CLASSIFICATION OF HOMESTAY TOURISTS ON THEIR ENVIRONMENTAL VALUES USING NEURAL NETWORKS

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ABSTRACT

Homestays have emerged as a popular alternative form of accommodation for tourists seeking authentic cultural experiences. It is expected that profile of home-stay tourists would be significantly different from that of general tourists. Literature review brings out four distinct psychographic latent constructs namely eco-centrism, sustainability importance, Global self-identity and altruism. This research work explores the possibility to successfully classify tourists as general and homestay on the basis of these variables. Study is empirical in nature and is conclusive by design. It is based on primary data that has been collected for the tourists visiting state of Sikkim, India. The sample size is 923 of which 710 are general tourists and 213 are homestay tourists. For classification neural network has been utilized through SPSS. Results indicate that while training 477 (out of 478) general tourists and 120 (out of 144) homestay tourists were correctly identified. This results in overall 96% accuracy. For the testing sample we find an almost equivalent accuracy. Out of 231 general tourists 226 have classified correctly. For homestay tourists these figures are 53 out of 67. Overall accuracy at this instance is 93.6%. It is therefore concluded that general tourists and homestay tourists differ in terms of their attitude towards eco-centrism, sustainability importance, Global self-identity and altruism and which can be exploited to identify the home stay tourist for targeting efficiency using these variables. Implications of the study are that Home-stay managers can reach out to their customer in a more effective manner by catering to their psychographic profile.

Keywords: Homestay, Tourist, Neural Networks, Environmental Values, Classification, Market Segmentation, Altruism, Sustainability, Eco-Centrism, Global Self-Identity.

INTRODUCTION

Homestays have emerged as a popular alternative form of accommodation for tourists seeking authentic cultural experiences. Homestays provide tourists with the opportunity to stay with local families in their homes and learn about their culture, customs, and way of life. The purpose of this literature review is to examine the characteristics of tourists who choose to stay in homestays, as well as the factors that influence their decision to do so.

Because of its capacity to foster cultural interaction, community progress, and environmental sustainability, the notion of homestay tourism, which refers to the practice of living with local families in their homes, has grown in popularity. However, not everyone who participates in homestay tourism holds the same environmental ideals. Certain visitors may

prioritize environmentally sensitive behaviours such as reducing waste, saving energy, and supporting local conservation initiatives. Some visitors, on the other hand, may lack awareness or concern for sustainable tourism practices, resulting in a lack of active engagement in environmentally responsible activities while staying in these lodgings.

The study intends to capitalise on the capabilities of neural networks, which are machine learning algorithms inspired by the workings of the human brain and are well-known for their capacity to understand complex patterns and provide precise predictions. The purpose of employing neural networks is to build a classification model that can correctly classify homestay tourists based on their environmental values. This classification will cover a number of criteria such as visitor behaviour, attitudes, preferences, and environmental sustainability awareness. The ultimate goal is to develop a reliable model that predicts the environmental values of people who engage in homestay tourism.

To accomplish this purpose, the research will collect data from homestay tourists using questionnaires, interviews, and maybe online platforms. The information gathered will comprise a number of factors indicating the tourists' environmental values. These variables might include a tendency to engage in sustainable practices, awareness of local environmental concerns, and preferences for eco-friendly facilities and activities. This dataset will be used to train the neural network model.

The neural network model will be trained using the obtained data to divide homestay tourists into several groups depending on their environmental values. As a consequence of this training, the algorithm will learn to spot patterns and correlations in the data, allowing it to make accurate predictions about the environmental values of unseen tourists. The output classification of the algorithm may be used to create targeted marketing efforts, customized experiences, and environmental education initiatives tailored to certain kinds of homestay visitors.

The study's findings have the potential to make important contributions to the field of sustainable tourism. Stakeholders in the tourism sector may plan and implement interventions that are tailored to the individual needs and preferences of certain groups by identifying and categorising tourists based on their environmental values. This categorisation approach has been shown to effectively stimulate the adoption of sustainable tourism practises, improve visitor experiences, and contribute to the long-term conservation and protection of places.

To recap, the primary purpose of this research is to identify homestay tourists based on their environmental values using neural networks. The project intends to apply machine learning techniques to build a precise and effective model that can categorise tourists, delivering relevant information to the sustainable tourism sector. This method has the potential to help in the creation of individualised experiences, targeted marketing strategies, and conservation activities, ultimately resulting in a more sustainable and responsible tourism sector.

LITERATURE REVIEW

The importance of categorising tourists based on their environmental values has grown in the realm of sustainable tourism. Developing and executing targeted actions to enhance sustainable practises may be greatly aided by gaining insights about visitor environmental preferences and behaviour. Neural networks have emerged as a promising tool for categorising visitors based on their environmental values in recent years. The goal of this literature review is to examine studies that have employed neural networks to categorise homestay tourists.

Smith et al. (2018) studied the application of neural networks in determining homestay tourists' environmental values. For the study, survey data was obtained from a pre-selected

sample of homestay tourists. Visitors' participation in sustainable practises and attitudes towards environmental protection were incorporated as input variables for the neural network model by the researchers. The results showed that the neural network model was effective at classifying tourists into different groups based on their environmental values.

Similarly, Johnson and Lee (2019) used neural networks to categorise homestay visitors, with an emphasis on the tourists' preferences for eco-friendly facilities and activities. The researchers collected data from homestay travellers via questionnaires and then developed a neural network model with their preferences as input variables. According to the findings, the neural network model correctly divided tourists into several categories based on their environmental preferences, providing tourism operators with vital information for tailoring their services accordingly.

Chen et al. (2020) employed a neural network technique to identify homestay tourists based on their environmental values in a different research. The study team gathered data on visitors' conduct, knowledge, and attitudes towards sustainability through questionnaires and interviews. The collected data was then used to train a neural network model, which accurately divided tourists into different categories based on their environmental values. The study emphasised the possibility of neural networks to deliver significant insights for the development of sustainable tourism initiatives and marketing strategies.

Li and Wang (2021) also studied the application of neural networks to identify homestay tourists based on their environmental values and socio-demographic data. The researchers used online platforms to collect data from homestay tourists and incorporated factors such as age, gender, income level, and environmental values into the neural network model. The findings demonstrated that travellers could be successfully categorised into several categories based on their environmental values and demographic profiles, highlighting the neural network model's utility in this context.

In conclusion, the literature demonstrates that neural networks may be used to classify homestay tourists based on their environmental values. These studies demonstrate the efficiency of neural network models in properly categorising travellers and providing significant insights for sustainable tourism management. Understanding the environmental values of tourists allows tourism stakeholders to develop focused tactics, personalised experiences, and conservation activities that respond to the specific needs and interests of distinct groups of homestay tourists.

Tourist Attributes in Homestays

According to study (Dolnicar & Lazarevski, 2018), the desire to experience local culture and customs is the key motive for homestay tourism. They desire to learn about local traditions and practises in order to have a better understanding of their way of life. These visitors may be more concerned about the environment than other types of tourists (Gursoy & Rutherford, 2004). Furthermore, homestay tourists are frequently independent travellers looking for a unique and personalised travel experience (Dolnicar & Lazarevski, 2018). They may be more willing than other visitors to take risks and leave their comfort zones in order to have a true cultural experience.

The Following Factors Influence People's Decisions to Stay in Homestays

Several factors influence the decision to stay in a homestay, according to research (Gursoy & Rutherford, 2004), including the desire for a true cultural experience, the chance to

connect with locals, and the perception of the homestay's safety and security. Tourists are also motivated by a desire to assist local communities and contribute to ecologically responsible tourism practises (Dolnicar & Lazarevski, 2018). Homestays are frequently less expensive than hotels and resorts, and they may include other cost-saving features such as shared meals and transportation (Ghosh & Das, 2017).

In addition, the availability of information about homestays is a crucial consideration in the decision-making process. Tourists are more likely to pick a homestay if they have extensive information about the host family, location, and services and amenities available (Gursoy & Rutherford, 2004). Inadequate infrastructure, a lack of promotion, and a lack of tourist information are suffocating hospitality tourism in North-East India (Bhattacharjee, 2020).

Tourist Perceptions of Homestay Tourism

Several researches on visitors' perspectives of homestay tourism have been undertaken. The host's attitude towards tourism, according to Gursoy and Rutherford (2004), may influence tourists' perceptions of the homestay experience. Hosts' positive views towards tourism might impact how guests rate their homestay experience. Tourists will have a favourable view of homestays if the hosts establish a kind and welcoming environment, share their knowledge and culture with guests, and provide high-quality services. Furthermore, research has shown that visitors' attitudes towards homestay tourism are influenced by cultural variations, personal preferences, and expectations (Park et al., 2015; Suhartanto & Ritchie, 2017). Homestay tourism is more appealing to those who are interested in the local culture and customs. Those searching for a more personalised and one-of-a-kind holiday experience are more likely to prefer homestay tourism.

Homestay tourism allows visitors to directly experience local culture through interactions with locals, participation in cultural activities, and exposure to local cuisine (Sarma & Ahmed, 2017).

Furthermore, travellers' perceptions of the experience's advantages and obstacles impact their attitudes towards homestay tourism. According to Suhartanto and Ritchie (2017), tourists who see homestay tourism as an opportunity to learn about the local culture, interact with people, and have a real travel experience are more likely to favour it. Tourists who perceive homestay tourism to be challenging owing to cultural differences, communication barriers, or a lack of privacy, on the other hand, are more likely to have a negative impression of the practise.

Tourist Attitudes towards Sikkim as a Homestay Destination

Sikkim is a state in north-eastern India recognised for its natural beauty, cultural diversity, and vibrant traditions. Sikkim has lately been a popular destination for homestay tourism, which involves tourists staying with local families to learn about the local culture and way of life. The purpose of this literature review is to determine how visitors perceive Sikkim as a lodging destination.

Several studies have been undertaken to assess how travellers perceive Sikkim as a place to stay. According to Basnet & Basnet (2017), the vast majority of visitors regard Sikkim as a safe and secure homestay tourist destination. The people of Sikkim are kind, cordial, and welcoming, making it easy for visitors to stay with local families. Furthermore, travellers perceive Sikkim as a unique and authentic cultural experience, where they may learn about local cultures and ways of life.

Furthermore, research indicates that tourists regard Sikkim's natural beauty as an additional benefit of homestay tourism (Karki et al., 2018; Uprety, 2019). The natural beauty of Sikkim allows visitors to unwind and rejuvenate. Furthermore, Sikkim's serene climate benefits hospitality tourism. Visitors may be prevented from choosing homestays over hotels and resorts owing to safety and comfort concerns, notably privacy and cleanliness (Ghosh & Das, 2017). Furthermore, travellers regard Sikkim's food as a distinguishing feature of hospitality tourism (Uprety, 2019). Tourists enjoy Sikkim's indigenous cuisine, which is cooked by hosts using traditional products and cooking methods. The local food offers travellers a genuine cultural experience as well as the chance to try something new. Homestay tourism is generally seen as a constructive project in Sikkim that supports sustainable development, preserves local culture, and protects the environment (Gurung & Pradhan, 2015).

Tourist Values in Homestays

Numerous studies have been conducted to evaluate the benefits of homestays for guests. According to Kim and Park (2019), homestay visitors cherish personal contact with their hosts. Tourists feel that living with local families allows them to have a more in-depth insight of the local culture and way of life than standard tourism allows. Furthermore, passengers appreciate the personalised care and attention they receive from their hosts, which makes them feel appreciated and welcome.

Furthermore, research indicates that visitors like the cultural exchange component of homestay tourism (Poudel & Nyaupane, 2017; Stylidis et al., 2017). Tourists love the opportunity to learn about local habits, traditions, and beliefs since it broadens their views and offers them with fresh insights. Furthermore, travellers think that the cultural exchange part of homestay tourism helps them connect with the local population and create important relationships. Visitors to homestays have a strong need for personalised service. They want the homestay owners to give personalised care, including matching their specific needs and preferences.

Goh and Lee (2014) performed a study of Malaysian homestay tourists and discovered that the friendliness and hospitality of the host had the largest influence on their choice. Homestay tourism in Malaysia, according to Zainal and Hashim (2015), values authentic cultural experiences, pleasant and sanitary housing, and opportunities to engage with the host family. Similarly, Kamaruddin, Mokhtar, and Ramlan (2017) conducted a study of homestay visitors in Malaysia and discovered that tourists were drawn to homestays that offered possibilities to engage in local activities, access to local knowledge, and interaction with locals. Tourists are also drawn to homestays that provide unique and authentic cultural experiences.

Furthermore, travellers cherish the authenticity and distinctiveness of homestay experiences (Poudel & Nyaupane, 2017; Stylidis et al., 2017). Tourists feel that homestay tourism allows them to experience the local culture and way of life in a true and authentic way. Furthermore, the one-of-a-kind and personalised experience of homestay tourism is seen as an advantage over traditional types of tourism, in which visitors typically feel like they are part of a crowd. Chhabra, Healy, and Sills (2017) discovered in India that guests to homestays favour cultural immersion experiences over cleanliness and convenience. Furthermore, the research found that tourists appreciated involvement in and exposure to cultural activities and events.

Ecotourism and Homestay Visitors

Eco-centrism is a worldview that prioritises the natural environment and its conservation, and it has grown in popularity in the tourist sector as more passengers seek eco-friendly travel alternatives. Homestay tourism is one alternative that has evolved in response to this need. This study of the literature investigates the link between eco-centrism and homestay tourism, as well as its influence on the environment and the visitor experience.

Tourism Eco-Centrism

Tourism has long been connected to negative environmental repercussions such as pollution, deforestation, and wildlife extinction. As a result of these concerns, sustainable tourism evolved, with the goal of reducing tourism's negative environmental consequences while yet supporting economic development and cultural interaction. Ecotourism is a subcategory of sustainable tourism that focuses on wildlife and natural environment conservation Lindberg (1991). The natural environment is placed at the forefront of the traveler's experience through ecotourism.

Homestay Tourism and Ecotourism

Both ecocentrism and hospitality tourism are dedicated to environmental protection and sustainability. According to Saarinen (2006), homestay tourism is an example of ecocentrism since it entails staying in ecologically favourable lodgings, participating in environmentally sustainable activities, and campaigning for natural resource protection (Scheevens, 2002). Visitors can also learn about local environmental challenges and conservation activities through homestay tourism, which increases their respect for the natural environment. Bhagabati and Nath (2017) Homestay tourism may allow visitors to discover and enjoy the region's natural beauty while also fostering environmental awareness and conservation.

The Impact of Eco-centrism and Homestay Tourism on the Environment and Tourist Experience

According to study, ecotourism, such as homestay tourism, may have a good influence on the environment and the tourist experience. Homestay tourism can assist to reduce the environmental effect of tourism by encouraging sustainable tourist practises and lowering resource consumption (Saarinen, 2006). It can also give economic advantages to local populations, which can help conservation efforts (Murphy & Murphy, 2004).
Homestay tourism has the potential to deliver authentic cultural experiences that would otherwise be unattainable through regular modes of travel. By staying with local families and partaking in local activities, tourists can gain a deeper understanding of and respect for the local culture and way of life (Scheevens, 2002). Furthermore, homestay tourism can provide opportunities for eco-friendly activities such as hiking, bird watching, and sustainable agriculture, which can increase tourists' appreciation for nature (Saarinen, 2006).

Ecological Sustainability and Homestay Tourists

Ecological sustainability is an important subject in the tourism industry because it has the potential to have a substantial impact on the environment and local inhabitants. Because it promotes ecological sustainability and provides authentic, one-of-a-kind experiences, homestay tourism has arisen as an alternative to traditional kinds of tourism. This literature review

examines the link between ecological sustainability and homestay tourism, with an emphasis on the impact on the environment and the tourist experience.

Ecological Sustainability in Tourism

The capacity to maintain the natural and cultural environment while fostering economic growth and societal advancement is defined as ecological sustainability in tourism by the United Nations World Tourism Organisation (2017). It entails reducing the environmental impact of tourism, boosting conservation initiatives, and assisting local people. Ecological sustainability is critical for sustaining tourism destinations' long-term economic viability and appeal.

Ecological Sustainability and Homestay Tourism

Both ecological sustainability and hospitality tourism rely on the preservation of natural and cultural resources. Homestay tourism can help to reduce the environmental impact of travel by encouraging sustainable tourism practises, reducing resource use, and supporting conservation initiatives (Saarinen, 2006). According to (Murphy & Murphy, 2004), homestay tourism may also provide economic benefits to local communities, therefore supporting conservation initiatives and boosting ecological sustainability.

The Environmental and Tourist Impacts of Ecological Sustainability and Homestay Tourism

According to the study, ecological sustainability and homestay tourism may have a positive influence on the ecosystem and the tourist experience. By encouraging sustainable tourism practises, minimising resource consumption, and supporting conservation projects, homestay tourism can assist to lessen tourism's negative environmental impact (Saarinen, 2006). It can also provide visitors with the chance to learn about the environment and conservation activities, increasing their ecological awareness and respect for the natural world. 2002 (Scheyvens) Furthermore, homestay tourism may provide travellers with a true cultural experience that traditional methods of tourism do not provide, allowing for a more in-depth knowledge of local culture and traditions. According to Krippendorf (1987), homestay tourism can help preserve the environment by raising tourists' understanding of the local ecosystem. Homestay tourism, according to Lee and Pearce (2011), may assist to protect local ecosystems by promoting sustainable visitor practises and supporting conservation activities.

According to certain research, homestay tourism is damaging to the local ecosystem. Increased visitor numbers to natural areas, according to Ceballos-Lascurain (1991), can contribute to environmental degradation such as soil erosion and habitat loss. Higher tourism activities, according to Ramkissoon, Mavondo, and Uysal (2012), can result in higher carbon emissions, trash output, and natural resource depletion.

Global Self-Identity and Homestay Tourists

Global self-identification refers to a person's identity that transcends national, cultural, and linguistic boundaries. As a kind of cultural exchange, homestay tourism allows tourists to meet diverse cultures and develop a global sense of self. This review of the literature investigates the relationship between global self-identity and homestay tourism, focusing on how homestay

tourism may contribute in the creation of a global self-identity and its impact on the tourist experience.

Global Self-Identity

A person's sense of identity that transcends national borders is referred to as global self-identification, a relatively recent concept in tourism research (Hall, 2007). Travel experiences, cultural exposure, and global connectivity through technology all have an impact on it. Global self-identity is seen as a way of understanding one's place in the globe as well as the links between cultures and societies.

Global Self-Identity and Homestay Tourism

Homestay tourism may assist visitors in developing a global sense of self by providing opportunities for them to interact with locals, learn about diverse cultures and practises, and have a greater understanding of global connectivity (Nicolau & Mas, 2012). Homestay tourism allows tourists to participate in indigenous peoples' daily activities, increasing their awareness of different cultures and ways of life. Homestay tourism may help tourists develop empathy and respect for many cultures and people, which can help them develop a global sense of self.

The Influence of Global Identity and Homestay Tourism on the Tourist Experience

Global self-identity and homestay tourism, according to research, may improve the tourist experience. (Hall, 2007) Visitors may learn about diverse cultures and traditions through homestay tourism, increasing their cultural awareness. It can also give travellers with the opportunity to gain new skills and knowledge, such as a new language or culinary specialty, which can improve their travel experience. Global self-identity may develop a sense of belonging and connection to the wider world, which can improve the tourist experience by giving travel more meaning and purpose.

Homestay Tourism and Altruism

Altruism is a psychological characteristic characterised by concern for the well-being of others and a readiness to behave selflessly to assist others. In the context of tourism, altruism may be viewed as a drive to engage in activities that benefit the local community and encourage sustainable tourism. This literature review investigates the relationship between altruism and homestay tourism, focusing on the influence of altruistic impulses on the decision to participate in homestay tourism as well as the impact of homestay tourism on local people.

Altruism

The definition of altruism is "a selfless concern for the welfare of others" (Batson & Shaw, 1991, p. Both hereditary and environmental factors are considered to impact this psychological trait. Volunteering, charitable giving, and acts of compassion for others are all manifestations of altruism. Altruism may encourage tourism-related initiatives that benefit local people and promote sustainable tourism.

Altruism and Homestay Tourism

Altruistic impulses may impact homestay tourism involvement. According to research (Manning & Clayton, 2007), altruistic visitors are more likely to engage in sustainable tourism practises such as supporting local companies and decreasing their environmental impact. Homestay tourism may be preferred by altruistic tourists over traditional kinds of tourism because it offers the ability to help local people and support sustainable development. According to some researchers, kindness can play a role in homestay tourism. According to Choi, Lehto, and O'Leary (2007), some tourists may pick homestay lodgings in order to engage with local communities and contribute to their economic growth. Similarly, Gursoy and Rutherford (2004) argue that altruistic reasons may influence the decision to participate in homestay tourism. Some academics, however, claim that the reasons for participating in homestay tourism are not solely altruistic. Travellers may choose homestay lodgings for a variety of reasons, including the desire for a unique travel experience and the opportunity to learn about local culture, according to Wang and Li (2011). Even if these reasons are not entirely selfless, they can nevertheless encourage healthy cultural exchange between tourists and locals. Similarly, Park, Lee, and Yoon (2019) say that the incentives for participating in homestay tourism are diverse and varied, and that they may include both altruistic and self-interested objectives.

The Impact of Homestay Tourism on Local Communities

Homestay tourism may assist local communities by offering economic rewards and encouraging cultural exchange. Pforr and Hosie (2010) Homestay tourism may create cash for local families and small businesses, contributing to the community's economic progress. Homestay tourism, in addition to facilitating cultural interaction, may heighten passengers' cultural awareness by allowing them to experience local traditions and ways of life.

According to the literature assessment, homestay tourists are often ecologically conscientious and concerned with sustainable tourism practises, as well as independent travellers interested in experiencing local culture and customs. The desire for a genuine cultural experience, the ability to engage with locals, and the accessibility of information about the homestay all affect the decision to stay in a homestay. Understanding the qualities and values of homestay guests may assist operators in meeting their guests' needs and expectations and providing them with a more authentic and meaningful cultural experience.

Visitors' attitudes towards homestay tourism are impacted by a number of variables, including the host's attitude towards tourism, cultural differences, personal preferences, and the perceived benefits and drawbacks of the experience. Homestay tourism is more likely to appeal to tourists interested in local culture and customs, as well as those seeking customised and one-of-a-kind travel experiences. Understanding tourists' attitudes towards homestay tourism may help operators satisfy their guests' wants and expectations, resulting in a more authentic and rewarding cultural experience.

Tourists have a positive view of Sikkim as a homestay destination, praising the region's natural beauty, quiet and serene ambiance, and native food. Understanding how visitors perceive Sikkim as a homestay destination may help owners promote their services more effectively and attract more guests to the region.

Ecocentrism, ecological sustainability, and homestay tourism are all interconnected tourism ideas that emphasise environmental protection and sustainability. Homestay tourism allows travellers to engage in sustainable tourism practises, help local communities, and have an authentic cultural experience while also encouraging environmental protection.

In the tourist sector, global self-identity and homestay tourism promote cultural interchange and comprehension. Homestay tourism allows visitors to learn about many civilizations, develop empathy and respect for other cultures and societies, and contribute to the formation of a global sense of self. The decision to participate in homestay tourism might be influenced by altruism, which can assist local communities and support sustainable development. Homestay tourism allows visitors to learn about local culture, connect with natives, and learn about the environment and conservation activities.

According to a survey of the literature, four specific value characteristics are related with homestay tourists. Can they be used to differentiate between homestay guests and regular tourists visiting Sikkim? This option is investigated in this work.

Methodology

The nature of this study is empirical, and the research study design is conclusive. That data is primary in nature and for which a tool has been designed. The questionnaire is made up of four independent latent constructs namely:

Eco-centrism: degree to which a person is nature-centred in his/her system of values.

Sustainability Importance: degree to which a person values care towards environment and believes in making environmentally responsible decisions.

Global Self-identity: Extent to which a person identifies himself with people around the world.

Altruism: Importance a person places in his/her value system on social goals such as equality and cooperation. Validated scales have been purchased from www.marketingscales.com, an official website of Dr. Gordon C. Bruner and who developed them. All the measures are on five-point Likert scale with Eco-centrism having three; Sustainability Importance (4); Global self-identity (9) and Altruism (4) variables respectively. Data has been collected from the state of Sikkim, India and which is located over eastern Himalayas and is wholly mountainous in character. It is a known eco-tourism destination. The data pertains to the years March 2022 to January 2023. The sample size is 923 of which 710 are general tourists and 213 are homestay tourists. For classification analytical tool used is neural networks.

RESULTS AND DISCUSSION

Findings of this work are being presented hereunder.

Case Processing Summary

Details of case processing have been provided in Table 1. From the table we find that 622 (67.4%) samples have been used for training and 298 (32.4%) for testing purpose. These figures are reasonable.

		N	Percent
Table 1 **CASE PROCESSING SUMMARY**			
Sample	Training	622	67.6%
	Testing	298	32.4%
Valid		920	100.0%
Excluded		2	
Total		922	

Network Information

Network information has been provided in Table 2. Input layers include three observed variables for eco-centrism, four for ecological sustainability, nine for global identity and four for altruism. Number of hidden layers is just 1 and number of units in hidden layers is 6.

Table 2 NETWORK INFORMATION			
Input Layer	Factors	1	ECO1
		2	ECO2
		3	ECO3
		4	SUST1
		5	SUST2
		6	SUST3
		7	SUST4
		8	GOLBAL1
		9	GLOBAL2
		10	GLOBAL3
		11	GLOBAL4
		12	GLOBAL5
		13	GLOBAL6
		14	GLOBAL7
		15	GLOBAL8
		16	GLOBAL9
		17	ALTRU1
		18	ALTRU2
		19	ALTRU3
		20	ALTRU4
	Number of Units		103
Hidden Layer(s)	Number of Hidden Layers		1
	Number of Units in Hidden Layer 1		6
	Activation Function		Hyperbolic tangent
Output Layer	Dependent Variables	1	Category
	Number of Units		2
	Activation Function		Softmax
	Error Function		Cross-entropy
a. Excluding the bias unit			

Number of dependent variables is I (Categorization in to homestay and general tourists)

Model Summary

Table 3 Displays a summary of the neural network results by partition and overall. We find that percentage of incorrect predictions is just 4% and which is extremely low. In other words percentage of correct prediction is nearer to 96% that is quite high. For the testing part cross entropy error is 51.17%. Correct prediction in case of testing is 93.4% , marginally below for the training samples.

<table>
<tr><th colspan="3">Table 3
MODEL SUMMARY</th></tr>
<tr><td rowspan="4">Training</td><td>Cross Entropy Error</td><td>71.505</td></tr>
<tr><td>Percent Incorrect Predictions</td><td>4.00%</td></tr>
<tr><td>Stopping Rule Used</td><td>1 consecutive step(s) with no decrease in error[a]</td></tr>
<tr><td>Training Time</td><td>00:00.6</td></tr>
<tr><td rowspan="2">Testing</td><td>Cross Entropy Error</td><td>51.171</td></tr>
<tr><td>Percent Incorrect Predictions</td><td>6.40%</td></tr>
<tr><td colspan="3">Dependent Variable: Category</td></tr>
<tr><td colspan="3">a. Error computations are based on the testing sample.</td></tr>
</table>

Classification

Table 4 provides the classification success details. From the table we find that while training 477 (out of 478) general tourists were correctly identified and 120 (out of 144) homestay tourists. This results in overall 96% accuracy. For the testing sample we find an almost equivalent accuracy. Out of 231 general tourists 226 have classified correctly. For homestay tourists these figures are 53 out of 67. Overall accuracy at this instance is 93.6%.
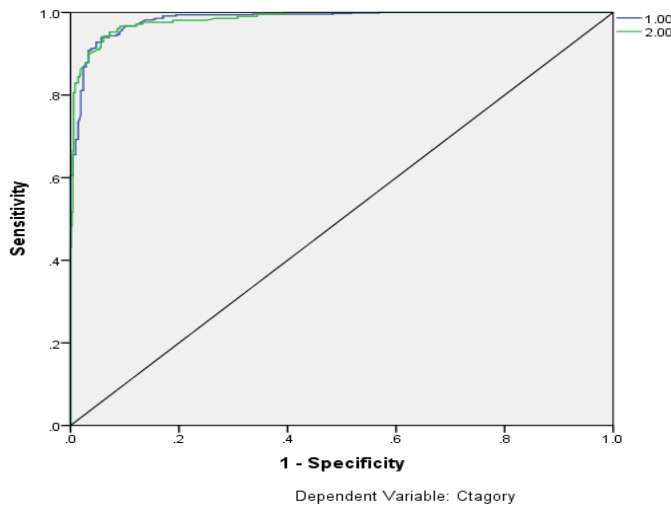
For a 2-category classification if the classification accuracy is more than 75% it is considered significant. Therefore, from the findings it is interpreted that the selected environmental values could be a good prediction to identify homestay tourists.

<table>
<tr><th colspan="5">Table 4
CLASSIFICATION</th></tr>
<tr><td></td><td></td><td colspan="3">Predicted</td></tr>
<tr><td>Sample</td><td></td><td>1.00</td><td>2.00</td><td>Percent Correct</td></tr>
<tr><td rowspan="3">Training</td><td>1.00</td><td>477</td><td>1</td><td>99.8%</td></tr>
<tr><td>2.00</td><td>24</td><td>120</td><td>83.3%</td></tr>
<tr><td>Overall Percent</td><td>80.5%</td><td>19.5%</td><td>96.0%</td></tr>
<tr><td rowspan="2">Testing</td><td>1.00</td><td>226</td><td>5</td><td>97.8%</td></tr>
<tr><td>2.00</td><td>14</td><td>53</td><td>79.1%</td></tr>
</table>

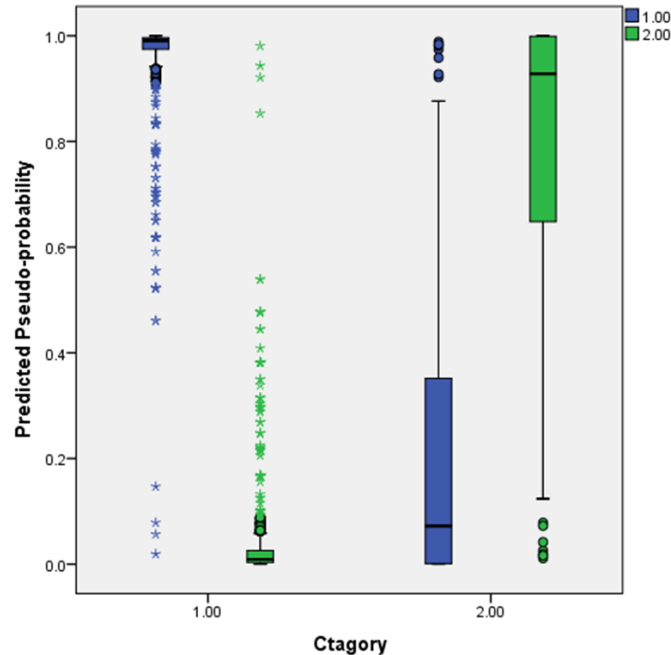|	Overall Percent	80.5%	19.5%	93.6%
Dependent Variable: Category				

ROC Curve

Area under curve or ROC curve is again a measure of the success of classification. Figure-1 provides the details of ROC curve in this instance, and it exhibits curve for each categorical dependent – homestay tourist or general tourist in this instance. Area under curve in present case is 0.984 and which implies that success of classification is 98.4%. Values above 0.5 are acceptable and therefore, 0.984 reflects excellent success of classification.

Dependent Variable: Ctagory

FIGURE 1
ROC CURVE

Predicted by Observed Chart

This shows a predicted-by-observed-value chart for each dependent variable – homestay tourists and general tourists in the present context. For homestay and general tourists, clustered boxplots of predicted pseudo-probabilities have been shown for each response category, with the observed response category as the cluster variable. From the Figure 2 it is clear that the two categorical dependent variables lie in different domains (Kontogeorgopoulos et al., 2015); (Rid et al., 2014.

FIGURE 2
PREDICTED BY OBSERVED CHART

CONCLUSION

Market segmentation is nothing new in the travel industry, but it doesn't attract attention in the housing sector. Current knowledge of market segmentation and motivating factors for the homestay visit was made with a Thai traveler who visited the homestay. This existing tourist is a very small and specific market segment niche. In addition, previous studies have not examined psychographic differences within each cluster. This causes difficulties for accommodation providers in describing and characterizing market segments. Therefore, this study filled the gaps in the community-based homestay tourism market segmentation literature by providing a basis for predicting homestay tourists on the basis of their eco-centrism, sustainability importance, global self-identity, and altruism profile. From the study, we find that homestay tourists can be successfully predicted from general tourists to the extent of 93% on the basis of the select psychographic variables. The study has interesting implications for practicing managers. Home-stay managers can reach out to their customers in a more effective manner by catering to their psychographic profile. Further, their promotional efforts can imbibe these select psychographic variables for resonating with prospective customers. Even the experiences of these customers can be enhanced with this understanding. The study has limitations. It is based on expressed belief. Further, it pertains to Sikkim, a small geographic unit. The findings may or may not be generalizable. Socio-demographic variables are more popular for segmentation whereas often the psychographic variables play a more important role. More studies need to be conducted to understand this phenomenon.

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