

Analysing push and pull motives for volcano tourism at Mount Pinatubo, Philippines

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Abstract

This paper investigates the motivations of visitors undertaking a volcano tour at Mount Pinatubo in the Philippines. The study identifies push and pull motives for visiting a non-erupting active volcano; tests the influence of age, gender and prior experience of volcanic tourism on visitors; and examines differences in motivations for domestic versus international visitors. A total of 174 survey responses were collected and analysed. The results reveal four push motives, namely *escape and relaxation*, *novelty-seeking*, *volcano knowledge-seeking*, and *socialisation*, and two pull motives namely *disaster and cultural heritage-induced*, and *volcanic and geological attribute-driven*. Novelty-seeking was found as the strongest motive for visiting volcanic sites. Domestic visitors display higher escape and relaxation, and socialisation motives compared to international visitors. The findings provide implications for developing and marketing volcano-based geotourism, and for diversifying the Philippines' tourism products. This study makes a valuable contribution to the under-researched understanding of geotourism at volcanic sites.

Keywords: volcano tourism, geotourism, push-pull motivation theory, Mount Pinatubo, Philippines

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Introduction

Volcanoes continuously shape the world's natural and cultural landscape. Volcanoes feature in art, film and literature, and serve as iconic landforms that enhance the aesthetic of a tourist destination (Dehn and McNutt 2015; McNutt 2015). Likewise, volcanoes have long been considered as important resources for leisure and recreation (Erfurt-Cooper et al. 2015). Today, there are about 1,300 known active volcanoes scattered worldwide. Each of these has its own unique physical attributes, type of eruption and eruption history (Erfurt-Cooper 2011; Lockwood and Hazlett 2010; Siebert et al. 2015).

Each year, more than 130 million tourists visit volcanic sites located in the USA, Japan, New Zealand, Italy and Spain (Erfurt-Cooper 2011). The activity that entails the travel to view, appreciate and learn about volcanic landforms is called *volcano tourism* (Erfurt-Cooper 2010b). Several factors have contributed to the popularisation of this form of tourism. First, the establishment of volcanic sites as national parks, geoparks and heritage sites has promoted the visitation and conservation of volcanic heritage (Erfurt-Cooper 2011). Furthermore, volcanic eruptions and the worldwide exposure of these geological phenomena through the media attract visitors to these sites. Lastly, the improved accessibility of volcanic sites through low-cost flights and better infrastructure has also boosted tourist numbers (Erfurt-Cooper 2014).

Although increasing in popularity as a tourism activity, volcano tourism is an under-researched field of study. Research in this area has been mainly focused on the inventory of volcanic attributes and their value for tourism planning and development in various volcanic regions (Moufti and Németh 2013; Wang et al. 2014; Zangmo Tefogoum et al., 2014). Moreover, a research focus on the assessment of volcanic risk and natural hazards at existing volcano tourism attractions is evident (Bird et al. 2010; Heggie 2009). Some studies have

investigated tourists' satisfaction and their perceptions of volcanic risk (Covelli et al. 2005; Davis et al. 2013; Nomura et al. 2004), yet little is known about volcano tourists' motivations.

This paper aims to address this gap in the literature by exploring the motivations of visitors to Mount Pinatubo, a currently non-erupting active volcano in the Philippines. Mount Pinatubo's most recent eruption in 1991 is known as one of the world's largest volcanic eruptions in recent history. After a decade, this violent eruption created an economic boom as the number of visitors to the volcanic site increases annually (Erfurt-Cooper et al. 2015). Today, after 25 years, Mount Pinatubo has become a popular tourist attraction for its crater lake, and other volcanic and natural features. By researching visitors to Mount Pinatubo, the objectives of this paper are to:

- identify the different push and pull motives for visiting a 'non-erupting' active volcano;
- examine the influence of age, gender and prior experience of volcanic tourism on visitor motivations; and
- test for differences in motivations between domestic versus international visitors.

Tourism in volcanic environments (Literature Review)

Volcano tourism can be considered as a subcategory of *geotourism* (Erfurt-Cooper 2011; Heggie 2009). The latter includes all kinds of travel to appreciate natural landscapes, geology, geomorphology, and geological phenomena (Dowling 2011; Dowling and Newsome 2006; Newsome and Dowling 2010a). Geotourism is a global activity and is currently researched worldwide with a particular focus on geological sites in Europe, Asia and South America (Ruban 2015). Newsome and Dowling (2006) propose that the scope and nature of

geotourism involves the integration of three elements, namely geological form, process and tourism. Applying this framework to volcanic sites reveals that the interaction of ‘volcanoes’ (geological form), ‘volcanic activities’ such as lava flows (process), and ‘recreational activities and facilities’ such as organised tours and visitor centres (tourism) within a volcanic site, constitutes geotourism in volcanic settings.

The nature of volcanoes is complex. To better understand these landforms, geologists classify volcanoes in different ways. The most common categorisation is based on their current volcanic activity, also known as the ‘active-dormant-extinct’ classification:

- Active volcanoes are those with ongoing seismic activities or eruptions.
- Dormant volcanoes are those without any ongoing activity but are predicted to have future eruptions.
- Extinct volcanoes are believed to never erupt again (Rothery 2010; Weil 2013).

The first and so far the only definition of volcano tourism is based on this classification:

Volcano tourism involves the exploration and study of active volcanic and geothermal landforms and processes. Volcano tourism also includes visits to dormant and extinct volcanic regions where remnants of activity attract visitors with an interest in geological heritage (Erfurt-Cooper 2010b).

A dichotomy of volcano tourism experiences can be identified based on the above definition. Firstly, a special focus can be noticed on the geological activities showcased by active volcanoes. Active volcanoes, especially those with ongoing eruptions offer unique spectacles of nature (Erfurt-Cooper et al. 2015), and may stimulate “feelings of awe, excitement, and to a greater or lesser extent, concern and fear for those nearby” (Lockwood and Hazlett 2010). An example of these volcanoes is Kilauea in Hawaii, a popular volcanic

attraction since the early 20th century (Erfurt-Cooper et al. 2015). This volcano is known to have a ‘strombolian’ type of eruption involving frequent subtle eruptions which create slow streams of lava that can be viewed at a relatively safe distance (USGS 1997). However, there are active volcanoes that erupt less frequently but are more destructive when they do. The eruption type of these active volcanoes classified as ‘plinian’, and have the ability to produce pyroclastic flows that can extend for up to 50 km (USGS 1997). Mount Pinatubo, the research site, is known to have a ‘plinian’ type of eruption; this explains why it is dangerous to visit the volcanic site when it is erupting.

Secondly, in contrast to the spectacle of viewing volcanic events at active volcanoes, dormant and extinct volcanic sites feature the landscapes and scenery produced by previous eruptions. Tourism at these sites is more focused on the interpretation of geological heritage (Erfurt-Cooper 2010b). Although Mount Pinatubo is classified as an ‘active’ volcano (Philippine Institute of Volcanology and Seismology 2008), it is recognised to fall under the second category of volcano tourism experience because it should be at its ‘dormant’ state, meaning there should be no threat of any volcanic eruption in order for tours to be allowed to commence on the volcanic site. This suggests a cautious interpretation of the ‘active-dormant-extinct’ classification, because it is subjective and varies from country to country. Nevertheless, all kinds of volcanic landforms and processes are within the scope of volcano tourism.

Complementing the complexity of volcanoes, a range of leisure and tourism activities are offered at volcanic tourist destinations. Aside from viewing the volcanic landforms and the scenery they provide, visitors may participate in climbing, skiing, guided tours and archaeological exploration in volcanic settings (Erfurt-Cooper et al. 2015). Furthermore, individuals may enjoy the geothermal by-products of active volcanism such as hot springs

and spas. This is evident in the city of Beppu in Japan where annually around 12 million domestic tourists visit the city's more than 2,000 hot springs or *onsen* which are manifestations of the country's active volcanoes (Beppu City 2017; Erfurt-Cooper 2010a). At some destinations, volcano museums or visitor centres have been established and linked to volcanic attractions with the aim of educating visitors about the geology of the area. Interpretive facilities provide information about the potential dangers and risks that visitors may encounter during their visit to a volcanic site (Erfurt-Cooper 2011).

In association with the dangers posed by potential volcanic activities, the disaster landscapes produced by a volcano's previous eruptions may offer tourists a dark tourism experience as well. As evident at Pompeii in Italy and the island of Montserrat in the Caribbean, communities that have been negatively affected by these natural disasters may serve as 'dark sites' to volcano tourists who may wish to witness the destruction caused by volcanic eruptions (Petford et al. 2010). These manifestations illustrate how natural and geological processes have shaped people's lives and their cultural landscape, which is proposed to be featured in geotourism as well (Dowling 2013).

The uniqueness of volcanoes as tourist attractions leads to the consideration of volcano tourism as a form of niche tourism or a special interest type of travel. From a geographical perspective, volcanic and geothermal attractions may serve as 'highly specific' offerings that can be used by a destination to market itself as a 'specialist' destination (Robinson and Novelli 2005), as observed for example in Hawaii. Furthermore, as Erfurt-Cooper's (2010b) definition implies, volcano tourism targets a niche market that has specific travel needs and a special interest in volcanology and geological heritage. Understanding volcano tourists, including their motivations, is an important step towards explaining why individuals participate in leisure and recreational activities in volcanic environments. Thus,

the primary aim of this paper is to investigate the underlying motives of individuals who visit a volcanic attraction.

Motivations for visiting volcanic sites

To better market tourism products and services, there is a need for marketers to understand the drivers that influence tourists' decisions to travel (Fodness 1994; Goossens 2000). One of the factors that may predict a person's travel behaviour is tourism motivation (Crompton 1979). It has been suggested that the motivational stage is the 'initial' stage of tourists' decision-making processes, because, without this set of needs and wants, the demand for tourism would not exist (Mansfeld 1992; Sharpley 2006).

In recent years, many studies have investigated tourist motivations for various types of natural area tourism (e.g. Saayman and Saayman 2009; Van der Merwe et al. 2011), including geotourism. In a study of tourist motivations at Hwansun Cave in South Korea, Kim et al. (2008) identified four motivation domains, namely escape, knowledge, socialisation and novelty, all of which are synonymous with the core motives for leisure travel proposed by Pearce and Lee (2005). In another cave tourism example, six intrinsic motives, namely knowledge, relaxation, escape, enjoyment, friendship and sense of wonder, were revealed to be the underlying factors for visiting Crystal Cave in Australia (Allan et al. 2015). Of these six factors, relaxation and sense of wonder were reported as the key visitor motivations. Fung and Jim (2015), by researching Hong Kong Global Geopark visitors, found out that the 'nature and ambience' motivation is the primary motive for visiting the geosite. According to these researchers, this is a unique motive that entails the intrinsic desire to escape, relax and recreate in, and appreciate nature. While investigating visitor motivations and willingness to pay for guided tours at the Hong Kong Global Geopark, four motives were revealed: novelty-seeking, enjoyment, social interaction and escaping (Cheung 2015).

Visitors who reported having greater novelty-seeking and social interaction motives also indicated that they were more willing to pay for the guided tour programme. However, although these studies are situated in the context of geotourism, they do not specifically tackle motivations for visiting a volcanic geosite.

Erfurt-Cooper (2010b) outlines several possible motives for volcano tourism, namely ambition and curiosity, scientific interest, and other volcanic activities-induced motives. These ideas are further developed into a framework that covers two distinct sets of motives for tourism at ‘active’, and ‘dormant and extinct’ volcanoes (Erfurt-Cooper 2014). On the one hand, there is the motivation to experience adventure, excitement, anticipation of volcanic activity, protected site status and study of volcanoes suggested as the determinants that attract tourists to visit active volcanic sites. It can be observed that special attention is given to the expectation of viewing ‘volcano eruptions’ at active volcanic sites (Erfurt-Cooper 2014). On the other hand, in the absence of volcanic activity, recreation and leisure, geo-education, experiencing the natural environment, hiking and camping and visiting a protected site are claimed to be some of the motives for visiting dormant and extinct volcanoes (Erfurt-Cooper 2014). The latter set of motives can be proposed to apply to Mount Pinatubo visitors because of the absence of ongoing volcanic eruptions onsite during the tours. However, these suggestions are mainly conceptual. Therefore, the first objective of this paper is to provide an empirical investigation of visitor motivations for volcano tourism by applying a push-pull motivation framework.

Push-pull motivation framework

Introduced by Dann (1977), the push-pull motivation framework is perhaps the most common approach to studying travel motivations (Cohen et al. 2013; Prayag and Hosany 2014). ‘Push factors’ refer to person-specific variables that force individuals to travel while ‘pull factors’

pertain to destination-specific features that attract people to choose and visit a specific destination. Dann (1977) suggests that push factors can be easily understood by adopting the concepts of 'anomie' and 'ego-enhancement'. Anomie involves psychological factors that push individuals to travel in order to escape their usual environment and socialise with others. In Iso-Ahola's (1982) social-psychological approach, these factors pertain to 'avoidance' and 'approach'. Ego-enhancement simply refers to travelling in order to boost one's ego, social status or self-esteem through embarking on prestigious holidays, a 'prestige' motive (Dann 1977; Iso-Ahola 1983). Further additions to these concepts are the desire to experience new things (novelty-seeking) and to learn something from travelling (knowledge-seeking) (Fodness 1994; Lee and Crompton 1992). Overall, it is asserted that escape, socialisation, prestige, novelty-seeking, and knowledge-seeking are the most common push motives for tourism (Phau et al. 2013).

However, travel motivations are context-bound and vary for each type of tourist and destination (Mansfeld 1992). This is where pull factors are worth investigating because they are expected to vary for each destination. Pull factors entail the inherent attributes of a destination that are attractive to a tourist. In other words, if push factors are intangible forces that stem from the individual, pull factors are tangible aspects exhibited by a destination (Uysal and Jurowski 1994). Core tourist attractions, facilities, events, activities or the weather are some examples of these attributes that are considered and measured in different studies (Phau et al. 2013; Prayag 2012). Specifically, pull factors are viewed as objects that explain the influence of a place towards tourists' preference and destination choice (Crompton 1979). Thus, the push-pull motivation framework provides a simple yet practical approach to determining motivations for volcano tourism, because this allows the analysis of the influence of various external factors such as a volcanic site's geoheritage and processes that may attract individuals to interact with the Earth's geological environment (Dowling 2011)

and to participate in volcano tourism, apart from the generic internal drives that impact tourist decision to travel.

The orthodox approach to operationalising the push-pull motivation framework entails the measurement of push factors as ‘motives’ and the assessment of pull factors as ‘destination attributes’. In the context of volcano tourism, it can be conceptualised that these attributes that may serve as pull factors involve the volcanic landforms themselves and their geological features, health and wellness components if geothermal by-products are present, and disaster landscapes or ‘dark sites’ if the toured volcano has negatively affected a locality during its past eruptions (e.g. Pompeii in Italy) (Erfurt-Cooper 2010b; Erfurt-Cooper 2011; Petford et al. 2010). However, pull factors may also be explored as ‘destination-induced motives’. As Crompton (1979) pointed out, “pull factors are motives aroused by the destination” (p. 410), which he then referred to as ‘cultural motives’. This has been supported by the argument that “destination components (‘pull factors’), may similarly reflect in their [tourists’] travel goals or aspirations (‘push’ motives) that they associate with these destination attributes” (Awaritefe 2004). Therefore, rather than analysing the importance of destination attributes as ‘pull factors’, the present study transforms these features into intrinsic or person-specific factors that are influenced by the visited destination, and labels them as ‘pull motives’. In this method, destination attributes are transformed into internal drives that may capture real motives rather than simply assessing their importance and attractiveness to tourists.

In general, like any other travellers, visitors to volcanic sites can be classified according to their socio-demographic characteristics. Various studies reveal that push and pull motives may vary according to socio-demographic variables such as age and gender (e.g. Ewert et al., 2013; Kim et al., 2003; Phau et al. 2013). Understanding differences in

motivations by socio-demographic variables provides useful insights into managing and marketing destinations (Saayman and Saayman 2009). Furthermore, it has been previously argued that volcano tourism can be regarded as a special interest form of tourism. As tourists accumulate more travel experience, they “narrow down their place and activity choices” (Lehto et al. 2004). This resonates with the concept of a travel career which pertains to the changing patterns of travel motives according to individuals’ previous experience (Pearce and Lee 2005). This pattern is frequently observed in specialised forms of travel such as skiing (Holden 1999) and backpacking (Paris and Teye 2010). This concept was applied in this study by classifying visitors into two groups: those who have prior experience of visiting volcanic sites and those who do not have this experience. Specifically, this study proposes that visitors’ prior experience of volcanic sites may influence their motives for visiting Mount Pinatubo or other volcanoes. Thus, the second objective of this study is to examine differences in motivations by age, gender and prior experience of volcanic sites.

Visitors may also be classified as either domestic or international. Domestic visitors are individuals (e.g. citizens, residents, expatriates) travelling within their usual country of residence while international visitors are those travelling to a country where they do not usually reside (UNWTO 2010). Conversely, it is important to note that this classification is not synonymous to visitors’ nationality although the latter is found to influence visitor motivations (e.g. Jönsson and Devonish 2008; Pizam and Sussmann 1995; Prayag and Ryan 2010). Three factors are proposed to distinguish domestic and international visitors, namely: usual place of residence, distance travelled or proximity to the destination, and cultural background – all of which influence travel motivations in different contexts (Awaritefe 2004; Eftichiadou 2001; Mechinda et al. 2009). Therefore, the last objective of this study is to test for differences in push and pull motives for domestic versus international visitors.

Research methods

The research site: Mount Pinatubo, Philippines

Mount Pinatubo is located at the boundaries of the provinces of Pampanga, Tarlac and Zambales in the Philippines (Figure 1). It is a 1,445 metre-high stratovolcano that is part of the Ring of Fire, a region of interconnected volcanic arcs and trenches that spans about 40,000 km long surrounding the Pacific Ocean (Allaby 2013). Mount Pinatubo's most cataclysmic eruption in recent history occurred on 15 June 1991. This geological event was recorded as the second most powerful volcanic eruption of the 20th century, next to the eruption of Alaska's Mount Novarupta in the year 1912 (Newhall et al. 1997). Unfortunately, Mount Pinatubo's eruption coincided with a typhoon that resulted in destructive lahar flows causing communities, businesses and natural resources surrounding the volcano to be adversely affected. Amongst those greatly affected were the *Aeta*, a group of indigenous people who live at the slopes of Mount Pinatubo and believe that the volcano is the home of their god *Apu Namalyari*. Most of them evacuated the volcano and were displaced but some insisted to remain at the site and died during the eruption (Seitz 1998). Documentation shows that 800 lives were lost and 320,000 families were displaced, while the Philippines suffered almost US\$1 billion worth of economic loss from this disaster (Gaillard 2008; Mercado et al. 1996; Wolfe and Hoblitt 1996).

[**Fig. 1** Geographical location of Mount Pinatubo (Source: Gaillard, 2008)]

Tourism was not an immediate option as an economic regeneration strategy for the communities that surround Mount Pinatubo until the year 2000 (Department of Tourism 2004). Increasing numbers of domestic and international visitors that embark from a less-developed and impoverished village called Barangay Sta Juliana located in the municipality of Capas, Tarlac Province, were reported. This village is also known as the 'jump-off point'

for hiking the volcano and viewing its crater-lake that was formed years after Mount Pinatubo's eruption. This prompted the villagers and other civic groups to establish the Sta Juliana Tourism Council, Inc, and launch the tourism project *Kabuhayan sa Turismo* (Livelihood in Tourism) to formalise the volcano tours. The tourism council's first programme is the 'Mount Pinatubo Millennium Trek' which raised PHP 100,000 (which is equivalent to USD 3,300) start-up funds from 150 supporters. Later on, funding was provided by the local government and other foreign aid agencies as the community-based tourism initiative became part of the National Ecotourism Strategy in 2004 (Department of Tourism 2004; Zeppel 2006). Entrance and other fees (e.g. environmental and indigenous people's fees) were also imposed to sustain the tourism operations and provide alternative income to target beneficiaries composed of 80% *Aeta* and 20% non-indigenous people. Subsequently, the volcano tourism operations provided opportunities for some community members to establish tourism-related businesses that employ the local people. In addition, jobs were created for the *Aeta* who serve as trail guides, which allowed them to not only earn but also reconnect to their aboriginal homeland (Marler 2011).

Mount Pinatubo tours comprise a total of two hours of four-wheel vehicle ride through the lahar paths, three hours trek to the crater-lake, and an interaction opportunity with the *Aeta*. Furthermore, visitors are able to undertake sightseeing upon reaching the crater-lake. Other leisure activities such as boating and swimming were able to be experienced on the crater-lake until the start of 2013, when a tourist drowned (Philippine Daily Inquirer 2013). As of 2013, Mount Pinatubo receives an average of 17,000³ visitors annually (Department of Tourism 2014).

³ Number is based on data collected from 2007 to 2013.

Survey questionnaire development

Survey methods were used for this research because they quantify and simplify complex information. Furthermore, surveys allow the exploration of the characteristics of individuals who are directly involved in the studied phenomenon, and the measurement of their attitudes (Denscombe 2014; Veal 2006). A quantitative survey questionnaire written in English that addresses the issue, ‘Why are you participating in a Mount Pinatubo Tour?’ was developed for this study. Respondents were instructed to rate 15 push motivation items and 11 pull motivation items using a five-point Likert-type scale (1 = Strongly disagree to 5 = Strongly agree). The push motive items were based on previous studies of general travel motivations that measure ‘escape’, ‘relaxation’ and ‘socialisation’ (Pearce and Lee 2005), and ‘novelty’ and ‘knowledge-seeking’ (Lee and Crompton 1992). Two of the ‘knowledge-seeking’ motivation items, namely ‘*to increase my knowledge about volcanoes*’ and ‘*to fulfil my scientific knowledge interest on volcanoes*’, were worded based on Erfurt-Cooper’s (2011) suggestions.

In contrast, the pull motivation items were self-developed based on a two-step evaluation of Mount Pinatubo’s tourism attributes. For the initial step, the components of a Mount Pinatubo tour as advertised online by various tour companies and organisations were identified. This entailed a content analysis of the websites of two travel agencies in Manila (Filipino Travel Center 2013; Tripinas 2013), and a tour organiser that operates at Barangay Sta Juliana (Majestic Mount Pinatubo Tour and Homestay 2013); these websites appeared as the top search results for tours of Mount Pinatubo at the time of questionnaire development. The regional promotional website of the Department of Tourism Region III (Visit My Philippines 2013) was also content analysed in respect to the information it shows about Mount Pinatubo. Motives that were conceptualised by Erfurt-Cooper (2011) were also

included at this stage. From this initial investigation, 13 initial pull motivation items that involve Mount Pinatubo's volcanic and natural, adventure, disaster landscape, wellness, and cultural heritage attributes were considered (Appendix A). The pull motivation statements were worded in a way that transforms the destination attributes into intrinsic motives. For example, a motivation item that pertains to the influence of the 'volcano itself' reads, '*Because of the volcano itself*'. For the second and final step, a first-hand research site evaluation was conducted. Through participation in a Mount Pinatubo tour, the presence of the tourism attributes as advertised online were confirmed. However, after this assessment it was discovered that the spa facility onsite is not operational. This resulted in dropping the 'wellness' dimension; thus, reducing the number of pull motive items to 11.

Supplementing the scale items were questions that asked for the respondents socio-demographic characteristics, including gender, age, education and occupation. Also, *a priori* segmentation of visitors was carried out based on their current place of residence (i.e. 'Living in the Philippines' = Domestic visitor; 'Living abroad' = International visitor). The respondents' prior experience of volcanic sites and size of travelling party were asked as well. A pilot test was conducted with six individuals composed of local tourism officers, tour guides and visitors, in order to ensure that the scale items were clear and relevant. No major alterations to these items were made as a result of the pilot study.

Data collection and analysis

Survey data were collected from a quota sample of visitors onsite at the jump-off point during March, April and May 2014, the summer months and peak tourist season in the Philippines. It is mandatory for Mount Pinatubo visitors to register at the Capas Tarlac Municipal Satellite Tourism Office located at the jump-off point; this provided the opportunity to administer the survey to visitors before each tour began which ensured that responses are not influenced by

the actual tour experience (Hyde and Harman 2011). Firstly, the study was introduced to pre-booked visitors during pre-departure briefings conducted by tour organisers. Secondly, walk-in visitors were approached and oriented about the tour and the current research activities. During these events, survey forms were attached to the registration and waiver forms. Those who agreed to participate in the study were asked to complete the questionnaire.

Data collection activities were performed by the primary researcher, and trained research assistants composed of a tour organiser and a local tourism officer. In total, 250 visitors were approached, of whom six declined to participate, leading to a high response rate of 97.6%. Of the 244 collected survey questionnaire, 70 were not considered for data analysis due to a significant amount of missing responses. This resulted in a 71.3% survey completion rate.

Several statistical analyses were carried out to address the research objectives. Frequency analysis was performed to describe the profile of the respondents. To delineate the underlying push and pull motives, factor analysis was performed. Thereafter, the *Cronbach's alpha* coefficients of each extracted factors were computed to test for internal consistency. Descriptive statistics of the summated scale items were run in order to identify how the extracted factors were scored by the visitors as a whole. As required by parametric statistical testing, normality tests were performed on the summated scale items. The results show that each extracted factor meets the criteria (-2 to +2) for skewness and kurtosis (George and Mallery 2010). To compare motivations based on gender, prior experience of volcanic sites and visitor types, independent sample *t*-tests were performed. An Analysis of Variance (ANOVA) procedure was applied to reveal differences in motivations across age groups.

Results

Respondent profile

Table 1 shows the socio-demographic characteristics of the respondents. Males (51.7%) are slightly higher in number than females. Most respondents are aged 18 to 29 years (59.8%). A majority (63.8%) reported they had not been to a volcanic site prior to joining the Mount Pinatubo tour. 60.9% were domestic visitors currently living or working in the Philippines. Of these domestic visitors, the majority (76%) were from the National Capital Region. While for those categorised as international visitors, the majority were currently living in Europe (47.1%) and Asia (35.3%). A majority had travelled to Pinatubo with friends (56.9%) or family (17.2%).

[Table 1 near here]

Factor analysis of push and pull motive items

For delineating the motivation factors, a series of Principal Components Analyses (PCA) with varimax rotation were performed on the 26 scale items. The first two PCAs showed six scale items that did not meet the criteria for communality ($>.60$) and factor loading ($>.50$) (Bryman and Cramer 2011). These scale items were eliminated in the final factor solution which was represented by the 20 remaining motivation scale items. The final factor solution (Table 2) has resulted in six motivation factors, has a significant Bartlett's test of sphericity, and has met the requirement for the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy ($>.50$) (Hair et al. 2006). The extracted factors have eigenvalues of ≥ 1 , represent 79.29% of the total variance, and have met the *Cronbach's alpha* criterion ($>.70$) (Hair et al. 2006).

Factor 1 represents an *escape and relaxation* motive ($M = 3.96, SD = .70$). This push motive pertains to the desire to escape from daily commitments and to relax mentally and physically. Factor 2 explains the *disaster and cultural heritage-induced* pull motive ($M = 3.55, SD = .84$). Those who have scored highly on this motive were pulled by Mount Pinatubo's disaster landscapes including the *Aeta*, the indigenous group of people who were greatly affected by the catastrophe but remained connected to their ancestral land. The *volcanic and geological attribute-driven* motive ($M = 4.05, SD = .67$) represents factor 3. This pull motive discusses the influence of the volcano itself and its geology on the decision of visitors to participate in a Mount Pinatubo tour. This factor can be recognised as a unique motive for volcano tourism. Factor 4 accounts for the *novelty-seeking* motive which also has the highest grand mean score of 4.57 ($SD = .49$) amongst all the extracted factors. Visitors scoring highly on this push motive are enjoying experiencing and exploring things that are different from their usual environment. The *volcano knowledge-seeking* motive ($M = 3.89, SD = .74$) accounts for factor 5. This push motive entails the motivation for learning more about volcanoes through participation in a Mount Pinatubo tour. Factor 6 explains the *socialisation* motive ($M = 4.34, SD = .67$). Those wanting to spend time with their family and friends, and are willing to socialise with other visitors at the volcanic site score highly on this push motive.

[Table 2 near here]

Comparisons of motivations by gender

The differences in push and pull motives between females and males were analysed through an independent samples *t*-test (Table 3). Results indicate that female visitors have higher levels of motivation for visiting Mount Pinatubo than male visitors on all motivation factors: *escape and relaxation* ($t(172) = 2.10, p < .05$); *disaster and cultural heritage-induced* (t

(172) = 2.00, $p < .05$); *volcanic and geological attribute-driven* ($t(174) = 2.10, p < .05$); *novelty-seeking* ($t(174) = 2.01, p < .05$); *volcano knowledge-seeking* ($t(174) = 3.47, p < .01$); and *socialisation* ($t(174) = 2.05, p < .05$).

[Table 3 near here]

Comparisons of motivations for different age groups

A one-way ANOVA procedure was conducted in order to identify differences on push and pull motivations across age groups. Table 4 presents no statistically significant results found on all motivational factors from this procedure, indicating that age does not have an influence on the motives of visitors for participating in the volcano tour.

[Table 4 near here]

Comparison of motivations for tourists with and without prior experience of volcanic sites

Independent samples t -tests were performed on the six factors to delineate motivational differences between visitors who have volcanic sites experience against those who do not have the same experience prior visiting Mount Pinatubo (Table 5). Results show no significant results on all motivation factors. This implies that individuals' prior experience of volcanic sites does not have an influence on their motives for visiting Mount Pinatubo.

[Table 5 near here]

Comparison of motivations for domestic and international visitors

To explain how domestic versus international visitors differed in terms of their motives for travelling to Mount Pinatubo, independent samples t -tests were performed (Table 6). The visitor types significantly differed on the *escape and relaxation* motive ($t(174) = 4.23, p <$

.01) due to domestic visitors ($M = 4.14$, $SD = .66$) scoring higher than international visitors ($M = 3.70$, $SD = .68$). The second motive where the two visitor types significantly differed was on the *socialisation* motive ($t(174) = 2.47$, $p < .05$). Domestic visitors ($M = 4.44$, $SD = .64$) were more likely to seek social experiences with family and friends as part of their decision prior engaging on the volcano tour compared to their international counterparts ($M = 4.18$, $SD = .71$). There were no further differences in motivation between these two groups.

[Table 6 near here]

Discussion

Despite the dangers posed by volcanic landforms, volcanoes remain popular tourist attractions. This paper aims to provide an insight into the underlying motives of individuals who participate in active volcano tours. The first objective of this paper is to identify these motives by adopting a push-pull motivation framework to Mount Pinatubo visitors. Results reveal four push motives and two pull motives. The push or person-specific motives identified include *escape and relaxation*, *novelty-seeking*, *socialisation* and *volcano knowledge-seeking*; all of which are synonymous with the main motives for general leisure travel and for visiting geological attractions (Cheung 2015; Kim et al., 2008; Kim et al. 2003; Kruger and Saayman 2010; Pearce and Lee 2005; Phau et al. 2013). The pull or destination-induced motives include the *disaster and cultural heritage-induced* and *volcanic and geological attribute-driven* pull motives; these can be interpreted as unique motives for visiting volcanic sites.

Of the motivation constructs, mean ranking showed that *novelty-seeking* is the main motive for visiting Mount Pinatubo. This finding differs from the results obtained in understanding the motivations for visiting the Hawaiian volcanoes where volcanic pull motives induced by actually 'seeing the volcanoes' serve as the primary visitor motive (Davis

et al. 2013). However, as Crompton (1979) argues, “novel meant new experience” and “novelty resulted from actually seeing something”. Volcanoes are described as exotic geological formations that serve as the main attractions of volcano tourism.

The second objective of this paper is to investigate the differences in motivations for socio-demographic characteristics and prior volcanic sites experience. Overall, females demonstrate higher levels of motivation on all extracted factors compared to males. This is consistent with other gendered studies of motivation for visiting natural areas (e.g. McGehee et al. 1996; Meng and Uysal 2008). Like female visitors to private parks, female visitors to a volcanic site indicate the same levels of relaxation and nature-related motives (Phau et al. 2013). Similarly, female volcano tourists show the same level of motivation to socialise with family and friends like female visitors to national parks (Kim et al. 2003). Moreover, like female tourists to rural areas in general, female visitors to Mount Pinatubo display the same level of knowledge-seeking behaviour towards the visited destination’s heritage and history (Xie et al. 2008).

Next, in reference to the sample profile, a majority of the respondents belong to the 18 to 29-years-old age category; therefore, it can be deduced that Mount Pinatubo is frequently visited by younger visitors, and that these individuals are more highly motivated to visit the volcano than older visitors (Jönsson and Devonish 2008). However, this should be interpreted with caution as no significant differences in motivations were found across age groups. Conversely, this result does not reflect the findings of previous studies that have found age to have an influence on travel motivations to natural area attractions (Kim et al. 2003; Phau et al. 2013; Wang 2004). Also, the results diverge from the current trend in Japan where ‘volcano collection’ is becoming popular particularly for older-aged hikers aged 50-plus years old because of achievement motives and cultural reasons (Nakata and Momsen 2010).

Furthermore, no significant differences on motivations were found in terms of prior experience of volcanic sites. This finding does not resonate with the concept of a 'travel career' in volcano tourism, which refers to a travel specialisation formed by previous travel experiences (Pearce and Lee 2005; Pearce and Moscardo 1985). Thus, this finding questions the proposition that volcano tourism is a special interest form of tourism, and opens up opportunities for future research.

The final objective of this paper is to analyse the differences in motivations for domestic versus international visitors. The results of this paper are consistent with Awaritefe's (2004) findings that reveal domestic visitors to have stronger intrinsic desires for resting and relaxing than international visitors. Also, this confirms Pierret's (2011) suggestion that 'escape' is the pre-dominant travel motive of domestic travellers in general. In addition, the majority of the domestic visitors surveyed are city-dwellers, which may explain their desire to experience the opposite of their day-to-day life in urban centres (Mehmetoglu 2007). Socialisation was also revealed as a stronger push motive for domestic visitors than their international counterparts. Domestic travel is viewed as an opportunity for residents to socialise with their family and friends (Pierret 2011). Similarly, since the surveys were conducted during the summer months in the Philippines, which are parallel to the school break months in the country, the visit to Mount Pinatubo can be implied as socialisation opportunity for families and groups of friends.

Conclusion

Research on volcano tourism is in its infancy. This research responds to the call for a better understanding of geotourists', including volcano tourists' behaviour and attitudes (Newsome and Dowling 2010b). By focusing on travel motivations for visiting Mount Pinatubo, this research is one of the few studies that aims to understand motivations for visiting volcanic

sites. The findings of this research provide a significant contribution to the developing literature on geotourism, which is currently focused on geological sites assessment for tourism use and product development.

Mount Pinatubo is perceived to possess the exoticism that influences the tourism choices of visitors' who feel a need for novel travel experiences and who wish to experience a sense of wonder and curiosity. Viewing a volcano and visiting a volcanic landscape are unique life experiences (Lockwood and Hazlett 2010). In investigating differences in motivation for differing socio-demographic characteristics, women were found to demonstrate greater intrinsic motivation for volcano tourism compared to males, which could potentially explain females' higher expectations when visiting volcanic sites than males. It has been argued that women's constraints for leisure participation (e.g. family and social roles) may induce stronger desires for undertaking tourism and recreation activities in nature (Meng and Uysal 2008), specifically in volcanic settings given the context of this study. Moreover, in exploring differences in motivations by prior volcanic sites experience, it appears that Mount Pinatubo attracts a homogenous market since no differing motivations were found between first-time versus more 'experienced' volcano tourists; however, this finding needs to be validated further.

In terms of visitor types, domestic visitors show stronger push motives to escape and relax, and socialise with family and friends in volcanic landscapes; these motives are common and expected of domestic visitors. However, it is surprising that both domestic and international visitors indicate almost the same level of novelty-seeking motive, wherein international visitors usually indicate higher levels compared to domestic visitors (Awaritefe 2004). On the one hand, the volcano is relatively new to international visitors that led to them appearing more motivated by the opportunity to encounter unique and exotic landscapes. On

the other hand, domestic visitors are expected to be more familiar with Mount Pinatubo as the volcano frequently appears in their local historical accounts and literature due to their proximity to the volcanic site, and thus should display lower novelty-seeking motive for visiting the volcano. This could be because the Philippines is internationally and domestically marketed for its islands and sandy beaches, and is not popularly known for its volcanoes (Edelmann 2010). The offering of this non-mainstream tourism product may have triggered both visitor types' intrinsic desire to experience unique attractions in the Philippines, and thus, pushed them to visit Mount Pinatubo.

The findings of this study provide practical implications for marketing and managing the volcanic site. For example, since novelty-seeking appears to be the primary motive for visiting Mount Pinatubo, marketers may focus on delivering unique and exotic experiences of nature. Tourism administrators may also introduce onsite activities to further enhance the novelty of the destination. For example, the swimming and boating ban on the crater-lake may be lifted – provided that better safety guidelines and risk management protocols are implemented – because these activities have the potential to deliver unique and memorable tourism experiences. Also, because novelty-seeking emerges as the most important motive for visitors regardless of origin, proximity and cultural background, tourism marketers should give equal attention to developing and promoting volcano tourism in the Philippines, as that which is already given to coastal and island tourism. This will diversify the Philippines' tourism products, and provide the country a competitive edge over its tourism rivals. As McKercher and Chan (2005) suggest, a special interest tourism product may act as a distinct selling point for a destination with multiple tourism products.

In terms of scale development, this research introduces a novel way of operationalising a 'push-pull motivation framework', by measuring destination attributes as

intrinsic destination-induced motives or ‘pull motives’, which could be adopted in future studies. However, these pull motive items are highly contextualised for Mount Pinatubo, thus limiting their application to other volcanic sites in an unmodified form. Conversely, the push motive scale items measured may be adopted at other volcanic sites.

Furthermore, the modest number of collected responses limits the generalisability of the findings. It can be implied that the motives discovered in this study may apply only to visiting Mount Pinatubo. Despite this, the study provided valuable insights into volcano tourism motivations, particularly by revealing motives that were induced by the volcano’s disaster and cultural landscape including its inhabitants, apart from its natural and tourism dimensions. As Dowling (2013) proposes, geotourism should also feature how humans have lived, and continuously live in geological areas in the past and at present, respectively. This cultural element appeared to be strongly present at Mount Pinatubo tourism.

Finally, it is suggested that future research should be made to a larger number of visitors particularly to volcanoes of the same type and nature as Mount Pinatubo, and especially to those with heightened volcanic activity. Segmentation studies based on motivations and socio-demographic factors may also be considered to better understand the composition of the volcano tourist market. The Travel Career Ladder approach (Pearce and Lee 2005) for understanding visitor motivations may also be carried out to gain a better view as to whether volcano tourism can be considered as a form of special interest tourism. Topics that involve visitor preferences, and the influence of motivations on tourists’ risk-taking attitudes and willingness to learn on volcanic sites can also be considered in an agenda for future research on volcano tourism.

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Fig. 1 Geographical location of Mount Pinatubo (Source: Gaillard, 2008)

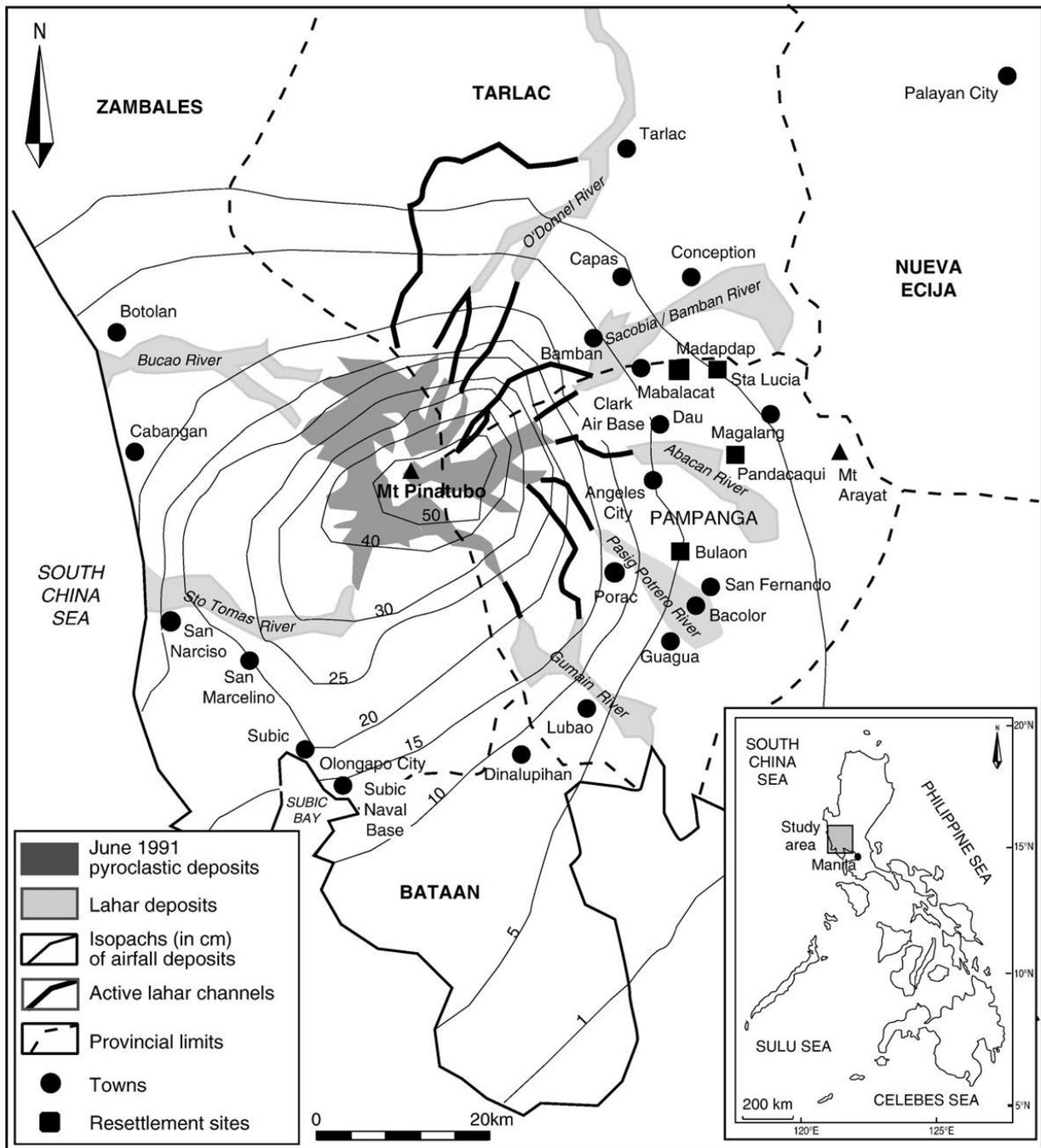


Table 1 Socio-demographic characteristics of the respondents

Characteristic	N	%
Gender		
Male	90	51.7
Female	84	48.3
Age group		
18 to 29	104	59.8
30 to 39	41	23.6
40 plus	29	16.7
Prior volcanic site experience		
Yes	63	36.2
No	111	63.8
Visitor type		
Domestic	106	60.9
International	68	39.1
Place of residence		
Philippines	127	62.3
Europe	37	18.2
Asia	28	13.7
Oceania	6	2.9
North America	6	2.9
Travelling party		
Friends	99	56.9
Family	30	17.2
Colleagues	13	7.5
Partner	18	10.3
Travelling alone	8	4.6
Classmates	2	1.1
Others	2	1.1
Not specified	2	1.1
Education level		
Secondary	16	9.2
Tertiary (Technical or Bachelors)	100	57.5
Postgraduate	54	31.0
Not specified	4	2.3
Occupation		
Professional	75	43.1
Manager	34	19.5
Administrative worker	9	5.2
Technical and trades worker	5	2.9
Labourer	1	0.6
Sales worker	2	1.1

Community or personal service	1	0.6
Other	43	24.7
Not specified	4	2.3
Total	174	100

Table 2 PCA with varimax rotation of motivation items

Motive	Factor loading						<i>M (SD)</i>
	1	2	3	4	5	6	
Escape and relaxation							3.96 (.70)
To be away from my daily routine	.81						
I want to get away from stress and pressure	.87						
To get away from the usual demands of life	.87						
In order to give my mind a rest	.78						
To refresh my mental and physical state	.72						
Disaster and cultural heritage-induced							3.55 (.84)
Because of the disaster landscapes		.76					
Because of the negative human effects		.83					
For the <i>Aeta</i> interaction		.90					
For the <i>Aeta</i> cultural experience		.87					
Volcanic and geological attribute-driven							4.05 (.67)
Because of the volcano itself			.82				
Because of the volcano's crater-lake			.89				
Because of the volcano's land and rock formations			.81				
Novelty-seeking							4.57 (.49)
I want to experience new and different things				.84			
I enjoy looking at things I have not seen before				.87			
I want there to be a sense of discovery				.71			
Volcano knowledge-seeking							3.89 (.74)
To increase my current knowledge about volcanoes					.85		
To fulfill my scientific knowledge interest on volcanoes					.81		

In order to learn other new things .67

Socialisation 4.34 (.67)

To do something with my family and friends .87

I want to have a good time with my family & friends .86

Eigenvalue	6.15	3.440	1.89	1.72	1.21	1.05
% of variance	30.79	17.20	9.45	8.58	6.04	5.23
Cronbach's α	.88	.89	.83	.80	.82	.87

Table 3 Mean score differences for gender^a

Motive	Female		Male		df	t	p
	<i>(n = 84)</i>		<i>(n = 90)</i>				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Escape and relaxation	4.08	.68	3.86	.71	172	2.10	.037*
Disaster and cultural heritage-induced	3.68	.83	3.43	.84	172	2.00	.047*
Volcanic and geological attribute-driven	4.16	.69	3.95	.63	172	2.10	.037*
Novelty-seeking	4.65	.47	4.50	.50	172	2.01	.046*
Volcano knowledge-seeking	4.08	.68	3.70	.74	172	3.47	.001**
Socialisation	4.45	.70	4.24	.64	172	2.05	.042*

^a*N = 174. All significance levels are two-tailed. *p < .05 **p < .01*

Table 4 Mean score differences for age groups^a

Motive	18 to 29		30 to 39		40-plus		F	p
	<i>(n = 104)</i>		<i>(n = 41)</i>		<i>(n = 29)</i>			
	M	SD	M	SD	M	SD		
Escape and relaxation	3.99	.74	3.95	.62	3.90	.70	.17	.845
Disaster and cultural heritage-induced	3.45	.91	3.57	.80	3.85	.58	2.60	.077
Volcanic and geological attribute-driven	4.04	.77	4.07	.59	4.08	.30	.07	.937
Novelty-seeking	4.59	.47	4.61	.52	4.46	.51	.99	.374
Volcano knowledge-seeking	3.85	.81	3.90	.66	4.00	.51	.51	.603
Socialisation	4.34	.68	4.41	.68	4.22	.64	.68	.509

^a*N = 174. One-way ANOVA p-values not significant.*

Table 5 Mean score differences for tourists with ('Yes') and without ('No') prior experience of volcanic sites^a

Motive	Yes		No		<i>df</i>	<i>t</i>	<i>p</i>
	<i>(n = 63)</i>		<i>(n = 111)</i>				
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Escape and relaxation	3.93	.74	3.99	.68	172	-.53	.597
Disaster and cultural heritage-induced	3.50	.87	3.58	.83	172	-.60	.547
Volcanic and geological attribute-driven	4.14	.56	4.00	.72	172	1.39	.167
Novelty-seeking	4.52	.54	4.60	.46	172	-1.04	.300
Volcano knowledge-seeking	3.88	.74	3.89	.74	172	-.09	.928
Socialisation	4.28	.71	4.37	.66	172	-.90	.367

^a*N = 174. p-values not significant.*

Table 6 Mean score differences for visitor types^a

Motive	Domestic (<i>n</i> = 106)		International (<i>n</i> = 68)		<i>df</i>	<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Escape and relaxation	4.14	.66	3.70	.68	172	4.23	.000**
Disaster and cultural heritage-induced	3.64	.87	3.41	.79	172	1.76	.081
Volcanic and geological attribute-driven	4.08	.71	4.00	.60	172	.71	.48
Novelty-seeking	4.59	.49	4.54	.48	172	.66	.51
Volcano knowledge-seeking	3.93	.77	3.81	.68	172	1.02	.31
Socialisation	4.44	.64	4.18	.71	172	2.47	.014*

^a*N* = 174. All significance levels are two-tailed. **p* < .05 ***p* < .001

Appendix A Attraction attributes used to develop the initial pull motive items

Attributes	Sources
Volcano itself Crater-lake Land and rock formations	Tripinas (2013); Filipino Travel Center (2013); Erfurt-Cooper (2011); Majestic Mount Pinatubo Tour and Homestay (2013); Erfurt-Cooper (2011)
Natural scenery Natural attributes	Tripinas (2013); Filipino Travel Center (2013); Majestic Mount Pinatubo Tour and Homestay (2013); Erfurt-Cooper (2011)
4x4 jeepney ride Trekking	Tripinas (2013); Filipino Travel Center (2013); Majestic Mount Pinatubo Tour and Homestay (2013)
Lahar trails Local living conditions at the disaster landscapes	Tripinas (2013); Filipino Travel Center (2013)
Pinatubo Spa Town Lahar spa	Tripinas (2013); Visit My Philippines (2013)
<i>Aeta</i> interaction Visit at the local village	Filipino Travel Center (2013)