noise disturbance" got the highest mean score (4.36) followed by "crowding" (4.35), showed negligible level of pollution in terms of noise disturbance and crowding. Mean scores of "left-over mountaineering gear (tents, bedding, ropes, shoes, clothing)" (3.54), "damage to forest area (cutting, destruction of vegetation, effects on wildlife)" (3.51), "human waste and trails of animal litter" (3.42), showed low level of pollution. Where as mean scores of "sanitation (scattered toilet papers along and uncovered toilet pits) at camp sites/lodges, peaks, and trekking routes)" (3.28), "containers (bottles, food packing, polyethylene bags/sheets)" (3.19) respectively, showed moderate level of pollution in the opinion of tourists (Table 6).

Hypothesis Testing

One way ANOVA (Analysis of Variance) was applied

to test the difference in tourists' opinion of environmental pollution in Hunza with regard to tourist type, travel party size and length of stay. All hypotheses are rejected due to the significance values 0.00. These values were lower than the standard significance value 0.01 (Table 7).

Table 5. Statistics of tourists in terms of travel characteristics**.**

	Percentage
Purpose of Visit (n=300)	49.3
Pleasure	41.7
Adventure	9
Education	
Type of accommodation used (n=300)	52.3
Lodges/guest house	24.7
Non star hotel	22
Budget hotel	1
Camping	
Length of stay (n=300)	7
1-3 days	14.3
4-6 days	33
A week	45.7
More than a week	
Years of mountain tourism experience (n=300)	17
less than 1 year	43.7
1-2 years	22
3-4 years	14.3
More than 4 years	3
Not applicable	
Type of Tourist (n=300)	39.7
Mountaineer	16
Trekker	36.0
General Tourist	8.0
Ecotourist or Natural tourist	
Travel Party Size (n=300)	39.7
1-2 persons	19.7
3-4 persons	26.7
5-6 persons	14
more than 6	
Status of local support employed (n=300)	39.7
No guide or porter	14.7
Both guide and porter	9
porter only	36.7
guide only	
Activities (n=300)	41.7
Viewing Natural Scenes	14.3
Natural walks	4
Access to unique landscape features	5
Bird watching/wildlife	9.7
Photography	4
Rock climbing	15
Physical activities	6.3
Picnicking	
Tourism type (n=300)	27.3
Leisure	12.7
Cultural	47.3
Recreational	12.7
Ecotourism	

Table 6. Tourists' opinion of environmental pollution in Hunza.

Environmental Pollution	Mean Scores
Noise disturbance	4.36
Crowding	4.35
Left-over mountaineering gear (tents, bedding, ropes, shoes, clothing)	3.54
Damage to forest area (cutting, destruction of vegetation, effects on wildlife)	3.51
Human waste and trails of animal litter	
Sanitation (scattered toilet papers and uncovered toilets pits) at camp sites/ lodges,	3.42
peaks and trekking routes)	3.28
Containers (bottles, food packing, polyethylene bags/sheets)	3.19

Likert Scale: 1-very high, 2-high, 3-moderate, 4-low, 5-negligible.

Table 7. Difference in tourists' opinion of environmental pollution in terms of tourists' type, travel party size and length of stay.

Variable		Environmental pollution
	n = 300	P value
Tourist's Type		
Mountaineer	39.7%	
Trekker	16.0%	0.000**
General Tourist	36.0%	
Eco tourist	8.3%	
. Travel Party Size		
1-2 persons	39.7%	
3-4 persons	19.7%	0.000**
5-6 persons	26.7%	
> 6 persons	14%	
Length of Stay		
1-3 days	7%	
4-6 days	14.3%	0.000**
a week	33%	
more than a week	45.7%	

** p<.01.

Conclusion

The results described that eco-tourists observed more pollution during their visit to Hunza. While tourists who traveled in a group of more than 6 persons and spent more than a week in Hunza, observed more pollution. Eco-tourists are more sensitive to identify environmental pollution as compare to other three types. Therefore, eco-tourism should be promoted, as they are more responsible and environmental friendly tourists. Eco tourism/environment friendly activities should be initiated in Hunza, which would help to reduce the negative effects of tourism and will allow both tourists and local people to take benefit from tourism activities.

As the results of research study identified that tourist who stayed for longer time in Hunza felt more pollution because they got more time to experience the destination. They got more time to walk around, and experienced the destination, giving them the feeling to be close to the nature. So long staying tourists must be entertained with extra tourism

packages to get more economic benefit from tourism activities in Hunza.

The outcomes of the results showed that tourists traveling in a large party size identified higher pollution than small size parties because small number of group can view limited areas where as large group of travelers observe more around, so large travel party size might have identified more pollution in Hunza. Carrying capacity of Hunza can accommodate large number of tourists. Tourism authorities must attract more tourists so that they could come and explore Hunza. It will help local residents to get economic benefit from the tourism activities. A sustainable tourism development concept is that which balances all the indicators without ignoring a single one.

This research recommends that tour operators and guides must educate tourists about the environmental pollution issues, environmental preservation, local laws and customs before arranging any tour to Hunza.

This research identified some environmental pollution in terms of sanitation (scattered toilet papers and uncovered toilets pits), so hoteliers/ lodges/guest house owners and tourism authorities must construct covered toilets and affix dust bins at hotels, lodges, and along the trekking routes to put the toilet papers and rubbish. They should also manage the waste properly.

As the result showed that the mountaineers and trekkers cut the trees along the trekking routes for fire wood during their sojourn. To minimize the deforestation, department of forestry must take steps with the help of Gilgit-Baltistan Tourism Department (GBTD).

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