

MODELING RESIDENTS' PERCEPTIONS ON ECOTOURISM IN UPPER NORTHEAST, THAILAND

by

Subchat Untachai

UdonThani Rajabhat University,

UdonThani, Thailand

Tel: +66-86-6434016, E-mail: s_untachai@yahoo.com

ABSTRACT

The objective of the research was to examine the residents' perceptions on ecotourism in the upper Northeast of Thailand. Given the literature review, a model proposed the residents' perceptions on ecotourism which was identified as a one-dimensional construct consisting of five components such as perceived costs of tourism, perceived benefits of tourism, use of the tourism resource base, perceived state of the local economy, and ecocentric attitudes. Using a survey design, data were collected via questionnaires interviewing 399 samples. They included the residents in Udonthani and Nongkhai provinces. The author argued the second-order factor structure for the ecotourism significantly supported. This suggested that residents evaluated the ecotourism on five basic dimensions but they also viewed overall ecotourism as a higher order factor that captured a meaning common to all dimensions. The managerial implications were discussed.

KEYWORDS

Residents' Perceptions, Ecotourism, Confirmatory Factor Analysis, Second-Order Factor Analysis

INTRODUCTION

Due to earning first service trade value of the country, the tourism is a service industry which takes main roles in Thai economics system. Moreover, it is an industry contributing involved business, for instance; hotels, residents, restaurants, souvenir shops, transportation, etc., and attracting investment, employment and local income distribution. In 2009, Thailand could earn from foreign tourists approximately 527,326 million baht or about 8.5 percentages of total exporting values (51.1 percentages of service section exporting values) or approximate proportion 5.8 percentages of GDP. Meanwhile tourism business can cause employing over 2 million people or 6-7 percentages of entire labor system. In addition, this can improve income distribution and local employment (Ministry of Tourism and Sports).

Ecotourism is one of the fast growing sectors of the hospitality and tourism industries worldwide (Bjork, 2000; Buckley, 2000). The International Ecotourism Society (TIES) defined ecotourism as responsible travel to natural areas that conserves the environment and improves the well-being of local people (The International Ecotourism Society, 2010). The ecotourism also refers to the three inter-linked elements of environment, active learning and sustaining the socio-cultural and natural environments (Weaver, 2001).

Ecotourism, a sub-category of sustainable tourism, is adopted by many Thailand rural communities as a new way to attract visitors and stimulate local economies through generating tour revenues while conserving the natural, social and cultural resources of communities (Rittichainuwat et al., 2001). Consequently, many communities have initiated to develop ecotours. However, the development of ecotourism does not automatically lead to conservation of community resources, and may in fact lead to additional environmental burdens, if not managed properly (Weaver, 2001;2005; Shikida et al., 2010). Local residents' support for tourism development (i.e. community tourism or ecotourism) is critical because successful operation and sustainability depend heavily on their goodwill (Gursoy et al., 2002; Jurowski and Gursoy, 2004). Therefore, it is not very surprising that research on residents' reactions continues to be a topic of considerable interest (Ko and Stewart, 2002; Lindberg et al., 2001 ; Mason and Cheyne 2000; Lepp , 2007; Perdue et al., 1990; Teye et al., 2002; Ishikawa and Fukushibe, 2008; Jackson and Inkanan, 2008; and Williams and Lawson 2001).

The purpose of this paper is to develop and empirically test the residents' perceptions on the ecotourism model in the upper northeast of Thailand. The paper starts with a review of the literature on the exploration variables of the proposed model. The following section presented the conceptual model and defines the sets of research objectives and hypotheses. The study proceeds with a description of methods applied, including information about the data and

statistical procedures. Results are presented and some of their implications and limitations are discussed in the final section.

LITERATURE REVIEW

Ecotourism

Weaver (2001) outlines a definition of ecotourism with three core elements. First, the focus of attraction is natural environments (e.g., a rainforest or a grassland) or specific components thereof, such as a particular type of animal or plant. Ecotourism is therefore essentially a form of nature-based tourism. Nature-based tourism refers to a type of tourism activity that integrates education, recreation, and adventure elements (Buckley, 2002; 2004). Second, ecotourism emphasizes learning as an outcome of the interaction between ecotourists and the natural environment. Finally, while some definitions emphasize the notion of ecological sustainability, most also include an economic or socio-cultural dimension, on the assumption that these can not be easily divorced from each other or from ecological sustainability (Hall, 2000). A wide range of ecotourism activities can be accommodated under this definition. Weaver (2001) classified the ecotourism by activity type (e.g., bird watching, whale watching, geological tourism) into hard and soft classes.

On the one hand, active ecotourism, which tends to involve a small number of environmentally aware participants who embark on relatively long specialized trips, expect few services during those trips, and have physically active, non-mediated experiences with the natural environment. On the other hand, the soft segment tends to embark on short ecotourism experiences as one component of a multi-purpose trip. These travelers expect a high level of comfort and services and are more likely to rely on interpretation and mediation to appreciate the relevant natural attractions. An important distinction is that soft ecotourists are usually associated with steady-state sustainability, or leaving an area in the same condition as when they arrived. In contrast, the hard ecotourist supports enhancement sustainability, or improving the condition of the physical environment through donations and volunteer activity (such as tree planting). Research carried out in several ecotourism destinations, while involving different populations and methods, generally supports this concept of an ecotourism spectrum.

Meric and Hunt (1998) point out four types of ecotourists: hard-core nature tourists who are scientific researchers or members of tours designed for education; dedicated nature tourists who take trips specifically to protected areas to understand local, natural and cultural history; mainstream nature tourists who visit natural parks, and casual nature tourists who partake of nature incidentally as part of a broader trip.

Singh et al. (2007) suggest that ecotourists consists of three types such as soft, structured, and hard ecotourists. The structured ecotourists, for instance, prefer intellectual interpretation, third party organization of the trips and using travel experts. They are also likely to visit less well-known destinations and consider themselves dedicated ecotourists. They claims that soft ecotourists support steady-state sustainability, while hard ecotourists normally strive for enhancing sustainability through various means such as volunteer work, fund-raising to support environmental causes, etc.

Wight (1996) found that the important features of ecotourism for experienced ecotourists including wildlife viewing, hiking/trekking, and visiting national park or protected area. On the other hand, the important features of ecotourism for general consumers such as casual walking, wildlife viewing, learning about other cultures, visiting national park or protected area, and wilderness setting. Still Ayala (1996) points out that an ecoresort combines quality with profitability through added value to tourists' experiences, by a skill full interpretation of a natural or cultural phenomenon.

In short, ecotourism is the sustainable tourism based on community resources and participatory.

The Residents' Perception of the Tourism Development

Most research studying local residents' perceptions and attitudes towards tourism development and the factors that may influence their perceptions and attitudes is essential in achieving a host community's support for tourism development (Akis et al., 1996; Choi and Murray, 2010; Andereck et al., 2005; Jurowski and Gursoy, 2004; Lankford and Howard, 1994; Hernandez et al., 1996).

Dyer et al. (2007) developed a structural model to describe the tourism impact perceptions of the residents of the Sunshine Coast, Queensland, Australia, and how these perceptions affect their support for tourism development. Specifically, this study had the following three objectives: to determine whether tourism impact scales developed in

North America are valid for the Australian context; to identify factors that provide elements of tourism development that are regionally relevant for the Sunshine Coast; and to provide baseline information regarding tourism in a rapidly changing environment that has recently lost its sugar industry, has a small business based economy, and an emerging focus on the knowledge and health economies. The five dimensions, e.g. negative socio-economic impact; positive social impact; negative social impact; positive economic impact; and positive cultural impact, with a 28 items scale were used to take account of the context of this study. They found that the perceived positive economic impact factor has the largest influence on residents' support for further tourism development.

Yoon et al. (2001) attempted to examine the structural effects of four tourism-impact factors on total impact and on local residents' support for tourism development. Three hundred and four questionnaires from a mail survey of randomly selected residents from the Norfolk/Virginia Beach/Newport News area were analyzed. A confirmatory factor analysis and structural equation modeling procedure were performed, respectively, by utilizing the LISREL procedure. The research revealed that four tourism-impact factors namely economic, social, cultural, and environmental impacts were related with two factors, including the variable of total impacts and support for tourism development. Ko and Stewart (2002) examined the relationship between resident's perceptions of the impact of tourism and attitudes toward host community. The model consisted of five latent constructs and nine path hypotheses and was based upon 732 mailback questionnaires returned by residents of Cheju Island, Korea, a major domestic tourism destination. It was found that residents' community satisfaction was closely related to 'perceived positive' and 'perceived negative' tourism impacts. These constructs were directly related attitudes with additional tourism development.

Jurowski et al (1997) examined the perceived impacts as having two dimensions such as costs and benefits. For expanded the understanding of community support for tourism, Gursoy et al. (2002) expanded on the findings of the model proposed by Jurowski et al (1997) breaking down the perceived impact into five areas including economic benefits; social benefits; social costs; cultural benefits; and cultural costs.

Johnson et al. (2002) examined residents' perceptions of tourism development in a rural area experiencing an economic transition. The economy was shifting from the extractive industries of mining and logging to an emergent tourism industry. The study utilized a longitudinal research design to investigate community sentiment over the developmental phase of a new year-round ski area. Various attitude indicators were used over the 6-year period. The residents initially held high expectations for tourism development, but support has diminished over time. The data suggested a complex relationship between the level of economic development, the level of tourism development, and residents' expectations and perceptions of the socioeconomic and environmental impacts resulting from tourism.

Vasgas-Sanchez et al. (2011) reviewed the constructs that have been used in research on residents' perception and attitudes towards tourism development. They also indicated that there are positive linkages among personal benefits from tourism development, perceived positive impacts of tourism (about economic, socio/cultural and environmental impacts), satisfaction with the community, and attitude towards additional tourism development (Ko and Stewart, 2002). Furthermore, they found negative correlations between perceived negative impacts of tourism (about economic, socio/cultural and environmental impacts) attitude towards additional tourism development, and satisfaction with the community.

William and Lawson (2001) suggested that researchers who are interest in investigating antecedents of residents perceptions of tourism need to focus more on personal value and less on demographic factors. Gursoy et al. (2002) aimed to model host community support for tourism development in Virginia, the United States of America. They showed that community concern, community attachment, ecocentric attitudes, utilization of the tourism resource base by residents, the state of the local economy, perceived benefits and costs are related to support for tourism based in two categories (cultural and historic attractions; and cultural and folks events). Foxall and Greenley (1998; 1999) used the Behavioral Perspective Model to examine the relationship between the affective and behavioral variable (Clitheroe et al., 1998). They note that pleasure, arousal, and dominance influence consumer behavior, and pleasure has the highest level of association with approach-avoidance, followed by arousal, and dominance. They also suggest that the significant effects of arousal and pleasurable affectives on approach-avoidance behavior are likely to vary taking into account levels of pleasantness of settings (Donovan and Rossiter, 1982).

However, the previous tests of the ecotourism construct yielded mixed findings. Therefore author aims to develop and to validate the measurement of the residents' perception of ecotourism construct (RET) in Thailand (see Figure 1). Figure 1 shows the path diagram for the second-order factor model. This model consists of a structural equation and a measurement equation:

$$\text{The Structural equation: } \begin{matrix} \eta \\ (5 \times 1) \end{matrix} = \begin{matrix} \Gamma \\ (5 \times 1) \end{matrix} \begin{matrix} \xi \\ (1 \times 1) \end{matrix} + \begin{matrix} \zeta \\ (5 \times 1) \end{matrix}$$

Where η is a vector of 5 residents' perceptions on ecotourism constructs, Γ is a vector of 5 coefficients relating each constructs its overall residents' perceptions on ecotourism construct, ξ is a vector of overall residents' perceptions on ecotourism construct, ζ is a vector of 5 errors of residents' perceptions on ecotourism constructs.

$$\text{The Measurement equation: } \begin{matrix} y \\ (18 \times 1) \end{matrix} = \begin{matrix} \Lambda_y \\ (18 \times 5) \end{matrix} \begin{matrix} \eta \\ (5 \times 1) \end{matrix} + \begin{matrix} \varepsilon \\ (18 \times 1) \end{matrix}$$

Where y is a vector of 18 indicators, ξ is a vector of the overall residents' perceptions on ecotourism constructs, Λ is a 18×5 matrix of pattern coefficients relating each indicator to its posited underlying construct, and ε is a vector of 18 indicator errors.

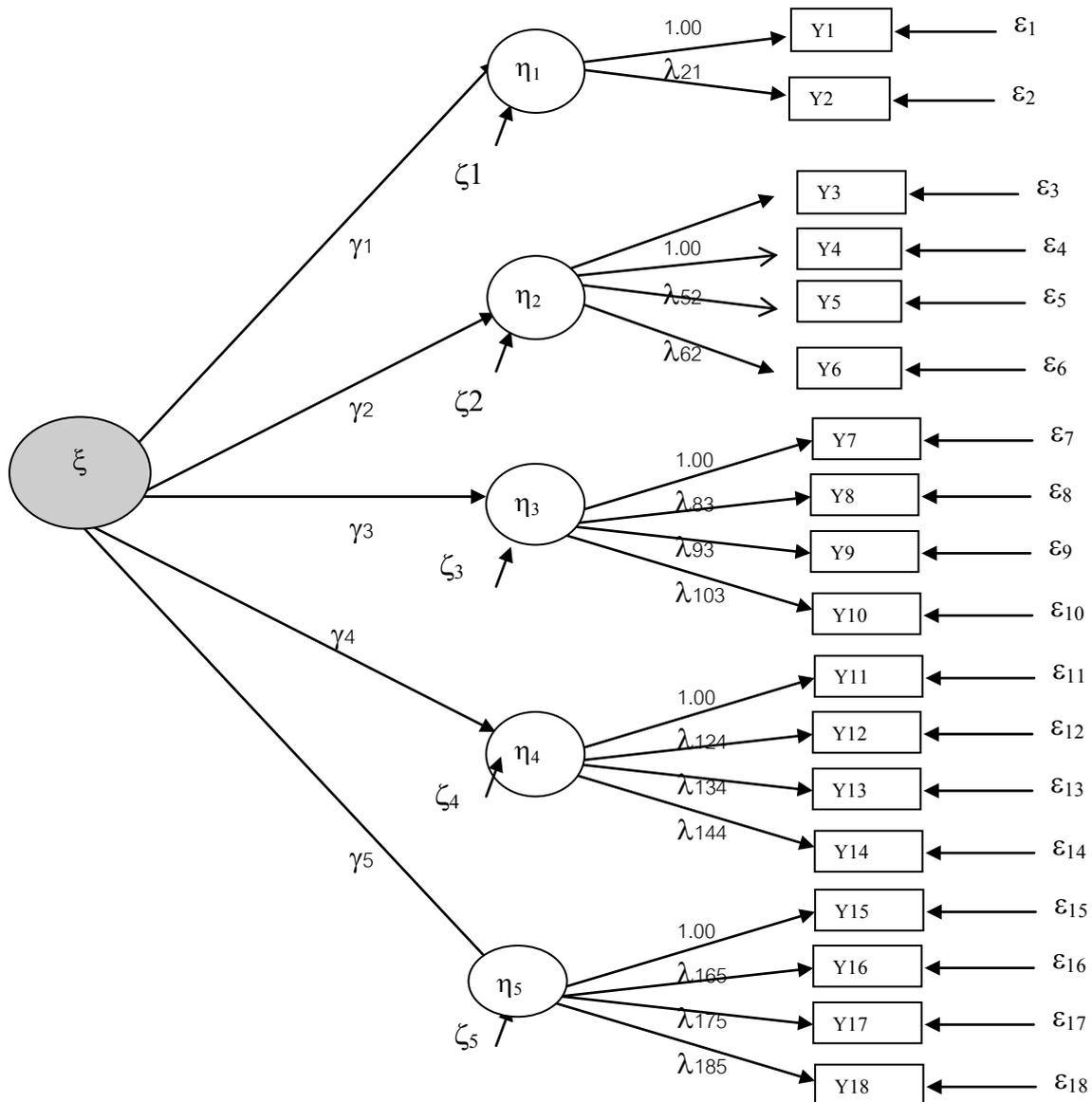
The structural equation links the five RET factors, η to the latent overall ecotourism, ξ . The measurement equation links the observed variable y to their respective hypothesized RET.

OBJECTIVE AND HYPOTHESIS

The aim of this paper is to examine the RET construct in Thailand. The author proposed a model of the RET. The model, based on the structural equation model, consisted of five constructs, namely perceived costs of tourism, perceived benefits of tourism, use of the tourism resource base, perceived state of the local economy, and ecocentric attitude. It provided a better understanding of the ecotourism construct in the view of local residents. Shifting attention to the measurement part of the model, five latent variables are operationalised by 18 manifest variables acting as reflective indicators. Table 2 details the measure scheme.

Therefore, research hypotheses are the residents' perceptions on ecotourism (RET) direct causal influences on perceived costs of tourism, perceived benefits of tourism, use of the tourism resource base, perceived state of the local economy, and ecocentric attitude ($\gamma_1, \gamma_2, \gamma_3, \gamma_4$ or $\gamma_5 \neq 0$).

**FIGURE 1
RET MODEL**



RESEARCH METHODOLOGY

The proposed research design embedded in a quantitative approach. It included a two-stage process. The first stage is a pilot study (i.e., pretesting questionnaire items) of undergraduate business students conducting data collection in Udon Thani Rajabhat University. In addition, cross-section survey design of this investigation into RET attributes necessitated uncovering the variables of interest and their relationship (Anderson and Gerbing, 1988; Baumgartner and Homburg, 1996). This entailed conducting a large-scale field study.

The Sample and Data Collection

The focus of this survey research was on scrutinising the link of RET dimensions.

The sample was drawn from a list of all households located at Wang Sam Mo district in UdonThani province (12,969 households) and at Nongkhai district in Nongkhai province (24,201 households) (National Statistical Office, Ministry of Information and Communication Technology, Thailand). From the initial list of 37,170 households, a sample of 450 heads of the households was quota selected. The data were collected via self-administered questionnaires. Respondents were asked to rate, on a five-point Likert scale their agreement or disagreement on the residents'

perceptions on ecotourism dimensions. In November 2010- February 2011, 450 questionnaires were distributed to the sample in upper northeast, Thailand.

Research Instrument

This study utilized nondisguised - structured questionnaires, based on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire consisted of two sections, each designed to elicit responses for the followings. Part 1, background information of the characteristics of the respondent including age, gender, income, and level of education. Part 2, respondents perceived on RET attributes including perceived costs of tourism, perceived benefits of tourism, use of the tourism resource base, perceived state of the local economy, and ecocentric attitude (Dyer et al., 2007; Bjork, 2000; Choi and Murray, 2010; Jurowski, et al., 1997; Ko and Stewart, 2002).

Stages in the Development and Validation of a Scale Measuring Healthcare Service Quality

In order to achieve the research aim, the authors developed the multi-item scale following the process that recommended by Churchill (1979), and Gerbing and Anderson (1988). The first task was to generate items, sample items and dimensions from Vassgas-Sanchez et al. (2011); Teye et al. (2002); Gursoy and Rutherford (2004); Gursoy et al. (2002), who have previously developed the scale.

Initial Generation of statement (step 1)

The first task was to generate a set of items to delineate the domain of RET construct. Particularly, 55 items were derived from the literature, in-depth interview, and focus groups. Each item was selected for its appropriateness, uniqueness, and ability to convey to informants different shades of meaning (Churchill, 1979). Multiple items were generated within each of the five primary domains. The author attempted to generate scale items that would measure the extent to which RET is perceived by residents.

Deletion of duplicate statement (step 2)

To assess the quality of the measurement items, a questionnaire was developed and administer to five expert judges. Three judges were academicians and two were tourism industrial judges. Within the questionnaire, the concept of RET was described. Each dimension within the domain was described and each judge was asked to agree or disagree with how well each item measured the construct under consideration by responding to a five-point Likert scale. Given only items that received an average score of three or better remained in the instrument questionnaire, a set of 24 items was obtained.

Initial collection of perceptions (step 3)

The survey instrument containing the new pool of 24 items was pretested with 300 undergraduate students in UdonThani Rajabhat University, Thailand. They were asked to complete a survey and indicate any ambiguity or other difficulties they experienced in responding to the items. Their feedback and suggestions were used to modify the questionnaire. The pool of 24 items were measured on a 5-point Likert-type scale where 1 indicated strongly disagreement and 5 strongly agreement.

Scale development and purification (step 4)

The pool of 24 items was analyzed to verify the dimensionality of the RET measurement. In order to test the suitability of the data for factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test for sphericity were employed. Relative scores of .87 and 500.17($p < .001$) rendered the data suitable for factor analysis.

To reduce the number of original variables, a principal component exploratory analysis was used. An eigenvalue greater than 1 and a cumulative percentage of variance explained being greater than 50 per cent were used as criteria in determining the number of factors. Thus, 5 factors were exacted. This accounted for 64.30 per cent of the variance. Moreover, the communality column provides further evidence of the overall significance of the solution exacted (see Table 1).

Interpretation of the factors

Due to the data were subject to exploratory factor analysis, and in the lack of a compelling analytical or theoretical reason, oblique rotation was applied to the data. The criterion for the significance of factor loading for the exacted common factors was stipulated to be greater than the absolute value of 0.6 (Steenkamp and Trijp, 1991). In order to assess how much variance of each item was accounted by the exacted factors, the communality value of 0.3 was used to eliminate the item. The result presented in Table 1.

TABLE 1
OBLIMIN-ROTATED PRINCIPAL COMPONENT FACTOR ANALYSIS FOR RET

Items	Component					Communality
	Facto r1	Facto r2	Facto r3	Facto r4	Facto r5	
• Tourism has changed our precious traditional culture	801					.666
• Local residents have suffered from living in a tourism destination area	.736					.595
• <i>The prices of goods and services have increased because of tourism</i>	<i>.576</i>					<i>.397</i>
• <i>Construction of hotels and other tourist facilities have destroyed the natural environment</i>	<i>.590</i>					
• Tourism has increased employment opportunities		.776				.690
• Tourism has increased shopping opportunities		.708				.672
• Tourism has increased recreation opportunities		.766				.672
• Tourism has increased revenue from tourists for local government		.790				.714
• <i>Cultural or historic-based attractions</i>						.549
• <i>Supporting service development</i>		.498				.580
		<i>.518</i>				
• Favorite place to go during free time			.685			.654
• Best for what I like to do			.608			.668
• Coming here is most satisfying			.714			.718
• Express who I am			.775			.700
• <i>Tourism is likely to encourage development of a variety of cultural activities by the local residents</i>			<i>.256</i>			<i>.564</i>
• Government should help to create more jobs				.711		.657
• Willing to pay higher taxes if create more jobs				.715		.617
• Need more jobs to stop young people moving away				.805		.723
• Our roads and others public facilities are likely to be kept at a high standard because of tourism				.698		.671
• <i>Interfering with nature</i>					.570	<i>.723</i>
• Plants and animals have as much as right as human do					.717	.665
• Earth has very limited room and resources					.707	.697
• The balance of nature					.707	.666
• Nature cannot cope with impacts of industrial nations					.719	.607
Eigenvalue	9.29	2.18	1.40	1.35	1.18	
Percentage of Variation	38.74	9.11	5.85	5.64	4.946	
Cumulative Percentage	38.74	47.86	53.72	59.36	64.30	

Note: factor loading below the 0.60 acceptable value (in italics) were eventually excluded from further analysis

Reliability of the EFA solution and respecification of the factors

The Cronbach's coefficient α was used to assess the internal reliability of the exacted factors. The cut-off value adopted was 0.7 and the acceptable benchmark level of item-to-total correlation was set above 0.3. And factors with only 1 item was deleted or merged with the others whenever they judged to be conceptually related. These criteria were undertaken to reduce the number of factors (see Table 2). Therefore, Factor 1, 2, 3, 4, 5 were fulfilled the above set criteria and consequently they are retained without any changes.

TABLE 2
INTERNAL CONSISTENCY AND RELATED DECISIONS FOR RET

Factors and Items	Items-total correlation	α value	Decision
Factor 1(Cost)		.78	Retained
• Tourism has changed our precious traditional culture (y1)	.63		
• Local residents have suffered from living in a tourism destination area(y2)	.63		
Factor 2(Benefit)		.83	Retained
• Tourism has increased employment opportunities (y3)	.58		
• Tourism has increased shopping opportunities(y4)	.68		
• Tourism has increased recreation opportunities(y5)	.72		
• Tourism has increased revenue from tourists for local government(y6)	.69		
Factor 3 (Use)		.84	Retained
• Favorite place to go during free time(y7)	.72		
• Best for what I like to do(y8)	.71		
• Coming here is most satisfying(y9)	.77		
• Express who I am(y10)	.78		
Factor 4 (Government)		.82	Retained
• Government should help to create more jobs(y11)	.62		
• Willing to pay higher taxes if create more jobs(y12)	.69		
• Need more jobs to stop young people moving away(y13)	.64		
• Our roads and others public facilities are likely to be kept at a high standard because of tourism(y14)	.62		
Factor 5 (Attitude)		.83	Retained
• Plants and animals have as much as right as human do(y15)	.61		
• Earth has very limited room and resources(y16)	.72		
• The balance of nature(y17)	.66		
• Nature cannot cope with impacts of industrial nations(y18)	.64		

Identification of the main factors (step 5)

Factor 1 is titled “Cost “. This factor accounts for 38.74 per cent of the total variance and consist of two items with factor loadings ranging from 0.73 to 0.80. The items contained in this factor describe the underlying.

Factor 2 is titled “Benefit“. This factor accounts for 9.11 per cent of the total variance and consist of four items with factor loadings ranging from 0.70 to 0.79. The items contained in this factor describe the underlying.

Factor 3 is titled “Use “. This factor accounts for 5.85 per cent of the total variance and consist of four items with factor loadings ranging from 0.60 to 0.77. The items contained in this factor describe the underlying.

Factor 4 is titled “Government “. This factor accounts for 5.64 per cent of the total variance and consist of four items with factor loadings 0.69 to 0.80. The items contained in this factor describe the underlying.

Factor 5 is titled “Attitude “. This factor accounts for 4.94 per cent of the total variance and consist of four items with factor loadings ranging from 0.70 to 0.71. The items contained in this factor describe the underlying.

Final collection of data on college students' perception (step 6)

To test and validate the initial RET factors, a second survey was embarked upon local residents. 450 questionnaires distributed to the residents. Similar to step 3, on a scale of 1 to 5 (1 indicated strongly disagreement, 5 indicated strongly agreement). Out of the 450 questionnaires distributed to residents in Wang Sam Mo and Chomchang villages, 399 were returned usable thus giving 89 per cent effective response rate.

Evaluation of construct reliability and validity (step 7)

Reliability

Besides the internal-consistency of a scale, the construct reliability was re-examined by confirmatory factor analysis. The goodness-of-fit index (GFI), the root mean square error of approximation (RMSEA), the adjusted goodness-of-fit index (AGFI), the normed fit index (NFI). From Table 3 one can see that, all construct values for GFI, AGFI, and NFI were within the recommended criteria (Bentler, 1990). However, there are some concerns regarding the observed high values of RMSEA.

TABLE 3
CONFIRMATION OF INTERNAL CONSISTENCY OF THE RET SCALE

Construct	Items	t-value	CFA tests			
			GFI	RMSEA	AGFI	NFI
Cost	Y1		Not applicable			
	Y2					
Benefit	Y3	1.00 ^a	0.98	0.12	0.92	0.93
	Y4	0.76(13.48)**				
	Y5	0.83 (13.70)**				
	Y6	0.39 (7.42)**				
Use	Y7	1.00 ^a	0.92	0.29	0.60	0.74
	Y8	0.44 (5.41) **				
	Y9	0.75 (6.14) **				
	Y10	0.72 (6.14) **				
Government	Y11	1.00 ^a	.96	0.18	0.82	0.78
	Y12	0.63 (8.61) **				
	Y13	0.80 (8.81) **				
	Y14	0.54 (7.93) **				
Attitude	Y15	1.00 ^a	0.99	0.06	0.97	0.99
	Y16	0.82(12.80) **				
	Y17	0.76 (12.49) **				
	Y18	0.63 (10.89)**				

^a indicates the parameter was fixed to a value of 1
significant *p<.05, **p<.01, ***p<.001

Validity

This study adopted the Gerbing and Anderson (1988) methodology to determine the construct, and discriminant validity of the RET measures. To determine the convergent and discriminant validity of the RET, measures were also included in the questionnaire. These cover cost, benefit, use, government, and attitude. Discriminant validity is required when evaluating measures, especially when the measures are interrelated, as in the case of the residents' perceptions of ecotourism.

The composite reliability (CR), average variance extracted estimates (AVE), convergent validity were examined. Composite reliability reflects the internal consistency of the indicators in measuring a given factor. The composite reliability values for each of the RET dimensions is shown in Table 4 which reveals that the composite reliability score for only attitude dimension is satisfying (0.61). In addition, the Cronbach's alpha values for each of the RET dimensions are shown in Table 3, which in each case is greater than 0.60 (Bagozzi and Yi, 1988). In addition, the result was that the AVEs are only cost and attitude dimensions greater than .50, but AVEs of benefit, use and government dimensions are less than .50.

Besides the reliability test, convergent validity was demonstrated when different instruments were used to measure the same construct, and scores from these different instruments are strongly correlated. The convergent validity can be assessed by reviewing the *t*-test for the factor loadings (greater than twice their standard error) (Fornell and Larcker, 1981). The *t*-test for each indicator loading is shown in Table 4. In the result of this analysis the construct demonstrates a high convergent validity because all *t*-values are significant at the .01 level.

TABLE 4
TEST OF CONVERGENT VALIDITY FOR CR AND AVE

Construct	Items	Standardized loadings	t-value	CR	AVE
Cost	Y1	.35	1.00 ^a	.50	.51
	Y2	.07	1.28		
Benefit	Y3	.57	1.00 ^a	.54	.41
	Y4	.45	12.57**		
	Y5	.54	13.68**		
	Y6	.39	9.81**		
Use	Y7	.31	1.00 ^a	.46	.37
	Y8	.36	6.40**		
	Y9	.67	6.06**		
	Y10	.65	6.40**		
Government	Y11	.41	1.00 ^a	.52	.41
	Y12	.54	8.75**		
	Y13	.55	10.24**		
	Y14	.55	10.28**		
Attitude	Y15	.54	1.00 ^a	.61	.53
	Y16	.59	14.41**		
	Y17	.55	13.69**		
	Y18	.52	11.73**		

^a indicates the parameter was fixed to a value of 1
significant *p<.05, **p<.01, ***p<.001

Analytical techniques

LISREL VIII (Joreskog and Sorbom, 1996) was mainly used for data analysis since the proposed model was a simultaneous system of equations having latent constructs (unobservable variables) and multiple indicators (Bollen, 1989), was a powerful methodology for assessing validity and reliability of marketing constructs. In LISREL an important consideration was to demonstrate that the model is properly identified. Quantitative data will be analyzed by multivariate statistical techniques, such as structural equation modeling.

RESULTS

1. Characteristics of sample

The majority of the sample (46%) completed a primary school while 40% only completed diploma. Most of the subjects (87 %) had an income level between 5,000 and 10,000 baht per month. There were 23.0 % male respondents, while 77.0 % were female respondents.

2. Test Hypothesized Model

The variables were entered into structural equation model based on the hypothesized model. The output showed $\chi^2_{(128)}$ value of 1127.08 (P = 0.00); GFI = 0.78; RMSEA = 0.13; CFI=0.84. GFI and CFI revealed the unacceptable level and the large chi-square value indicated the model did not fit the data. Thus, the magnitude of the modification indices was examined to improve fit.

3. Model Modification

An examination of the modification indices revealed that the hypothesized model could be improved by adding error covariance terms. The results from the estimation of modified model yielded a $\chi^2_{(95)}$ value of 276.99, GFI value was 0.94; RMSEA = 0.06.

For assessment of the improvement in fit used by performing a chi-square different test ($\Delta\chi^2$), the comparison of the modified and hypothesised models can be used to show a more general situation often encountered in covariance structure analysis, namely that of nested models. For the study, the hypothesised model was nested within the modified model because the former is obtained from the latter by constraining more of the free parameters in the modified model to be fixed. In the consideration of the chi-square value, the study takes in to account the difference in the chi-square values of the hypothesised model ($\chi^2_{(128)} = 1,127.08$) and the final model ($\chi^2_{(95)} = 276.99$) and then evaluates the results with the difference of degree of freedom (df= 33). In this study

$$\Delta\chi^2_{(33)} = 1,127.08 - 276.99 = 850.09$$

which is highly significant ($p < 0.001$). Thus, the modified model is a better fit than the hypothesised model.

Hypothesis Testing

The analysis began with the calculation of the mean and standard deviation for each unweighted, interval scale. The overall adequacy of the proposed theoretical framework was examined using LISREL 8.30 causal modeling procedures. A substantial portion of the variance in the RET has been explained by the model. The model be a close fit to the data at χ^2 (95) value of 276.99 ($P < 0.00$). However, the ratio of Chi-square and degree of freedom was 2.91 (276.99/95), GFI of 0.94, AGFI of 0.88, CFI of 0.97 and RMSEA of 0.06. Therefore, the five-factor model could be acceptable (Bentler, 1990; Bentler and Bonett, 1980).

Table 5 contained the maximum likelihood LISREL estimates of the model's parameters and their t -values. All estimated parameters (i.e. the structural coefficients contained in Γ and the measurement coefficients contained in Λ_y) were positive and significant at the 0.05 level.

TABLE 5
ESTIMATES OF MODE'S PARAMETERS

<i>Parameter</i>	<i>Estimate</i>	<i>t-value</i>
γ_1	0.25	6.24*
γ_2	0.85	15.54*
γ_3	0.98	6.53*
γ_4	0.78	10.36*
γ_5	0.80	13.20*

Significant * $p < .01$

The author proposed the RET model as a second-order factor (see Figure 1). The results of this analysis, presented in Table 5, indicated that the model was a close to fit. For this model, GFI was 0.94, RMSEA was 0.06, CFI was 0.99, χ^2/df was 2.91 (276.99/95). These provided support for the hypothesis. It's showed that the RET construct consists of five components. More specifically, overall ecotourism had significant causal influences on perceived costs of ecotourism ($\gamma_1=0.25$, $t=6.24$), perceived benefits of ecotourism ($\gamma_2=0.85$, $t=15.54$), use of the ecotourism resource base ($\gamma_3=0.98$, $t=6.53$), perceived state of the local economy ($\gamma_4=0.78$, $t=10.36$) and ecocentric attitudes ($\gamma_5=0.80$, $t=13.20$).

This finding would be consistent with the research by Andereck et al. (2005); Dyer et al. (2007); Gursoy and Rutherford. (2004); and Yoon et al. (2001). They argued that ecotourism dimensions is usually justified on the basis of economic benefits and challenged on the grounds of social, cultural, and environmental destruction.

The findings from the study that the model achieved converge validity. This findings could be consistent with the scales reported by Dyer et al. (2007); Gursoy and Rutherford. (2004); Gursoy et al. (2002; 2009); Ko and Stewart (2002), Fornell and Larcker (1981). They examined the respondents' perceptions in Idaho and Washington state in the United States. They noted the similar dimensions.

In addition, it was probably consistency with a number of studies, for example Dyer et. (2007); Gursoy and Rutherford. (2004); Gursoy et al. (2002); Teye et al. (2002); Kuvan and Akan (2005). One explanation for the findings may be that, the tourism development be gained from three main sources such as social, economics, and natural resources (Weaver, 2001; Buckley, 2004). Specifically, tourism changed our precious traditional culture is high important for

perceived costs of tourism dimension. This finding would be consistent with the research by Gursoy et al. (2002). They pointed that challenges in social, cultural, and natural resources are damaged.

Tourism increased employment opportunities, tourism increased shopping opportunities, tourism increased recreation opportunities, tourism increased revenue for local government are high important for perceived benefits. This finding would be consistent with the research by Gursoy and Rutherford. (2004). They reported that the benefits of ecotourism are increasing income and helping employment in the community.

Additionally, a favorite place to go during free time, the best for what I like to do, coming here is most satisfying, and 'express who I am are high importance for use of tourism resource base. This finding would be consistent with the research by Gursoy et al. (2002; 2009). They indicated that residents who utilize the resource base perceive ecotourism which improves entertainment and recreation opportunities.

Next, government help to create more jobs, willing to pay higher taxes if create more jobs, need more jobs to stop young people moving away, roads and others public facilities kept at a high standard because of tourism are high importance for perceived state of the local economy. This finding would be consistent with the research by Chi and Murray (2010), Crouch and Ritchie (1999). They argued that residents perceive tourism has a positive influence on the community economy by resulting in effects, such as economic diversity, job, and tax revenue.

Finally, plants and animals right, earth limited room and resources, and the balance of nature are high importance for ecocentric attitude. This finding would be consistent with the research by Nunkoo and Gursoy (2011), and Akis et al. (1996). They reported that the greatest sense of responsibility toward the natural environment.

CONCLUSION

Having been synthesized from the researches of Andereck et al. (2005); Dyer et al. (2007); Gursoy and Rutherford. (2004); and Yoon et al. (2001), this empirical study, a second-order factor model was developed to test whether a set of five RET dimensions. The hypothesis had been supported in this study. That is the overall residents' perceived ecotourism direct causal influences on perceptions of costs of ecotourism, benefits of tourism, use of the ecotourism resource base, state of the local economy, and ecocentric attitudes. This paper concluded that the second-order factor structure for RET was well supported. This suggested that residents evaluated the ecotourism on five basic dimensions but that they also viewed overall service quality as a higher order factor that captured a meaning common to all dimensions.

RESEARCH AND MANAGERIAL IMPLICATIONS

For the researcher, this article has provided a comprehensive evaluation for understanding the measurement of residents' perception on ecotourism in upper northeast, Thailand. However, several limitations are acknowledged, leading to suggestion for directing future research. First, this research was limited to validating the model of residents' perception on ecotourism based on confirmatory factor analysis. Whereas, many researchers have used the resource-based and strategy-structure-performance views to examine the associations between residents' perception on ecotourism, tourists' motive, tourists' satisfaction, and tourist loyalty, future research could apply these views to ascertain antecedent and consequent relationships among natural resources, human capability, and competitive advantage.

Second, cross-sectional data were used in the paper. Subsequently, the time sequence of the residents' perceptions on ecotourism structure cannot be determined unambiguously. Therefore, the results might not be interpreted as proof of a causal relationship, but rather as lending support for a prior causal scheme. The development of a time-series database and testing of the residents' perception on ecotourism structure relationship with performance in a longitudinal framework would provide more insight into probable causation.

Finally, the LISREL methodology may be construed as a limitation because the results presented here are based on the analysis of a causal non-experiment design. The future research could conduct the quasi-experimental and experimental designs.

From a managerial perspective, the results provide an initial empirical evidence of the importance of implementing the ecotourism strategies holistically rather than piecemeal. These suggest that local residents evaluate the ecotourism construct on five basic dimensions but that they also view overall the ecotourism construct as a higher order factor that captures a meaning common to all dimensions. That is tourism managers cannot be selective in implementing

certain ecotourism dimension practices and regardless of others due to all subcomponents serve as building blocks of one concept. However, they should pay more attention on utilized resources and benefit of ecotourism for developing the favorable ecotourism.

Specifically, destination managers, tourism planners, political authorities and other groups who implements strategies in different environment settings cannot have an ethnocentric view about management imperatives. This study provides some guidelines for stakeholders handling residents' perceptions on ecotourism activities across the country. For example, the results demonstrate that 'tourism changed our precious traditional culture has important implications for the perceived costs of tourism. The stakeholders should conserve, preserve traditional cultures such as Thailand Vassa's wax sculpture, Bun Bang Fai Fair (Bamboo Rocket) or Songkarn festival. Furthermore, this study found that 'tourism increased revenue for local government is strongly correlated to perceived benefits of tourism, use of the tourism resource base. The destination managers, tourism planners, political authorities should place emphasis on preserving the natural resources. Also, they should build facilities e.g., homestays, restaurants, and transportation for tourism effectiveness.

Furthermore, the study found a significant link among perceived cost of tourism, perceived benefit of tourism, use of the tourism resource base, perceived state of the local economy, and ecocentric attitude factors. Thus, stakeholders should increase communication channels, or develop information systems for integrating tourism activities. Collaboration should be strengthened among Thailand officials in different government departments and agencies, such as Tourism Authority of Thailand, Department of Agricultural Extension, The Thai Chamber of Commerce, Community Development Department and Commission on Higher Education.

Finally, a top priority for ecotourism managers is to find which of the many extrinsic and intrinsic cues residents use to signal ecotourism development. This process involves a careful look at situational factors surrounding the ecotourism development. Does ecotourism development vary greatly among services in the category? Is ecotourism development difficult to evaluate? Do respondents have enough information about intrinsic cues before ecotourism development? Identifying the important ecotourism development signals from the residents' point of view, then communicating those signals, is likely to lead to more vivid perceptions of ecotourism development. The stage of ecotourism development, for example, is an extrinsic cue that has more substantial influence on residents' perceived benefit than does the use of tourism resource base (Fredline and Faulkner, 2000).

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