Perceived Tourism Impacts of Tourists on the Environment of the Philippine Military Academy in Baguio City, Philippines

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Abstract. There has been an incredible increase in tourism activities in the Summer Capital of the Philippines, Baguio City, specifically at the Philippine Military Academy over the years. Unfortunately, these tourism activities led to the growth of a variety of environmental pressures. An environment-friendly or a sustainable form of tourism is seen as a solution to this growing problem. A perception analysis of tourists on the impacts of tourism on the environment of the Philippine Military Academy (PMA) was undertaken. This is a practical approach to gain information about the extent of environmental effects of tourism activity which will also identify areas that can be improved. The study adopted a survey research design with 109 PMA visitors, mainly women (63.3%), that are randomly selected. Respondents were surveyed through an online questionnaire from February to April 2019. Results of this study revealed that tourism has a moderate impact on the environment of PMA as perceived by the tourists on the different aspects of tourism including: general management, commercial areas, tourist routes and facilities. It also shows that respondents, regardless of gender, have a considerable level of awareness and concern about the effects of tourism on the PMA environment. Although considered as an environmental disturbance it is also offered that when managed properly, tourism is a positive activity benefiting the host community, environment and all stakeholders alike.

Introduction

The Philippines has many natural and human-made attractions that make tourism one of its major sources of revenue [1-3]. Industry leaders and development experts observed that there had been an apparent growth in tourism in most countries [4]. This has also been factual with the case of Baguio City, the summer capital of the Philippines. Baguio City has long been a place that pulls-in large number of tourists [5]. It is a popular northern Philippine destination for many local and foreign visitors particularly on weekends and holidays, and especially during the Lenten season and the *Panagbenga* festival [6]. Aside from natural attractions such as mountain ranges and bodies of water, Baguio City is also famous as it hosts several historic landmarks and institutions such as The Cathedral, The Mansion, *Lourdes Grotto*, Bell Church, and the Philippines' premier military school, the Philippine Military Academy (PMA). This military institution boasts a long and illustrious history of preparing the best military officers of the country [7]. It is located at a verdurous pine forest in Fort General Gregorio del Pilar on Loakan road with manicured grounds composed of installed vintage tanks, other historical military weapons [8] and museum, aside from the cadets marching off and performing drills, that entices tourists to see. However, as tourism grows, the

PMA ground is often overcrowded by individuals and environmental issues, such as garbage problems, wherein plastic bags and containers around are prevalent.

A study by Cassidy et al. [9] shows that the peak of the tourist influx makes the city congested and polluted. According to the Philippine Statistics Authority (PSA), Baguio City has a 345,366 population with a growth rate of 1.54 percent [10]. While tourism is often one of the most efficient and important financial component in developing nations compared to other traditional industries [11-14], it is considered a source of negative reactions including economic such as uneven development, income inequality, geopolitical risks, and social in nature including cultural and heritage problem [12 & 15].

It is always believed that the growth of tourism industry is tightly linked with environmental degradation such as a decline in the quality of air, water and soil and disturbance or loss of biodiversity affecting negatively tourism itself. A study by Jackson [16], shows the rising indications that the increase of tourism in a natural area is accompanied by a significant increase in environmental effects such as excessive emission of greenhouse gases, scarcity of water and other resources and excess consumption of energy. Although, tourism can be a significant tool for economic development, it also poses destructive impacts on biodiversity and pristine environments if not adequately planned. It can result in misuse of natural resources such as freshwater, forests and marine life if improperly managed [17-20]. To avoid these negative consequences, tourism should be managed and planned in a way that it must not compromise the environment and the socio-economic viability [21].

Planning and management of a tourism destination can significantly decrease the general impact of facets of tourism [22]. This can be achieved through the participation and support of the tourists [23]. Determining the views of tourists on the impacts of tourism can provide valuable information not only about the existence but also on the extent of environmental effects of tourism activities [24]. When problems and gaps in management process is carefully determined and taken into account seriously, it will lead to creating a more sound policy intervention for the proper management of tourism site [18, 19] which will benefit the host institution, the environment and the tourists as well [25, 26]. In the Philippine Military Academy, it is unclear whether tourists also recognize their impacts on its environment. No such studies have been conducted focusing on the PMA grounds or in other military installations in the Philippines [27]. This needs to be measured in order to come up with appropriate management policies and plan for the sustainability of the academy's tourism and environment. Hence, a study which aims to determine the perception of visitors regarding the impacts of tourism on the environment of the PMA is conducted.

Materials and Methods

The primary research method that was used in this study is quantitative design in the form of a survey. The survey conducted in this research is descriptive. The descriptive purpose of this study is to look at the perception of the visitors on the impacts of tourism on the environment of PMA. The instrument used to collect data in this survey is by using an internet-based questionnaire. The questionnaire consists of questions that are adopted from the study of du Plessis [25] on the general management, commercial area, tourist routes, and tourist facilities. A four (4) point Likert scale was developed to investigate the perception of the respondents, and the mean was used to analyze and interpret the data using the table below (Table 1).

Table 1. Likert scale for the perceived tourism impacts of tourists on the environment of PMA

Scale	Scale Limits	Level	Interpretation
4	3.25-4.00	Major	This tourism aspect has a major impact on the environment of PMA
3	2.41-3.24	Moderate	This tourism aspect has a moderate impact on the environment of PMA
2	1.75-2.40	Minor	This tourism aspect has a minor impact on the environment of PMA
1	1.00-1.74	Negligible	This tourism aspect has a negligible impact on the environment of PMA

The data collection was carried out from February to April 2019. The researchers distributed the questionnaire link through email and social media and gave some time for the respondents between the ages of 15 and 70 years old to fill in their answers and to avoid incomplete entries. The questionnaire was pre-tested to ten (10) respondents for clarity and reliability of questions. Each questionnaire items were also tested for reliability through Cronbach's Alpha Coefficient measurement. The population of tourists in PMA per month is roughly around 5,000. The computed sample size for the said population with $\pm 10\%$ margin of error and a 95% confidence level or a z score of 1.96, with an assumed population proportion of 0.5, is 94. Sample population for the respondents was calculated using the following Chochran's formula [28 & 29] where, z is the z score, ϵ is the margin of error, n is population size, and $\hat{p}$ is the population proportion:

$$n = \frac{z^2 \times \hat{p} (1 - \hat{p})}{\epsilon^2} \div 1 + \frac{z^2 \times \hat{p} (1 - \hat{p})}{\epsilon^2 N}$$

The questionnaires were randomly sent to 110 respondents that are at least a graduate of secondary school and able to visit PMA. 109 respondents were able to accomplish the questionnaire.

Study site

The research was carried out in the Philippine Military Academy, Loakan Road, Baguio City, Philippines at Fort Gregorio del Pilar (Figure 1). It is approximately 250 km north of Manila and roughly 1,400 m above sea level nestled within the Cordillera Central mountain range with an average temperature of 20 °C. The main motivators for tourists to visit an area are attractions, these play an important part in a destination's success [30]. In PMA, tourists visit ancient historical landmarks such as the old Melchor Hall Building. Other attractions include the relics point where military tanks and weapons are located, amphitheater, museum, sundial area where old air crafts are also located (Figure 2). Business establishments, parking spaces and comfort rooms are also present to serve the tourist [31].

Results and Discussion

The reliability of each item in the survey questionnaire was measured using the Cronbach's Alpha Coefficient. Table 2 shows the result of the reliability test for the four variables. It is recommended that Chronbach's alpha values above 0.7 as a sufficient measure of reliability or internal consistency of an instrument [32]. The table below shows that the variables addressed in the questionnaire achieved a reliability of 0.8 and above, reflecting the items in the questionnaire reliable and deletion is not required.

Table 2. Reliability coefficients for the variables

Variable	No. of item	Cronbach's Alpha
General management tourism aspect	10	0.917
Commercial area tourism aspect	5	0.851
Tourism Routes tourism aspect	12	0.962
Tourist facilities tourism aspect	9	0.948

Figure 1. Location map of the study area

Figure 2. Some of the tourist destinations inside the Philippine Military Academy: A. The shako monument; B. Relics point; C. Military aircrafts; D. Sundial area; E. The PMayer monument; F. Prayer room

The study set out to investigate the perceived tourism impact of tourists on the environment of PMA. The respondents of this study were predominantly females (63.3%). Most of the respondents were between 18 to 27 years old. 86.2% are single, and 13.8% were married. Respondents are well educated since 33.9% of them were college graduate, 56% were in the tertiary level, and the rest were in the secondary level of education.

The respondents believed that general management in the PMA has a moderate impact on its environment (Table 3). This shows that pollution (solid waste, noise and aesthetic), lack of energy and water saving measures, inappropriate solid waste management and sewage discharge, excessive tourists in the area, no environment-friendly products, and limited Information Education Campaign (IEC) materials are all present in the PMA. This gives the impression that these aspects contribute to the negative consequence of tourism on the place. Inappropriate water pollution discharge, for instance, can carry potential diseases which can be spread out by vermin such as flies, mouse, and cockroach affecting human health. Noise pollution, such as those coming from the vehicles, causing annoyance and distress not only to humans but to wildlife as well. Improper disposal of solid wastes adds on the poor aesthetic condition of the area, and it also attracts unwanted pests. The presence of too many visitors also entails problems on the environment. Tourist activities can alter the integrity of cultural resources. This damage includes vandalism and looting of sites of cultural significance [18]. Likewise, the vehicles of the tourists that pile up in one parking area congest that zone and emit a large amount of carbon dioxide. Also, the absence of environment-friendly products such as

paper bags adds on the long-time garbage problem is observed. Finally, the lack of IEC reduces the awareness of people on the possible impacts they might bring in the environment of PMA. IEC materials such as brochures and information booklets provide information on the potential harm a human can do whenever they go closer with nature and the environment. It also includes information about how people can mitigate their impacts on nature.

Table 4 shows that respondents perceived commercial area tourism aspect has moderate impact on the environment of PMA. The respondents see that inappropriate waste disposal and not making use of locally produced products of restaurants, utilization of single use plastics, visible pollution at restaurants and non-organic food products exist in PMA, and all these attributes have a negative impact contribution in the environment of PMA. The plastic bags for instance, has seen to create environmental challenges because of its physical and chemical composition [33-35]. Plastics are made of fossil fuels that are infamous for its contribution on the worsening effects of the global climate change.

Table 3. Perception of tourists on the impacts of the general management tourism aspects on the environment of PMA

General Management Tourism Aspect	Mean	Level
1. Solid waste/Litter/Garbage	3.11	Moderate
2. Lack of energy saving measures (for ex. Energy saving lights, solar panels, etc.)	2.83	Moderate
3. Inadequate water saving measures	2.98	Moderate
4. Visual Pollution (For ex: signs/advertising, building structures)	2.94	Moderate
5. Noise Pollution (For ex: Music/people)	2.75	Moderate
6. Sewerage Systems (Inappropriate discharge)	2.99	Moderate
7. Inappropriate waste management – the absence of recycling waste bins	3.01	Moderate
8. Too many tourists in the park at a given time	3.02	Moderate
9. Lack in the use of environmentally friendly products (For ex: Paper bags)	2.66	Moderate
10. Lack of brochures and information booklets about the tourism site.	2.78	Moderate
Mean	2.90	Moderate

Table 4. Perception of tourists on the impacts of commercial area tourism aspects on the environment of PMA

Commercial Areas Tourism Aspect	Mean	Level
1. Inappropriate waste disposal at restaurants (For ex: not using organic gardens)	2.96	Moderate
2. Restaurants not making use of locally produced products	2.63	Moderate
3. Impacts of using non-renewable resources (For ex: plastics)	3.09	Moderate
4. Pollution at restaurants	2.91	Moderate
5. Use of food products that aren't organic	2.58	Moderate
Mean	2.89	Moderate

The tourist routes tourism aspects have moderate impact on the environment of PMA according to the respondents (Table 5). Attributes under these aspects include the physical damage on the natural vegetation and soil, impacts on wildlife and plants, and speeding vehicles that may kill animals. The aforesaid activity disturbs wildlife in many ways. Many species will perceive the consequent disturbance in various ways and for different reasons. Some will be affected in terms of their breeding season, feeding patterns, behaviors, and many more [20]. Visitors may damage the ecosystem due to their activities such as walking. along restricted areas or places where trails are not apparent resulting to trampled vegetation. One or two tourists may not cause visible harm, but

hundreds over time can do substantial damage [20] One notable attribute under this aspect is the possible introduction of alien species. Many visitors do not know the effects of introducing alien/exotic species in an environment. This species threatens the local environment and interferes with the essential species balance, and generally destabilizes the ecosystem.

The respondents perceived tourist facilities tourism aspects have a moderate impact on the environment of PMA (Table 6). Under these are waste spillage in the garbage bins, interference of animals, wildlife attracted to rubbish bins, lack of energy saving measures, lack of waste management and use of non-renewable resources by tourist. Each of these aspects have detrimental effects on the environment. The solid waste management has been a long-time problem all throughout the Philippines. Despite the passing of the RA9003 or the Ecological Solid Waste Management Act of 2001, many organizations and institutions fail to comply properly on the provision of the said law.

Table 5. Perception of tourists on the impacts of tourist routes tourism aspects on the environment of PMA

Tourist Routes Tourism Aspect	Mean	Level
1. Damage to natural vegetation due to uncontrolled tourist behavior	3.15	Moderate
2. Erosion in the roadway due to tourists	2.96	Moderate
3. Overcrowding of tourist at wildlife sightings	2.91	Moderate
4. Impacts of wildlife attracted to rubbish bins along tourist routes	2.87	Moderate
5. Impacts of plant collecting along tourist routes	2.84	Moderate
6. Introduction of alien plants and species due to tourism	2.63	Moderate
7. Interference of breeding of wildlife due to tourism	2.70	Moderate
8. Specimen collection (for ex: butterflies) by tourists	2.75	Moderate
9. The killing of animals for comfort and safety (for ex: spiders, snakes, mosquitos)	2.78	Moderate
10. Road killings as a result of reckless tourist driving and speeding in the tourism site.	2.91	Moderate
11. Speeding of staff and delivery vehicles in the site	2.81	Moderate
12. Lack of environmental-friendly support	2.88	Moderate
Mean	2.84	Moderate

Table 6. Perception of tourists on the impacts of tourist facilities tourism aspects on the environment of PMA

Tourist Facilities Toursim Aspect	Mean	Level
1. Waste spillage around waste bins by tourists	3.09	Moderate
2. Interference of wildlife due to noise, cars, and people	2.93	Moderate
3. Overcrowding of people	3.17	Moderate
4. Visual pollution (e.g. signs and direction)	2.99	Moderate
5. Wildlife attracted to rubbish bins	2.91	Moderate
6. Supplementary feeding of wildlife by tourists	2.72	Moderate
7. Lack of energy-saving measures (e.g. solar panels)	2.72	Moderate
8. Insufficient management of waste (e.g. lack of recycling measures)	3.08	Moderate
9. Use of non-renewable resources (e.g. plastic) by tourist	3.09	Moderate
Mean	2.96	Moderate

The respondents believed that the impact of tourism aspects in the environment of PMA was all moderate. It means that the management of the PMA has still a lot to improve in order to lower the tourists' perceived tourism impacts in the environment of the academy. More so, each aspect presented above can be used as indicator on which areas to improve. Study shows that the PMA can improve further on the aspects of general management, commercial areas, tourist routes and tourist facilities. A sustainable tourism management approach can be carried out as an improvement for the

tourism in PMA. Moreover, an independent sample t-Test was performed to determine the significant difference of perception between female and male respondents (Table 7). The analysis revealed that there is no significant difference in the perception of female and male respondents ($t_{stat}=5.49 > t_{Critical\ two-tail}$; and $P\ value = 5.84 \times 10^{-7} < \alpha=0.05$).

Table 7. Independent sample t-Test for female and male respondents mean responses

Variable	Mean	StDev	t stat	T Critical two-tail	P value
Female	2.97	0.03	5.49	1.99	5.84×10^{-7}
Male	2.76	0.03			

Conclusions and Recommendations

The study revealed the impacts of tourism on the environment of PMA, pointing out different problems, challenges, and negative consequences to the environment of the various aspects of tourism in the Academy. The tourists believe that the general management, commercial areas, tourist routes and facilities at PMA have moderate impact on its environment. This agrees to other studies that tourists perceive tourism negatively affects the overall make-up of an environment [36, 37]. Moreover, tourists, irrespective of gender, have considerable level of awareness and concern on the impacts of tourism in an environment of a destination site [38-40]. Findings of this study gives out valuable insights on how the academy can improve its tourism management to make it more environmentally friendly and sustainable. A policy that details the management plan on tourism in the PMA considering the results of this study is suggested. This will offer the Academy officials and managers a clear perspective of what needs to be taken into account when designing a sustainable tourism in PMA. For a more complete understanding on the impacts of tourism on the PMA, a similar study targeting other stakeholders such as personnel, students and residents is greatly recommended wherein the results shall be compared and integrated with the results of this study.

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Conflict of Interest

The authors declare that they have no affiliations with or involvement in any organization or entity having any financial or non-financial interest in the topic or materials discussed in this manuscript.

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