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# Pro - environmental behaviour of adventure tourists: an applicability of value belief norm theory

## Abstract

Extant research has established the role of environmental quality on tourism competitiveness and tourist satisfaction. While the effort to mitigate negative effects of tourism has come from both private and public sectors, cooperation from tourists is still needed for maintaining sustainability especially in nature based tourism. The aim of this study is to investigate the factors which influence the adventure tourists' intentions to behave pro-environmentally. To test this, we use Value Belief Norm theory. The data was collected from 216 adventure tourists at a popular trekking destination of India. The results of the study confirm that value belief norm model predicts adventure tourists' pro-environmental intention. We found that the biospheric and altruistic value has direct positive relation with new environmental paradigm and indirect positive relation with awareness of consequences, ascription of responsibility, personal norms and pro-environmental behavioural intentions. However their egoistic value negatively affects new ecological worldview. Further, the result of the study shows that personal norm is the largest predictor of pro-environmental behaviour of adventure tourists. The study also confirms the mediation effect of the research constructs.

**Key words:** pro-environmental behaviour; value belief norm theory; adventure tourists; India

## Introduction

Emergence of concepts like responsible tourism, ecotourism, sustainable tourism is an indication of increased attention towards environmental effects of tourism. Environmental phenomena such as climate change have raised consciousness among destination planners about environmental protection and maintenance of the ecology, raising an argument to promote sustainable tourism practices. According to United Nations World Tourism Organization (UNWTO) and United National Environment Programme (UNEP), sustainable tourism is "*tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities*". In 2002, at the World Summit on Sustainable Development, the tourism stakeholders from 20 countries considered the issues of responsible tourism at destinations. According to Cape Town Declaration (2002), the three guiding principles identified for responsible tourism were economic, social and environmental responsibility. Various governments across the world have launched environmental awareness programmes with an objective to educate the citizens and seek their participation. Government of India through its National Environment Policy, 2006 highlights the importance of stakeholder participation and industry experts believe that the future lies in sensitizing all

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the tourism stakeholders towards environmental concerns. Recent Government initiatives like Swachh Bharat Abhiyan (Clean India Mission) as its associated schemes of Swachh Paryatan (Clean Tourism Initiative by Ministry of Tourism), Swachh (Clean) Iconic Places initiative's (by Ministry for Drinking Water and Sanitation) work towards cleanliness and building environmental consciousness. The success of such initiatives largely depends upon stakeholder participation and involvement by exhibiting environmentally accountable behaviour or pro-environmental behaviour (Lee, Jan & Yang, 2013).

Existing academic literature talks about the symbiotic relationship between tourism and environment, linking tourist satisfaction with environmental quality (Budeanu, 2007). Environmental quality at the destination also plays a significant role in attracting tourists (Font & Buckley, 2001; Christ, 2003). The negative impacts of tourism are also well documented as increase in tourism activity at the destination cause significant damage to the environment (May, 1992; Gossling, Hansson, Hörstmeier & Saggel, 2002; Burak Dogan & Gazioglu, 2004). According to UNWTO (2014), adventure tourism, which is one the fastest growing segment, where the quality human-environment interaction can significantly influence the impact on the environment (Newsome et al., 2012). For example trekkers depend on hills, mountaineers depend on mountains, and rafters depend on rivers for their adventure (Williams & Soutar, 2005). The environment not only provides resources to adventure tourists for their activities, but also gets affected by impact of tourists activities upon it (Giddy & Webb, 2018)

Extant research in the area of pro-environmental behaviour in tourism has been undertaken in different contexts including hotels (Ayuso, 2006; Dief & Font, 2010; Knowles et al., 1999), business owners (Frey & George, 2010), ecotourism (Chiu, Lee & Chen, 2014), suburban and national parks (Mosquera & Sanchez, 2012; Kyle & Riper, 2014), green lodging (Han, 2015) and among young travellers (Kiatkawsin & Han, 2017). Issues like place attachment (Ramkissoon, Smith & Weiler, 2013), barriers towards pro environmental behaviour (Kollmuss & Agyeman, 2002) have also been examined. Previous studies on adventure tourism and environment investigate impact of adventure activities on environment (Cole, 2004; Hall, 2001; Leung & Marion, 2004; Lucrezi, Saayman & van der Merwe, 2013); destruction of coral reefs (Davenport & Davenport, 2006; Doiron & Weissenberger, 2014); environmental attitude and adventure tourism (Giddy & Webb, 2018); adventure travel and sustainable tourism (Zurick, 1992). However, we have not been able to come across any study which investigates the pro-environmental behavioural intentions of adventure tourist. The current study aims to fill in this gap by investigating the factors which influence the adventure tourist intentions to behave pro-environmentally. This study shall contribute to understand the underlying psychological factors influencing the tourists' intentions to behave pro-environmentally. The findings of this study will help in successful implementation of environmental protection and conservation schemes and programmes at the destinations.

## Literature review

### Pro-environmental behaviour

Increased awareness about negative impacts of development and human lifestyle has led to growing focus on pro-environment behavioural change (Lucas, Brooke, Darnton & Jones, 2008). According to Sawitri, Hadiyanto and Hadi (2015), it is critical to identify factors that inhibit or foster pro-environmental behaviour. Various terms have been used to describe pro-environmental behaviour such as pro-environmental behaviour, environmentally responsible behaviour, sustainable behaviour, environmentally concerned behaviour and environmentally significant behaviour (Lee et al., 2013). Kollmuss and Agyeman (2002) and Jensen (2002) defined pro-environmental behaviour as "*conscious actions performed by an individual*

so as to lessen the negative impact of human activities on the environment or and to enhance the quality of the environment." Similarly Halpenny (2010) describe pro-environmental behaviour as "activities by an individual or group that promotes the sustainable use of natural resources." Further Steg and Vlek (2009), refers pro-environmental behaviour as "behaviour that poses minimum harm to the environment or even create benefits for the environment." Pro-environmental behaviour is the mechanism for environmental conservation (Chiu et al., 2014). Lee et al., 2013) defined environmentally responsible behaviour of tourists as actions which strive to lessen environmental impacts, promote environmental preservation or conservation and do not harm the ecosystem and biosphere of destination during travelling. According to Homburg and Stolberg (2006), examples of pro-environmental behaviour include environmental activism (e.g., active involvement in environmental organizations), non-activist behaviour in the public-sphere (e.g., petitioning on environmental issues), private sphere environmentalism (e.g., saving energy, purchasing recycled goods), and behaviour in organizations (e.g., product design).

## Theoretical background and hypotheses

Extant research on pro-environmental behaviour has used theory of reasoned action, theory of planned behaviour (Stern, Kalof, Dietz & Guagnano, 1995; Taylor & Todd, 1995; Cheung, Chang & Wong 1999; Trumbo & Garrett, 2001; Shaw, Radler, Chenoweth, Heiberger & Dearlove, 2011), norm activation theory (Valle, Rebelo, Reis & Menezes 2005; Wall, Devine-Wright & Mill 2007), social cognitive theory (Booth, Owen, Bauman, Clavisi & Leslie, 2000) and value belief norm theory (Han, 2015; Kiatkawsin & Han, 2017) to explain pro-environmental behaviour of travellers.

In this study, we use value belief norm theory (VBN) as the underlying theoretical framework to study the pro-environmental behaviour of adventure tourists. VBN is the most appropriate model in context of pro-environmental behaviour. Stern, Dietz, T., Abel, Guagnano and Kalof (1999) compared VBN theory with three other theories (cultural theory, theory of postmaterialism and belief in sacredness of nature) to measure three types of environmental behaviour: environmental citizenship, private-sphere behaviour, and willingness to sacrifice and found that VBN theory is stronger predictor of each environmental behaviour than the other models. In addition, evidence has shown that, depending on the type of behaviour (i.e., private sphere behaviour, policy support action, or environmental citizenship); the VBN model explains 19% to 35% of the variance in behavioural intention (Stern et al., 1999). These numbers are considerably 3% to 10% higher than the alternative value based models and the explained variance is similar to the average 25% to 30% that can be expected from the Theory of Planned Behaviour as shown by Han, (2015) in his study on pro-environmental behaviour of traveller in context of green hotels. As a result VBN approach offers a good account of the causes of the general predisposition toward pro environmental behaviour (Stern, 2000).

### *Value belief norm theory*

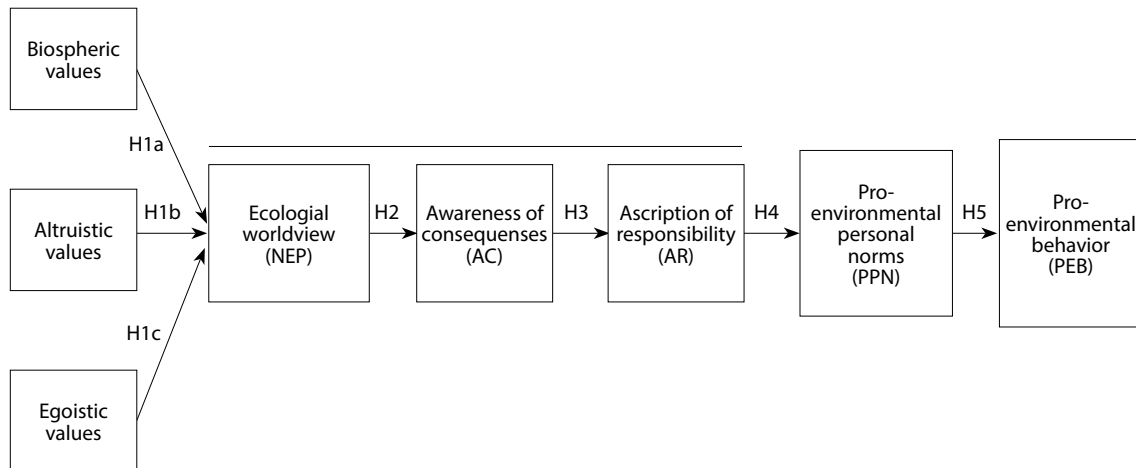
Value Belief Norm (VBN) theory was first developed and introduced by Stern et al. (1999) which provides a comprehensive understanding of the role of public support in the context of environmentalism, as it is believed to be one of the most critical resources to cope with social problems (Stern et al., 1999). VBN theory extends norm activation model which comprises of three major concepts in explicating the formation of pro-environmental intention and behaviour, namely awareness of consequences, ascription of responsibility and personal norm (Schwartz, 1977). Value belief norm theory adds values and new environmental paradigm to the framework The VBN theory is built on three components: Values, Beliefs and Norms (Stern et al., 1999). Schwartz (1992, p. 21) defined value as "*a desirable trans-situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity*". Three types of values appeared to be particularly relevant for

understanding environmentalism which are egoistic, altruistic and biospheric (Stern, 2000). Altruism value (AV) promotes environmental awareness, biospheric (BV) refers to the biosphere and other species and egoistic value (EV) places an importance on one's own interests within the society (Stern, 2000). Extant research confirms that values are an important antecedent of environmental beliefs, norms, intentions and behaviours (De Groot & Steg, 2008; Groot, Steg & Dicke, 2008; Honkanen & Verplanken, 2004; Nilsson, Borgstede & Biel, 2004; Steg, De Groot, Dreijerink, Abrahamse & Siero, 2011; Steg, Dreijerink & Abrahamse, 2005; Steg, Perlaviciute, Werff & Lurvink, 2014; Stern et al., 1995). The importance of values may differ across persons and cultures, but their structure is believed to be universal.

There are three constructs of beliefs in value belief norm theory; these are new ecological Paradigm (NEP) also known as new environmental paradigm, awareness of consequences (ACs) and ascription of responsibility (AR). According to Dunlap, Van Liere, Mertig and Jones (2000), new ecological paradigm is a "belief about humanity's ability to upset the balance of nature, the existence of limits to growth for human societies, and humanity's right to rule over the rest of nature." Awareness of consequences refers to "a belief that environmental well being can enhance or threaten other people, other species and the biosphere" (Stern, 2000). Ascription of responsibility is the belief "that human actions can either prevent or escalate potential negative consequences" (Stern et al., 1999). The next construct of VBN theory is pro-environmental personal norms which is the sense of moral obligation towards the environment (Stern et al., 1999).

Extant research has applied VBN theory in various context such as; Green advertisement and intention to engage in pro environmental behaviour (Davis, 2014); effect of shared consumption on consumers values, attitude and Norms (Roos & Hahn, 2017); smart energy systems (Werff & Steg, 2016); travel mode choice (Lind, Nordfjærn, Jørgensen & Rundmo, 2015); sustainable transportation (Jakovcovic & Steg, 2013); cultural differences in antecedents of pro-environmental behaviour (Cordano, Welcomer, Scherer, Pradenas & Parada 2010); residential electricity consumption behaviour (Guo et al., 2018); customer eco-friendly behaviour (Han, Hwang & Lee, 2017); museum vacationers eco-friendly decision making process ( Han, Olya, Kim & Chu, 2018); car use reduction policy (Unal, Steg & Granskaya, 2019); energy conservation behaviour (Shi, Wang & Wang, 2019); workplace behaviour (Tezel & Giritli, 2019).

Figure 1  
The proposed research model



### *Hypothesis formulation*

Kiatkawsin and Han (2017) conducted study on young travellers pro-environmental behaviour and found that biospheric and altruistic values positively affect new ecological paradigm whereas an insignificant relationship between egoistic value and new ecological paradigm was observed at the same time. Existing research also confirms that these three values together explain 26.3% variance in NEP. Previous studies found that people with high altruistic and biospheric values have stronger environmental beliefs than those having low altruistic and biospheric values, furthermore people with high egoistic values have less pro-environmental beliefs (Bardi & Schwartz, 2003; De Groot & Steg, 2007; Stern, 2000; Van Riper & Kyle, 2014). Landon, Woosnam and Boley (2018) in their study on tourists' pro-sustainable behaviour found that biospheric and altruistic values positively affects new ecological paradigm whereas egoistic value negatively affect new ecological paradigm. Similarly Han, Hwang and Lee (2017) while investigating eco-friendly behaviour of cruise travellers found that biospheric and altruistic values was significantly related to new environmental paradigm whereas egoistic values was not significantly related to new environmental paradigm. Based on the above findings, we posit

**H1a.** Biospheric value positively affects new ecological paradigm.

**H1b.** Altruistic value positively affects new ecological paradigm.

**H1c.** Egoistic value negatively affects new ecological paradigm.

Ecological world view is measured by new ecological paradigm which has a positive influence on awareness of consequences (Stern, 2000; Stern et al., 1999, 1995; Van Riper & Kyle, 2014; Kiatkawsin & Han, 2017; Landon, Kyle, Woosnam & Bynum Boley, 2018). Recently, Han, Olya, Cho and Kim (2018) while studying museum travellers eco friendly decision making process found positive relationship between new environmental paradigm behaviour and awareness of consequences. Kiatkawsin and Han (2017) established in their research that new ecological paradigm explained 33.8% of variance in awareness of consequences.

Therefore, we posit

**H2.** New ecological Paradigm positively affects awareness of consequences.

Kiatkawsin and Han (2017) in their study found that awareness of consequences has significantly affected ascription of responsibility. Earlier, Van riper and Kyle (2014) in their study on travellers decision to take eco-friendly practices in national parks empirically verified that awareness of consequences positively influence ascription of responsibility. Awareness of consequences positively affects ascription of responsibility which is turn affects personal norms (Han, 2015). Recently, Han, Olya, Cho and Kim (2018) while studying museum travellers eco friendly decision making process found that awareness of consequences has positive impact on ascription of responsibility. Further Landon et al. (2018) in their study on pro-sustainable behaviour of tourists found that awareness of consequences positively affects ascription of responsibility. Therefore, we posit

**H3.** Awareness of consequences positively affects ascription of responsibility.

As discussed earlier, Value Belief Norm theory posits that ascription of responsibility positively affects the pro-environmental behaviour and many previous studies have proved this relationship across different contexts (Bardi & Schwartz, 2003; De Groot & Steg, 2007; Stern, 2000; Van Riper & Kyle, 2014). Han (2015) and Kiatkawsin and Han (2017) in their studies observed that travellers with high ascription of responsibility ascribe to more pro-environmental norms which in turns enhances their

intentions to behave pro-environmentally. Han et al (2016) in their study on ecological behaviour of cruise travellers found that ascription of responsibility has a significant impact on obligation to take pro-environmental action. Similarly Landon et al. (2018) hypothesized that ascription of responsibility is positively related to pro-environmental personal norms. Therefore, we posit

**H4.** Ascription of responsibility positively affects Pro-environmental personal norms.

Kiatkawsin and Han (2017) in their study on young travellers pro-environmental intentions posited that pro-environmental personal norms positively influences intentions to behave pro-environmentally. Similarly Han (2015) found that there exists positive relationship between pro-environmental personal norms and pro-environmental behaviour. Furthermore Han et al (2016) observed that sense of obligation to take pro-environmental action had positive influence on three pro-environmental behavioural intentions they studied in their study i.e. willingness to sacrifice, purchase intentions and word of mouth intentions. Similarly Landon, et al (2018) and Han, Hwang and Lee (2017) found that personal norm is positively related to eco- behaviour. Therefore, we posit

**H5.** Pro-environmental personal norms positively affect traveller's intentions to behave pro- environmentally.

## Research methodology

### Measurement instruments

The present study is based on quantitative survey of the research objectives. Items used to measure the constructs of the study are derived from the previous studies on pro-environmental behaviour and VBN model (Stern et al., 1999; Stern, 2000; Han, 2015; De groot & Steg, 2008; Mosquera & Sanchez, 2012; Kiatkawsin & Han, 2017; Dunlap et al., 2000; Han, 2015; Dolnicar & Grun, 2009; Landon et al., 2018). Biospheric value, altruistic value and egoistic value consist of three items each which were measured on a seven point Likert scale, ranging from 1 (Not at all important) to 7 (Extremely important) (Stern et al., 1999; Stern, 2000; Han, 2015; De Groot & Steg, 2008; Mosquera & Sanchez, 2012; Kiatkawsin & Han, 2017; Landon et al., 2018). New ecological paradigm, awareness of consequences, ascription of responsibility, and pro-environmental personal norm constructs consist of three items each (Dunlap et al., 2000; Stern et al., 1999; Stern, 2000; Han, 2015; De Groot & Steg, 2008; Mosquera & Sanchez, 2012; Kiatkawsin & Han, 2017) and Intention to behave pro-environmental behaviour construct consist of five items (Miller, Merrilees & Coghlan, 2015; Dolnicar & Grun, 2009; Stern et al.,1999; Landon et al., 2018). The responses for these constructs were measured on seven point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The survey was divided into two sections, wherein the first section contained questions to measure the constructs that influence behavioural intentions to Pro-environmental behaviour and second section had questions about the demographic profile of the respondents.

### *Sample and DATA collection*

A survey was conducted to collect the data from a popular adventure destination in India. The target population of the study was adventure tourists coming to the famous adventure trek of Kheerganga in Parvati Valley, Kullu, Himachal Pradesh, India. We approached tourists visiting the destination and asked them for their willingness to participate in the survey, after the consent of the respondents detailed explanation of the research was given to them and asked to fill the questionnaire. A total of 252 responses through questionnaires were collected, out of which 216 valid responses were obtained, providing a response rate of 85.7 %.

Table 1 indicates the respondent's profile which shows that out of 216 valid responses 82 were female and 134 were male. It was also observed that largest proportion of respondents were aged between 20-30years (45.4%) followed by those between the age group of 31-40 years (33.3%), 41-50 years (13%) and below 20 years (6%).

Table 1  
Gender and age characteristics of the respondents

	Characteristics	Frequency	%
<b>Gender</b>	Male	134	63
	Female	82	38
	Total	216	100
<b>Age</b>	Less than 20	13	6.0
	20-30	98	45.4
	31-40	72	33.3
	41-50	28	13
	51-60	05	2.3
	Total	216	100

## Data analysis and results

Structural equation modeling (SEM) is a multivariate statistical technique used to estimate causal relationships between the measured variables and latent constructs. According to Hair et. al. (2017), there are two types of SEM methods techniques- covariance based (CB-SEM; Jöreskog, 1993) and variance based techniques i.e. Partial Least Square (PLS-SEM; Lohmöller, 1989; Wold, 1982). While comparing both these methods, Hair et. al. (2017) state that PLS-SEM which is based on composite model, takes into account common, specific and error variance, and thus uses all variance from the independent variable to predict the variance in dependent variable. Based on empirical analysis, they further posit that PLS-SEM being a 'causal-predictive' technique achieves greater statistical power at all sample sizes, and also works well with non-normal distributions. Therefore, the proposed research model was tested using the Partial least square technique PLS-SEM, which was performed using R software version 3.4.1 and the plspm-Package. PLS-SEM has become a popular and well established technique which has been recognized by various researchers in several fields including marketing and strategic management (Hair, Sarstedt, Ringle & Mena 2012), and operations management (Peng & Lai, 2012). Its increased usage and popularity is due to the technique's ability to handle complex models with several constructs and calculating model parameters under conditions of non-normality. The data analysis was done in two stages wherein the first stage included assessment of measurement model and the second stage included the development of full structure equation model (Gerbing & Anderson 1988).

### Measurement model

In the measurement model, the convergent and discriminant validity of the constructs and reliability of all the multiple item scales were examined. We have examined indicator reliability using factor loadings as mentioned below in the Table 2 and all the values were above the minimum acceptable value of 0.70 (Fornell & Larcker, 1981). Furthermore, Table 3 shows average variance explained (AVE), calculated by taking square root of the correlation between constructs, for each item, which were above the minimum acceptable value of 0.50 (Fornell & Larcker, 1981) The discriminant validity of the constructs can be confirmed if the square root of AVE is greater than the correlation between the constructs (Fornell & Larcker, 1981). The values of AVE square root and the correlation of the

constructs are presented in Table 3 which suggests satisfactory discriminant validity of the measurements. All the above results supported the validity and reliability of the scales; hence these scales were further utilized to test the structural model.

Table 2  
Measurement items and loadings

Measures (Sources)	Loadings
<b>Biospheric values (BV) (Stern et al., 1999; Han, 2015; De groot &amp; Steg, 2008; Kiatkawsin &amp; Han, 2017; Landon et al., 2018)</b> Please read the following statements and encircle the appropriate answer in accordance with your level of Importance. BV1- Preventing pollution, conserving natural resources BV2- Protecting the environment, preserving nature BV3- Respecting the earth	   0.872 0.972 0.863
<b>Altruistic value (AV) (Stern et al., 1999; Han, 2015; De groot &amp; Steg, 2008; Kiatkawsin &amp; Han, 2017; Landon et al., 2018)</b> AV1- Equality, equal opportunity for all AV2- Helpful, helping others AV3- Social justice, care for the weak	   0.963 0.896 0.764
<b>Egoistic value (EV) (Stern et al., 1999; Han, 2015; De groot &amp; Steg, 2008; Kiatkawsin &amp; Han, 2017; Landon et al., 2018)</b> EV1- Social power, control over others and dominance EV2- Wealth, material possessions and money EV3- Authority, the right to lead or command	   0.896 0.784 0.869
<b>New environmental paradigm (NEP) (Dunlap et al., 2000; De groot &amp; Steg, 2008; Han, 2015; Kiatkawsin &amp; Han, 2017)</b> Please read the following statements and encircle the appropriate answer in accordance with your level of agreement. NEP1: The balance of nature is very delicate and easily upset NEP2: Humans are severely abusing the environment NEP3: We are not doing enough at the moment to protect the environment	   0.835 0.936 0.869
<b>Awareness of consequences (AC) (Stern et al., 1999; Stern et al., 2000; Han, 2015; De groot &amp; Steg, 2008; Mosquera &amp; Sanchez, 2012; Kiatkawsin &amp; Han, 2017)</b> AC1: Tourism can generate huge environmental impacts on the Environment AC2: Tourists can cause environmental deteriorations of the host community such as wastes and excessive use of energy/water/fuel AC3: The tourism industry can cause pollution, climate change, and exhaustion of natural resources because of infrastructures required to cater to a large number of tourists	   0.879 0.769 0.874
<b>Ascription of responsibility (AR) (Stern et al., 1999; Han, 2015; De groot &amp; Steg, 2008; Mosquera &amp; Sanchez, 2012; Kiatkawsin &amp; Han, 2017)</b> AR: I believe that every traveller is partly responsible for the environmental problem caused by the tourism industry AR2: I feel that every traveller is jointly responsible for the environmental deteriorations caused by travelling activities AR3: Every traveller must take responsibility for the environmental problems caused during their trips	   0.896 0.764 0.926
<b>Pro-environmental personal norm (PN) (Stern et al., 1999; Han, 2015; De groot &amp; Steg, 2008; Mosquera &amp; Sanchez, 2012; Kiatkawsin &amp; Han, 2017)</b> PPN1- I feel an obligation to act pro-environmentally by choosing ecofriendly activities while travelling. PPN2- Regardless of what other people do, because of my own values/principles, I feel that I should behave in an environmentally friendly way while travelling. PPN3- I feel that it is important to be environmentally friendly, reducing the harm to the community and its environment while travelling.	   0.729 0.873 0.846



Table 2 Continued

Measures (Sources)	Loadings
<b>Pro-environmental behaviour (PEB) (Miller et al, 2015; Dolnicar &amp; Grun, 2009; Stern et al.,1999; Landon et al., 2018)</b>	
PEB1- I would prefer to buy local products	0.739
PEB2- I would buy products in eco-friendly packaging when possible i.e. avoid plastic shopping bags, plastic bottles and try to reuse bottles and bags	0.938
PEB3- I would try to save water and electricity	0.926
PEB4- I would try to protect local resources as much as I could	0.968
PEB5- I would try to dispose garbage properly if possible.	0.939

Measures for BV, AV and EV were assessed with a 7-point scale ranging from "extremely unimportant" (1) to "extremely important" (7); and measures for other study variables were all assessed with a 7-point scale ranging from "extremely disagree" (1) to "extremely agree" (7).

The reliability of the indicators was also verified using Composite Reliability coefficient (Werts, Linn & Joreskog, 1974) and Cronbach coefficient alpha (Cronbach, 1970). The values of all the coefficients are presented in Table 3. The values are above the threshold value (0.70) as suggested by (Churchill, 1979).

Table 3  
Validity and reliability

	CR	AVE	Cronbach alpha	BV	AV	EV	NEP	AC	AR	PPN	PEB
BV	0.948	0.894	0.954	<b>0.945</b>							
AV	0.925	0.749	0.786	0.124	<b>0.865</b>						
EV	0.874	0.769	0.824	0.213	0.247	<b>0.876</b>					
NEP	0.847	0.786	0.798	0.287	0.284	0.321	<b>0.886</b>				
AC	0.875	0.748	0.847	0.346	0.364	0.181	0.536	<b>0.864</b>			
AR	0.927	0.785	0.846	0.147	0.158	0.135	0.494	0.658	<b>0.886</b>		
PPN	0.878	0.768	0.789	0.238	0.292	0.154	0.486	0.584	0.689	<b>0.876</b>	
PEB	0.947	0.836	0.944	0.105	0.021	0.125	0.628	0.487	0.692	0.736	<b>0.914</b>

CR: composite reliability; AVE: average variance explained; BV: biospheric value; AV: altruistic value; NEP: new environmental paradigm; AC: awareness of consequences; AR: ascription of responsibility; PPN: pro-environmental personal norm; PEB: pro-environmental behaviour.

## Structural model

The structural model and the hypothesized relationships were tested by using PLS analysis. The explanatory power of the model was determined by assessing the  $R^2$  values. Figure 1 shows results of the structural model. The results indicate that the model explains a variation of 62.6% in Pro-environmental Behaviour; 45.8% in Personal Norms; 54.7% Ascription of responsibility; 38.6% in Awareness of consequences and 32.8% in new ecological paradigm respectively. It was found as hypothesized biospheric value (H1a) and altruistic value (H1b) positively affect new ecological paradigm ( $\beta = 0.37$ ,  $P < 0.05$  and  $\beta = 0.26$ ,  $P < 0.05$  respectively). However, egoistic value negatively affects new ecological worldview (H1c;  $\beta = -0.42$ ,  $P < 0.05$ ). Further as hypothesized in (H2) and (H3) we found positive relationship between new ecological paradigm and awareness of consequences ( $\beta = 0.64$ ,  $P < 0.05$ ), and between awareness of consequences and ascription of responsibility ( $\beta = 0.76$ ,  $P < 0.05$ ). Results of study also confirmed that there is significant positive relationship between ascription of responsibility and personal norms (H4;  $\beta = 0.69$ ,  $P < 0.05$ ) and personal norms positively affects pro-environmental behaviour (H5;  $\beta = 0.78$ ,  $P < 0.05$ ). Overall, the result reveals that personal norm is the largest predictor of pro-environmental behaviour of adventure tourists.

Figure 2  
Results of the structural model

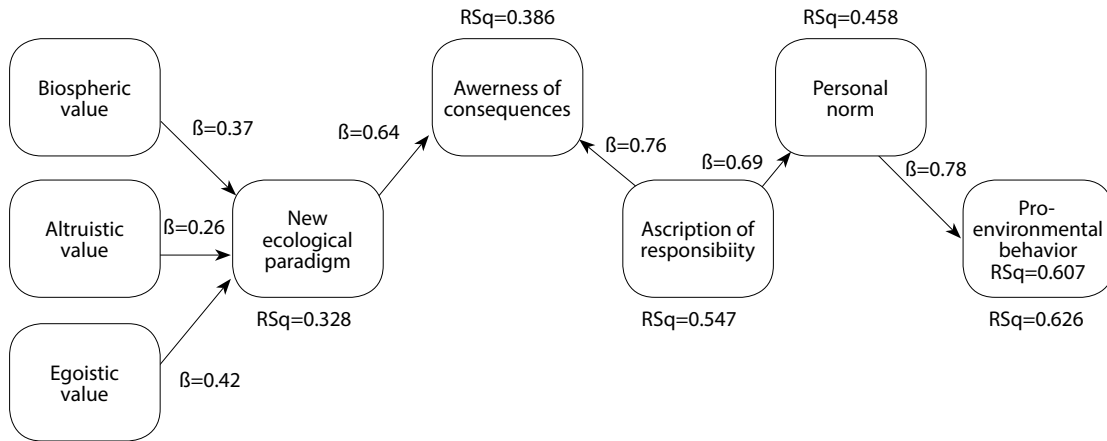


Table 4  
Summary of test results for the structural model

Hypothesis	Path	Standardized path coefficient	P-Value	Supported?	Construct	R-squared
H1a	BV-NEP	0.37	<0.05	Yes	New environmental paradigm	0.328
H1b	AV-NEP	0.26	<0.05	Yes		
H1c	EV-NEP	-0.42	<0.05	Yes		
H2	NEP-AC	0.64	<0.05	Yes	Awareness of consequences	0.386
H3	AC-AR	0.76	<0.05	Yes	Ascription of responsibility	0.547
H4	AR-PPN	0.69	<0.05	Yes	Personal norms	0.458
H5	PPN-PEB	0.78	<0.05	Yes	Pro-environmental behaviour	0.726

H: hypothesis; BV: biospheric value; AV: altruistic value; NEP: new environmental paradigm; AC: awareness of consequences; AR: ascription of responsibility; PPN: pro-environmental personal norm; PEB: pro-environmental behaviour.

The indirect impact (or mediation effect) of research variables was also examined, and the significance was assessed using Sobel's test. The results indicate that ascribed responsibility significantly affect pro-environmental behaviour intention indirectly through moral norm (Sobel test statistics = 3.28,  $p < 0.05$ ); awareness of consequences significantly influenced moral norm through ascription of responsibility (Sobel test statistics = 3.37,  $p < 0.05$ ); and new environmental paradigm significantly affect ascription of responsibility through awareness of consequences (Sobel test statistics = 3.62,  $p < 0.05$ ). In addition, our findings also reveal that biospheric value included a significant indirect influence on awareness of consequences (Sobel test statistics = 2.97,  $p < 0.05$ ). These findings support the significant mediating role of research constructs as has been observed in previous research.

## Discussion

The present study applied Value Belief Norm theory to examine the pro-environmental behavioural intentions of the adventure tourist. The results of the study confirm that VBN model can be an important model for predicting adventure tourists' intention to behave pro-environmentally ( $R^2 = 0.328-0.726$ ). We found that the biospheric and altruistic value has direct positive relation with new environmental

paradigm and indirect positive relation with awareness of consequences, ascription of responsibility, personal norms and pro-environmental behavioural intentions these findings are consistent with previous studies (Kiatkawsin & Han, 2017; Landon et al., 2018) which show that biospheric and altruistic value have a role in motivating tourists to behave pro-environmentally. Individuals with high biospheric value gave importance to biosphere and non-living things, know about the consequences of their harmful actions on environment, take responsibility of their actions that harm environment, build pro-environmental personal norms and finally behave pro-environmentally, whereas individual with high Altruistic values gave importance to other people and species, have awareness of consequences of their actions that harm other people and species, build personal norm for environment and behave pro-environmentally. Further we found that as hypothesized egoistic value negatively affect new environmental paradigm which is consistent with the previous studies. Landon et al. (2018) in their study on Tourists' Pro-sustainable behaviour found that Biospheric and altruistic values positively affects new ecological paradigm whereas Egoistic value negatively affect new ecological paradigm. Similarly Kiatkawsin and Han (2017) conducted study on young travelers pro-environmental behaviour and found that Biospheric and Altruistic values positively affects ecological world view whereas the relationship between Egoistic value and New ecological Paradigm was insignificant. Van Riper and Kyle (2014) did not found significant relation between egoistic value and new environmental paradigm.

Further the results of study shows that new environmental paradigm has direct positive relationship with awareness of consequences which is consistent with the previous studies (Stern, 2000; Stern et al., 1999, 1995; Van Riper & Kyle, 2014; Kiatkawsin & Han, 2017; Landon et al., 2018). This shows those individuals who has belief that there is association between humans and environment and knows that humans can upset the balance of the nature are aware about the consequences of their negative actions on environment. The results revealed that there is positive significant relationship between awareness of consequences and ascription of responsibility, ascription of responsibility and personal norm and finally between personal norm and pro-environmental behavioural intentions of tourists. The study also shows that pro-environmental personal norms is the highest predictor of pro-environmental behaviour which means that individual with greater feeling of moral obligation to perform or refrain from specific actions towards environment are more intent to behave pro-environmentally. Finally the findings reported that this study has research, managerial and theoretical implications. From a theoretical perspective it provides comprehensive understanding of the determinants that influences the Pro-environmental behavioural intentions of adventure tourists. This research added another research context by successfully demonstrating the application of the VBN model to the tourists' intention to behave pro-environmentally while travelling to adventure destinations in India as there are no such studies in Indian context. From managerial perspective the finding of the study can help various tourism stakeholders and authorities to identify strategic direction to enhance tourist behaviour to behave pro-environmentally. Further this study can help government and tourism stakeholders in development and successful implementation of strategies related to sustainable development of the tourists' destinations.

Since this study focus only on adventure tourists, future studies can study the differences in pro-environmental behaviors' of different types of tourists. Future studies can also do the comparative study of various models to predict pro-environmental behavioural intentions of tourists. The present study studies the pro-behavioural intentions of the tourists, future studies can study the actual behaviour of the tourists at the destination. This study relies on existing scales for measuring pro-environmental behaviour which may possibly suffer from measurement misspecification (Mikulić, 2018) wherein the indicators included are formative in nature whereas they are conceptualized as reflective (Mikulić & Ryan, 2018). Future studies should look into the development of pro-environmental behaviour scales keeping in view the recommendations made by both the above mentioned studies.

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