Multilevel Confirmatory Factor Analysis of Green Tourism Management in Thailand for ASEAN Economic Community

Thitinan Chankoson
Faculty of Social Sciences, Srinakharinwirot University, Thailand
E-mail: tchankoson@gmail.com, thitinanc@swu.ac.th

Abstract
This research aimed to study a model of green tourism management in Thailand, which was developed to support the ASEAN Economic Community, using multilevel confirmatory factor analysis method. The results for the overall model fit measure revealed that the developed model had construct validity and fit the empirical data (χ^2 =118.084, df =168, P=0.096, CFI =0.967, TLI =0.909, RMSEA =0.029, $SRMR_W$ =0.444, $SRMR_B$ =0.442 and χ^2/df =0.703; P>0.05). Twenty-one variables from 7 elements were identified and studied at both the within-group level and the between-groups level. Considering the component fit measure, it was found that at the organization level and individual level green plus (social and environmental responsibility) was given the highest priority, followed by green attraction, green heart, green service, green activity, and green logistics.
Keywords: Multilevel Confirmatory Factor Analysis, Green Tourism Management, ASEAN Economic Community

Introduction
The tourism industry is considered a business in the service sector and has played a key role in the economic and social development of Thailand. The governmental agencies associated with Thailand's national economic and social development have used tourism as a tool to enhance Thailand's economy. A higher tourism growth rate has been targeted in an effort to generate higher revenue. The effect of the tourism industry on Thailand's economic growth can be seen in a 2014 statistical report, which states that the revenue of the service sector accounted for 40% (approximately 5 trillion baht) of the gross domestic product (GDP) in Thailand, worth 13 trillion baht. It was also recorded that tourism businesses can generate 1.6 trillion baht in 2014 (Office of the National Economics and Social Development Board 2016; Tourism Department, 2016). However, focusing on economic development and rapid tourism service growth without taking account of good sustainable management and natural resource responsibility can directly affect the environment. Most of the natural resources and environment will be quickly and extravagantly consumed, resulting in environmental deterioration, poor resource recovery, continuing ecological destruction, and more conflicts regarding the exploitation of natural resources. Moreover, the indirect impacts affecting social and economic stability in the tourism industry such as coastal collapse and global warming caused by climate change will also inevitably increase (Green Peace Thailand, 2016; Tourism Authority of Thailand, 2015a). The United Nations World Tourism Organization (UNWTO) stated that in 2006 the global tourism industry emitted 1,307 million tons of greenhouse gases, such as carbon dioxide, which accounted for 5% of the total amount of greenhouse gases emission. Among all tourism activities, air transportation was reported to emit the highest amount of greenhouse gases (40%), followed by land transportation (32%) and other transportation (3%), while the amount of emissions produced by the accommodation services and sightseeing activities accounted for 21% and 4% respectively (Kasemsap, 2009). Some theorists, such as Termphittayaphaisit (2014), have

suggested that the natural resources and environment are related to the manufacturing industry and service sector, including carbon dioxide emissions, air and noise pollution, and pollution from service businesses such as hotels and resorts, which are a source of wastewater. All of these are factors affecting global warming issues, public hazards, and various disasters. In other words, they are the variables that have a negative effect on tourists' decisions because the uncertainties of climate change and global warming can cause disasters and impacts such as storm surges, droughts, floods, and tsunamis. The intensity of regional and global tourism competition is increasing in terms of socio-economic dynamics. As a consequence many countries have increasingly taken measures to stimulate their economic system through tourism and there are economic changes resulting from the opening of the ASEAN Economic Community and ASEAN tourism industry promotion according to the Roadmap for ASEAN Tourism Integration and the ASEAN World Tourism Organization (ASEAN Secretariat, 2011). According to the world tourism rankings compiled by the United Nations World Tourism Organization (UNWTO), Thailand is considered one of the world's significant tourist destinations (Jamnongratsamee et al., 2015). The analysis results of Asia Pacific tourism situation and outlook indicate that 248 million tourists visited Asia Pacific countries in 2013, which accounted for one-fourth of the total number of global tourists. Thailand ranked second in popularity with 27 million visitors. The tourism industry in ASEAN has also been increasingly growing. The number of tourists visiting Myanmar, Cambodia, and Lao has increased by 52%, 47%, and 17% respectively. Overall, ASEAN has 149 visitors per population of one thousand, which is higher than the world average. As for long-term tourism, Thailand's tourism competitiveness was analyzed and compared with that of other ASEAN countries according to the environmental sustainability index and received a full score of 7. The results showed that Thailand obtained a score of 3.46, which was lower than the ASEAN average score (3.49). According to Thammasak et al. (2015), in a special interview report of Mrs.Kobkarn Wattanavrangkul, Thailand's Minister of Tourism and Sports is describing the system and mechanism for tourism enhancement and balanced sustainable development, which was initiated under the long-term tourism framework according to the National Economic and Social Development Plan Volume 12 (2017-2021). This report indicated that the tourism focusing on the demand side had an effect on tourist attractions in terms of local environment and traditional lifestyles. Therefore, quality and sustainable promotion are needed to develop the demand side and supply side in order to create a good balance, which was considered an effective approach to enhancing the quality and sustainability of tourism in Thailand. Thai tourism agencies have realized and actively cooperated in the restoration of natural tourist attractions. They have carried out numerous ecological tourism campaigns, such as beach cleaning, afforestation, and encouraging people to take public transport instead of using private cars to reduce carbon dioxide emissions, as well as organizing various training programs to build environmental awareness among tourists and entrepreneurs, which is the key to preserving the environment and reducing negative behaviors causing adverse effects on natural resources and the environment. The sustainable tourism management approach is associated with the 7 Greens concept, which encourages all parties involved in tourism business activities to understand and deal with tourism product and service management in a sustainable and environmentally-friendly way. From the foregoing, in Thailand, it can be seen that the tourism service sector in the socio-economic dimension has an effect on the economy, society, and environment, including the tourists and those involved in the production of tourism products and services, tourism facilitation, and tourism transportation. Thus, adaptation to circumstances is essential and is considered a challenge for the tourism sector and Thailand's preparedness for the AEC according to the ASEAN Tourism Strategic Plan and Master Plan on ASEAN Connectivity. In today's business environment, enterprises driven by market pressures need to the private

sector or tour operators in Thailand, such as the restricted, domestic, and inbound tour operators, which directly use the tourism in Thailand for commercial purposes. However, they should not only aim for profitable benefits and ignore environmental awareness, the global warming impact, and natural resource issues. They should conduct their businesses with good tourism management and tourism sustainability according to the National Tourism Development Plan (2012-2016), which suggests that "Thailand is full of quality tourist attractions with global tourism competitiveness and has an ability to generate and distribute income based on fairness, balance, and sustainability." This study analyzes the multilevel confirmatory factors of the green tourism management in Thailand, which was developed to support the ASEAN Economic Community.

Literature Review and Research Framework

The research framework of this study is divided into 2 parts as follows.

Part 1: Study of the concepts, theories, and literature related to green tourism management from secondary data sources, then synthesizing, compiling, and organizing the obtained data to develop the research framework.

To begin with the definition of green tourism, Thailand's Ministry of Tourism and Sports (2011) has stated that green tourism is a type tourism that takes into account the needs of promoting and developing environmentally-friendly products and services. In addition, the valuable tourism activities include education, learning and unique experiences, as well as participation in local, social, and economic and environmental benefits. Furthermore, as Weaver (2008) and Hyde and Law (2001) have remarked, green tourism, or ecotourism, is low-impact tourism with responsibility for the environment culture, and well-being of local people as well as the businesses that are providing environmentally-friendly tourist facilities and services. Significantly, some theorists, such as Hyde and Law (2001), Dupeyras and MacCallum (2013) and Greenpeace Thailand (2016), have suggest sustainable standards for the tourism industry, for the environment, and for the ecological society and community, including a green economy that helps reduce environmental risks.

According to the Ministry of Tourism and Sports (2011) and the Tourism Authority of Thailand (2015b), the essence and operational guidelines are consistent with Thailand's green tourism context, which includes the concepts of green heart, green logistics, green attraction, green community, green activity, green service, and green plus. The details of each element are described in the following. First, green heart refers to tourism with an eco-friendly mind. Everybody in relevant agencies that are directly and indirectly involved in the tourism system should respect nature, have an ecological attitude, and realize the value of the environment and the consequences of global warming threat affecting tourism. Second, green logistics deals with travelling to the destination in an environment-friendly way. Tourism transportation should focus on energy saving, renewable energy, greenhouse gas emission reduction, and environmental preservation. Third, green attraction refers to the tourism focusing on tourist sites with the consideration of effective sustainable development and ecological management, such as applying area management according to environment-friendly concepts, showing respect for nature, living in harmony with nature in a sustainable way, and promoting local culture preservation. Fourth, green community refers to the tourism that takes account of the identity of the community. This includes the community-based tourism in both urban and rural areas, which pays attention to environmental preservation and maintaining the culture and identity of the community. People in the community should be proud of their way of life, engage with the community, and focus on public interest. Fifth, green activities include the joyful tourism activities supporting the value of the environment, natural resources, community culture, and local way of life. Green activity should cause the least impact on the environment. Sixth green service refers to a kind of tourism service that

impresses the tourists with quality standards, takes account of environmental awareness and preservation, and focuses on reducing greenhouse gas emissions from service activities. Seventh, green plus refers to social and environmental responsibilities, aiming to avoid tourism activities and behavior that may cause damage to the environment. Green plus includes finding an appropriate measure to save and reduce energy consumption, donating, and conducting relevant activities in order to create a better environment, which is vital for competing with other ASEAN countries under the General Agreement on Trade in Services (GATS) in terms of tourism and travel-related service when entering the AEC (Department of Trade Negotiations, 2013). Considering the context of the global society associated with the megatrends in the aspect of environment and preservation, Thailand's service sector should show clear standpoints in order to create trust among the stakeholders and related parties (Ministry of Tourism and Sports, 2011). This is because in the future one of the key factors contributing to organizational success will be tourism product and service differentiation. Green tourism is considered a process focusing on operational development in order to create ecological balance and environmental sustainability without losing a competitive advantage in the tourism market. It can also create economic, social, environmental, and cultural benefits to the relevant parties, which contributes to sustainable tourism.

Part 2: Conduct an exploratory research and synthesize the variables. The concepts from part 1 were applied to assess and select the variables through in-depth interviews. Three experts in the tourism business, green tourism management, and AEC strategy development were selected to participate in the interviews according to the principle of Rovinelli and Hambleton (1977), who stated that there should be 3 (or higher odd number of) informants in order to obtain sufficient and decisive data. Twenty-one variables in 7 elements of green tourism management are presented in Figure 1.

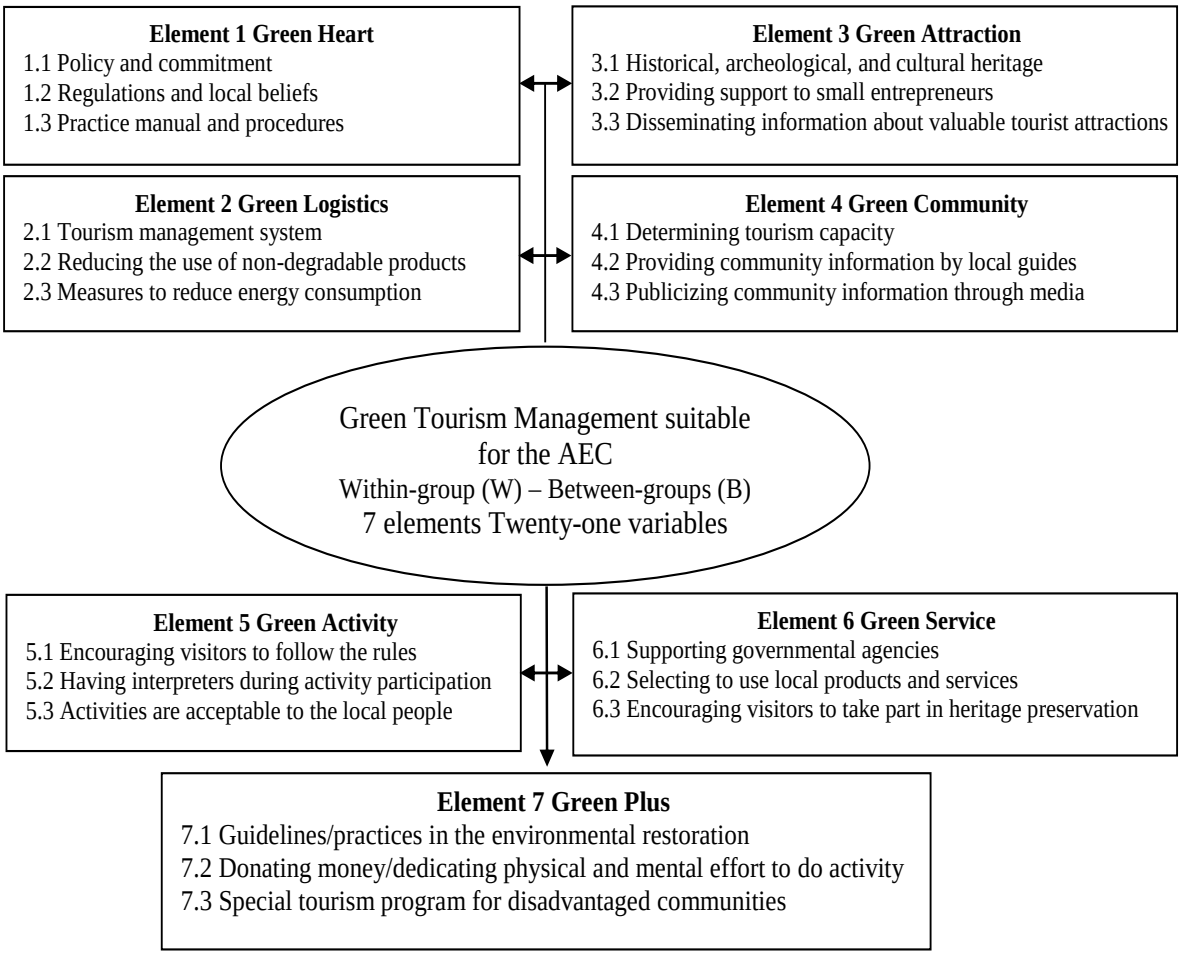

Figure 1 Research framework

Research Methodology

The methodology of this survey and development research can be described as follows. The population of this research was 9,078 tour operators in Thailand, data as of August 31, 2015 (Division of Tourism Business and Guide Registration, 2015). From a total of 9,078 agencies, the Thomson formula (Thomson, 1992) was applied in calculating the number of the sample size, as shown below. $n = 1/ e^2/ (Z^2 (CV)^2) +1/N)$; e=0.05, Z=1.96, CV=0.50, N=9,078. Hence, the appropriate sample size of 369 tour operators (n=368.56 ≈ 369) was determined. Multi-stage random sampling (Cochran, 1977) was used in dividing all of the tour operators into 3 groups according to the types of tourism license. Then the simple random sampling was applied to select 369 tour operators. Four representatives from each tour operator group were required to complete the questionnaires. Therefore, a total of 1,476 representatives (4 x 369 = 1,476) from 369 tour operators comprised the participants of this study. The details are presented in Table 1.

Table 1 Population and samples classified by types of tourism license

Tour operators in Thailand	**Population** (organizations)	**Samples** (organizations)	**Participants** (representatives)
1. Restricted	5,379	219	876
2. Domestic	1,336	54	216
3. Inbound	2,363	96	384
Total	**9,078**	**369**	**1,476**

Source: Division of tourism business and guide registration (2015)

This research focuses on a multilevel structural equation model analysis and therefore the sample size was very important. If the sample size were too small, the reliability value measured by the correlation coefficient would be low. Table 1 illustrates the sample size in this research, which is consistent with Muthén (2006), who suggests that a sample size of at least 50 groups is appropriate for a multilevel structural equation model analysis. It is also consistent with Tabachnick and Fidell (2013), who indicated that the sample size should be large enough to make the standard error smaller (Snijders and Bosker, 1999). Each sample group should have at least 2 members (Yingwanna et al., 2013). In this research, the samples consisted of 369 groups of 4 participants. The researcher divided the data analysis into two levels, 1) within-group or micro level, and 2) between-groups or macro level. The data were aggregated from the micro level to macro level. The research tools were comprised of an interview form and a questionnaire. Both structured and unstructured interview techniques were applied to collect the data with relevant and interesting questions. Then the researcher synthesized, compiled, and organized the obtained data in order to find the suitable variables. Consequently, twenty-one variables were identified from 7 elements of green tourism management.

After that the self-administered questionnaire was developed in order to collect data from the participants. The developed questionnaire was composed of the following: 1) the overview part contained the checklist questions providing an overview of the tourism business in Thailand, and 2) the assessment of green tourism management in Thailand, including 7 elements of green tourism. The close-ended questions were designed using the ruler and option scale (Rohana and Roziah, 2014), which is a 0-10 scale with 11 possible responses ranging from "never" (0 point) to "always" (10 points). The content validity for scale/average (S-CVI/Ave) technique was applied to measure the content validity of the questionnaire. The item content validity index (I-CVI) was used to calculate the average content validity index (the sum of I-CVIs divided by the number of questions) (Waltz and Bausell, 1981). Considering the reliability test, the developed questionnaire was examined by 5 experts using Cronbach's alpha coefficient method. The results revealed that this questionnaire had content validity with an I-CVI of 0.60-1.00, which exceeded the minimum of 0.50. The S-CVI/Ave was 0.83 and 0.84, which were greater than the target of 0.80 (Waltz and Bausell, 1981). The reliability value of the whole test was 0.8554, which was higher than the minimum of 0.70 (Cronbach, 2003). Statistical computer software for a social study was used to calculate the descriptive statistics, such as frequency, percentage, mean, standard deviation, skewness, and kurtosis. As for the green tourism management model, the relationship between the variables was analyzed at 2 levels using Multilevel Structural Equation Modeling (MSEM), which integrates the multilevel analysis technique with the causal relationship analysis method to examine hierarchical data (Heck and Thomas, 2009). Multilevel Secondary Order Confirmatory Factor Analysis (MCFA) was carried out with advanced statistical software called Mplus. The within-group model and between-groups model were analyzed together as a multilevel model. The relevant statistics, including Maximum Likelihood with Robust Statistics (MLR), Chi-square, Standard Error, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardize Root Mean Square Residual (SRMR), were computed in order to examine how well the model fit the empirical data (Morris, 1995; Hu and Bentler, 1999; Ullman, 2001; Goldstein, 2003; Heck and Thomas, 2009; Muthén and Muthén, 2010).

Results of the Study and Discussions

Considering the overview of the tourism business in Thailand, it was found that the majority of the samples were restricted tour operators, which accounted for 59.35%. Most of them were small enterprises with fewer than 50 employees and a fixed asset value of 50 million

baht or lower (95.12%). They had conducted their business in Bangkok (36.86%) for 4 years with the average registered capital of 326,182.57 baht. Their average profit was 9.71% higher than that of the last year. This was because most of them were small enterprises owned by the private sector and run by a single owner so they had high independence in conducting business in the form of ordinary persons or sole proprietorship. Many of them were situated in the capital of Thailand. They were in the service sector, with a fixed asset value of up to 50 million baht and fewer than 50 employees (Revenue department, 2016).

It was also found that all twenty-one variables from 7 elements of green tourism management in Thailand were deemed appropriate for the MCFA and had a normal distribution with a skewness value of less than 0.75 and a kurtosis value of less than 1.50 (Hoogland and Boomsma, 1998). The relationships between the variables, which were used to assess the 7 elements of green tourism management, were found to be less than 0.30, which indicated that the identified variables were appropriate for further data analysis (Wiratchai, 2008). The details are presented in Table 2.

The details of the multilevel confirmatory factor analysis of green tourism management in Thailand is discussed as follows. The Inter Class Correlation (ICC) of the observed variables ranged from 0.098 to 0.357, suggesting that Twenty-one observed variables had within-group variation. Furthermore, they were found to have between-groups variation with an ICC value of more than 0.05. This indicated that the variables had enough variation to be used in the MCFA (Snijders and Bosker, 1999). The intercept values or average group means of the observed variables in the within-group level with between-groups variation ranged from 5.188 to 9.784. This suggested that in the between-groups level the predictive ability of the variables regarding green tourism management in Thailand was between the medium (4.01 < Average Group Means < 6.00) and the highest level (8.01 < Average Group Means < 10.00). The results suggested that the green tourism management model, which was examined with the overall model fit measure, had construct validity and fit the empirical data according to the standard criteria. Table 3 shows that $\chi 2$ was insignificantly different from zero. In addition, the model fit assessment was carried out based on the rule of thumb principle.

Table 2 The relationships between the variables

	G1			G2			G3			G4			G5			G6			G7		
Variable	G1.1	G1.2	G1.3	G2.1	G2.2	G2.3	G3.1	G3.2	G3.3	G4.1	G4.2	G4.3	G5.1	G5.2	G5.3	G6.1	G6.2	G6.3	G7.1	G7.2	G7.3
	(Pearson Product Moment Correlation Coefficient: r)																				
G1.1	1.000																				
G1.2	0.362*	1.000																			
G1.3	0.743*	0.379*	1.000																		
G2.1	0.100	0.100	0.003	1.000																	
G2.2	0.280*	0.366*	0.486*	0.479*	1.000																
G2.3	0.229*	0.126	0.123*	0.308*	0.703*	1.000															
G3.1	0.303*	0.150*	0.203*	0.870*	0.378*	0.014	1.000														
G3.2	0.440*	0.028	0.020	0.013	0.001	0.720*	0.320*	1.000													
G3.3	0.547*	0.076	0.015	0.807*	0.012	0.031	0.769*	0.426*	1.000												
G4.1	0.073	0.052	0.464*	0.054	0.813*	0.224*	0.050	0.010	0.126*	1.000											
G4.2	0.027	0.004	0.049	0.018	0.063	0.851*	0.033	0.761*	0.026	0.360*	1.000										
G4.3	0.013	0.127*	0.001	0.813*	0.036	0.011	0.767*	0.056	0.871*	0.437*	0.828*	1.000									
G5.1	0.088	0.012	0.183*	0.019	0.757*	0.046	0.023	0.253*	0.049	0.756*	0.056	0.008	1.000								
G5.2	0.640*	0.413*	0.681*	0.112*	0.055	0.035	0.117*	0.041	0.133*	0.035	0.020	0.124*	0.608*	1.000							
G5.3	0.752*	0.017	0.856*	0.340*	0.083	0.079	0.020	0.070	0.069	0.084	0.049	0.353*	0.393*	0.727*	1.000						
G6.1	0.069	0.033	0.079	0.072	0.881*	0.025	0.283*	0.043	0.102	0.796*	0.281*	0.040	0.763*	0.515*	0.069	1.000					
G6.2	0.781*	0.033	0.726*	0.005	0.069	0.477*	0.007	0.388*	0.059	0.021	0.026	0.039	0.052	0.622*	0.765*	0.747*	1.000				
G6.3	0.056	0.364*	0.045	0.759*	0.124*	0.005	0.704*	0.041	0.779*	0.087	0.144*	0.761*	0.078	0.388*	0.062	0.415*	0.531*	1.000			
G7.1	0.017	0.604*	0.006	0.026	0.441*	0.706*	0.004	0.780*	0.005	0.217*	0.770*	0.214*	0.023	0.201*	0.458*	0.362*	0.350*	0.360*	1.000		
G7.2	0.052	0.166*	0.044	0.542*	0.790*	0.102*	0.327*	0.016	0.032	0.879*	0.329*	0.318*	0.720*	0.011	0.048	0.778*	0.041	0.481*	0.509*	1.000	
G7.3	0.614*	0.077	0.015	0.626*	0.130*	0.655*	0.537*	0.641*	0.047	0.123*	0.708*	0.462*	0.198*	0.024	0.645*	0.033	0.419*	0.076	0.617*	0.525*	1.000

*P < 0.05

Table 3 Summary of structural model fit and the empirical statistics

Model fit indices	Criteria	Statistics from data analysis
χ^2	P>0.05	χ^2=118.084, df=168, P=0.096
χ^2 / df	≤ 2	0.703
CFI	≥ 0.90	0.967
TLI	≥ 0.90	0.909
RMSEA	≤ 0.08	0.029
$SRMR_W$	≤ 0.08	0.444
$SRMR_B$	≤ 0.08	0.442
Passed the criteria of model fit indices		

According to Table 3, the results of the overall model fit measure revealed that the developed model had construct validity and fit the empirical data. The development model of green tourism management in Thailand for the ASEAN Economic Community, using multilevel confirmatory factor analysis method, is displayed in Figure 2.

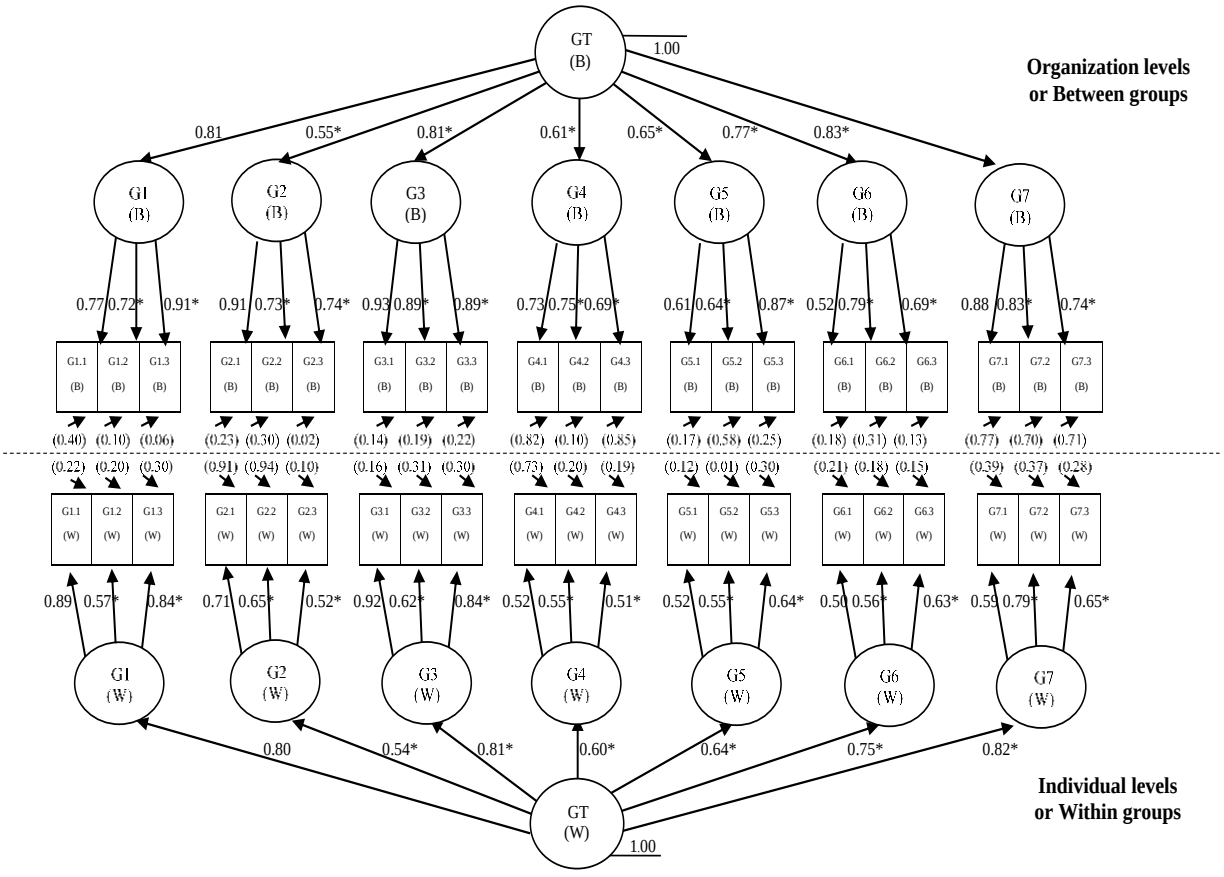

Figure 2 A model of green tourism management in Thailand for the ASEAN Economic Community

Considering the results for the component fit measure, it was found that at individual levels or within groups the highest priority was given to the 7th element or green plus (G7; β =0.820, R^2 =0.672), which consisted of 3 variables (G7.1-G7.3) with standardized factor loadings (β) of 0.586-0.792 and reliability coefficients (R^2) of 0.343-0.627. This was followed by the 3rd element or green attraction (G3; β =0.805, R^2 =0.648), which comprised 3 variables (G3.1-

G3.3) with β =0.615-0.917 and R^2 =0.703-0.842, the 1st element or green heart (G1; β =0.801, R^2 =0.642), which consisted of 3 variables (G1.1-G1.3) with β =0.573-0.885 and R^2 =0.328-0.783, the 6th element or green service (G6; β =0.752, R^2 =0.566), comprising 3 variables (G6.1-G6.3) with β =0.501-0.628 and R^2 =0.251-0.394, the 5th element or green activity (G5; β =0.643, R^2 =0.413), comprising 3 variables (G5.1-G5.3) with β =0.517-0.637 and R^2 =0.276-0.406, the 4th element or green community (G4; β =0.604, R^2 =0.365), consisting of 3 variables (G4.1-G4.3) with β =0.505-0.550 and R^2 =0.255-0.303, and the 2nd element or green logistics (G2; β =0.541, R^2 =0.293), consisting of 3 variables (G2.1-G2.2) with β =0.520-0.708 and R^2 =0.270-0.591.

With respect to the standardized factor loadings (β), it was found that at the organization levels or between groups the highest priority was given to the 7th element or green plus (G7; β =0.832, R^2 =0.692), which consisted of 3 variables (G7.1-G7.3) with standardized factor loadings (β) of 0.736-0.875 and reliability coefficients (R^2) of 0.542-0.766, followed by the 3rd element or green attraction (G3; β =0.813, R^2 =0.661), which comprised 3 variables (G3.1-G3.3) with β =0.885-0.926 and R^2 =0.783-0.857, the 1st element or green heart (G1; β =0.826, R^2 =0.682), which consisted of 3 variables (G1.1-G1.3) with β =0.724-0.908 and R^2 =0.524-0.824, the 6th element or green service (G6; β =0.765, R^2 =0.585), comprising 3 variables (G6.1-G6.3) with β =0.521-0.793 and R^2 =0.271-0.629, the 5th element or green activity (G5; β =0.652, R^2 =0.425), comprising 3 variables (G5.1-G5.3) with β =0.613-0.866 and R^2 =0.376-0.750, the 4th element or green community (G4; β =0.613, R^2 =0.376), consisting of 3 variables (G4.1-G4.3) with β =0.693-0.753 and R^2 =0.480-0.567, and the 2nd element or green logistics (G2; β =0.554, R^2 =0.307), consisting of 3 variables (G2.1-G2.2) with β =0.727-0.910 and R^2 =0.529-0.828. However, when comparing the reliability coefficients at the individual and organization levels, it was found that the reliability coefficients in the organization level were higher than those at the individual level. The details are presented in Table 4.

Table 4 Analysis results of green tourism management in Thailand for ASEAN Economic Community, using multilevel confirmatory factor analysis method

Variables	**Individual levels (Within group: W)**		**Organization levels (Between groups: B)**		**Intercept or Average Group Means**	**The Inter Class Correlation (ICC)**
	β	**R^2**	**β**	**R^2**		
1. G1	0.801	0.642	0.826	0.682	-	-
G1.1	0.885	0.783	0.774	0.650	7.389	0.132
G1.2	0.573*	0.328	0.724*	0.524	8.893	0.215
G1.3	0.838*	0.702	0.908*	0.824	6.216	0.161
2. G2	*0.541	0.293	*0.554	0.307	-	
G2.1	0.708	0.591	0.910	0.828	7.731	0.314
G2.2	0.654*	0.428	0.727*	0.529	6.401	0.243
G2.3	0.520*	0.270	0.740*	0.548	6.276	0.311
3. G3	*0.805	0.648	*0.813	0.661	-	
G3.1	0.917	0.842	0.926	0.857	9.784	0.125
G3.2	0.615*	0.841	0.886*	0.785	7.161	0.130
G3.3	0.839*	0.703	0.885*	0.783	6.253	0.124
4. G4	*0.604	0.365	*0.613	0.376	-	
G4.1	0.516	0.267	0.729	0.531	7.512	0.219
G4.2	0.550*	0.303	0.753*	0.567	6.212	0.207
G4.3	0.505*	0.255	0.693*	0.480	6.742	0.209

Table 4 (Con.)

Variables	Individual levels (Within group: W)		Organization levels (Between groups: B)		Intercept or Average Group Means	The Inter Class Correlation (ICC)
	β	R^2	β	R^2		
5. G5	*0.643	0.413	*0.652	0.425	-	
G5.1	0.517	0.276	0.613	0.376	8.121	0.216
G5.2	0.554*	0.307	0.636*	0.404	6.933	0.106
G5.3	0.637*	0.406	0.866*	0.750	6.158	0.101
6. G6	*0.752	0.566	*0.765	0.585	-	
G6.1	0.501	0.251	0.521	0.271	5.188	0.357
G6.2	0.556*	0.319	0.793*	0.629	8.474	0.305
G6.3	0.628*	0.394	0.694*	0.482	7.835	0.328
7. G7	0.820*	0.672	*0.832	0.692	-	
G7.1	0.586	0.343	0.875	0.766	8.262	0.300
G7.2	0.792*	0.627	0.829*	0.687	9.053	0.098
G7.3	0.646*	0.417	0.736*	0.542	6.852	0.204

Note: The parameter value was set at 1 in the positions of G1, G1.1, G2.1, G3.1, G4.1, G5.1, G6.1, and G7.1 (*P<0.05).

Considering the causal factors for the multilevel confirmatory factor analysis regarding green tourism management in Thailand for the ASEAN Economic Community, it was found that at individual levels, the highest priority was given to historical, archeological, and cultural heritage (G3.1) with standardized factor loadings (β) of 0.917, followed by policy and commitment (G1.1; β =0.885), the disseminating information about valuable tourist attractions (G3.3; β =0.839), practice manual and procedures (G1.3; β =0.838) and donating money or dedicating physical and mental effort to do an activity (G7.2; β =0.838). With respect to the organization levels, it was found that the highest priority was given to historical, archeological, and cultural heritage (G3.1) with standardized factor loadings (β) of 0.926, followed by the tourism management system (G2.1; β =0.910), practice manual and procedures (G1.3; β =0.908), providing support to small entrepreneurs (G3.2; β =0.886), and disseminating information about valuable tourist attractions (G3.3; β =0.885). In conclusion, the causal factors for the multilevel confirmatory factor analysis regarding green tourism management were given to historical, archeological, and cultural heritage (G3.1), practice manual and procedures (G1.3) and disseminating information about valuable tourist attractions (G3.3), which was significant.

Acknowledgement

This research was financially supported by a research grant from faculty of social sciences, Srinakharinwirot university, Thailand (Contract no: 436/2560) and ethical reviewed by the research ethics committee (no: SWUEC/E-108/2560). The researcher would like to thank all cited experts that contributed to the present study. My sincere gratitude is extended to all anonymous respondents that devoted their valuable time to answering the questionnaires as well. The most profound thanks go to the anonymous reviewers and the editors of this article for their constructive criticism and comments.

References

ASEAN Secretariat. 2011. **ASEAN Tourism strategic plan 2011-2015.** Jakarta: Association of Southeast Asian Nations.

Cochran, W. 1977. **Sampling techniques.** Third edition. New York: John Wiley & Sons.

Cronbach, L. 2003. **Essential of psychology testing.** New York: HarperCollins.

Department of Trade Negotiations. 2013. **Asean Economic Community: AEC/ASEAN**, Retrieved from www.dtn.go.th/index.php/forum/aec-asean.html.

Division of tourism business and guide registration. 2015. **Registration record of all tour operators.** Retrieved from 122.155.9.59:8081/stm4/ NewReport/report509.jsp.

Dupeyras, A. & MacCallum, N. 2013. **Indicators for measuring competitiveness in tourism: a guidance document.** Retrieved from dx.doi.org/10.1787/5k47t9q2t923-en.

Goldstein, H. 2003. **Multilevel statistical models.** 3rd ed. London: Edward Arnold.

Greenpeace Thailand. 2016. **Stop global warming: impact on Thailand.** Retrieved from www.greenpeace.org/seasia/th/campaigns/climate-and-energy/impacts/thailand/#soc eco.

Heck, R. & Thomas, S. 2009. **An introduction to multilevel modeling techniques.** 2nd ed. New York: Routledge.

Hoogland, J. & Boomsma, A. 1998. "Robustness studies in covariance structure modeling: An overview and a meta-analysis." **Sociological methods and research** 26: 329-367.

Hu, L. & Bentler, P. 1999. "Evaluation model fit." In R. Hoyle (ed.) **Structural equation modeling concept, issue and application.** California: Sage.

Hyde, R. & Law, J. 2001. **Green globe 21: designing tourism infrastructure: steps to sustainable design, the path to sustainable travel and tourism.** Deakin: Cooperative Research Centre.

Jamnongratsamee, S., Keeratiphaiboon, T., and Chumpanya, K. 2015. "Travel around Thailand, create flows of income." **Journal of Economy and Society** 52 (1): 8-16.

Kasemsap, J. 2009. "Environmental conservation for sustainable tourism." **Journal of Environment** 13 (3): 37-40.

Ministry of Tourism and Sports. 2011. **Tourism best practices in Thailand.** (PowerPoint slides for the 5th, UNWTO Asia Pacific Executive Training Program on Tourism Policy and Strategy, June 13-16, 2011, Brunei Darussalam).

Morris, C. 1995. "Hierarchical models for educational data: An overview." **Journal of Educational and Behavioral Statistics** 20 (2): 190-200.

Muthén, B. 2006. "Latent variables modeling in heterogeneous populations." **Psychometrica** 54 (4): 557-586.

Muthén, L. & Muthén, B. 2010. **Mplus user's guide.** 6th ed. California: Muthén & Muthén.

Office of the nation economic and social development board. 2016. **National income of Thailand 2014. Chain volume measures.** Bangkok: Office of the National Economic and Social Development Board.

Revenue department. 2016. **About SMEs business small and medium business tax administration unit.** Retrieved from www.rd.go.th/publish/38056.0.html.

Rohana, Y., & Roziah, M. 2014. **Generation of an interval metric scale to measure attitude.** Retrieved from sgo.sagepub.com/content/spsgo/4/1/2158244013516768.full.pdf.

Rovinelli, R. & Hambleton, R. 1977. "On the use of content specialists in the assessment of criterion-referenced test item validity." **Dutch Journal of Educational Research** 2: 49-60

Snijders, T. & Bosker, R. 1999. **Multilevel analysis: an introduction to basic and advanced multilevel modeling.** London: Sage Publications.

Tabachnick, B. & Fidell, L. 2013. **Using multivariate statistics.** 6th ed. Boston: Pearson.

Termphittayaphaisit, A. 2014. **Vision and strategy for sustainable development of the country.** Bangkok: Office of the Nation Economic and Social Development Board.

Thammasak, S., Wongwiwat, N., and Jampakerdsap, N. 2015. "Comprehensive and sustainable tourism." **Journal of economy and society** 52 (1): 2-7.

Thomson, S. K. 1992. **Sampling.** New York: John Wiley & Sons.

Tourism authority of Thailand. 2015a. **A guide to reduce global warming with 7 Greens by Green Teams** Retrieved from thai.tourismthailand.org/fileadmin/downloads/others/001_toolskits_7_Greens.pdf.

Tourism authority of Thailand. 2015b. **How to be 7 greens.** Retrieved from 7greens.tourismthailand.org.

Tourism department. 2016. **Visitors statistics.** Retrieved from newdot2.samartmultimedia.com/home/content.

Ullman, J. 2001. **Structural equation modelling. In B. G. Tabachnick & L. S. Fidell (Eds.), Using multivariate statistics.** 4th ed. Massachusetts: Allyn & Bacon.

Waltz, C. & Bausell, R. 1981. **Nursing research: Design, statistics, and computer analysis.** Philadelphia: F. A. Davis.

Weaver, D. 2008. **Ecotourism.** Milton: John Wiley and Sons, Ltd.

Wiratchai, N. 2008. **Linear structural relationship (LISREL): statistical analysis for social and behavioral sciences.** Bangkok: Chulalongkorn University.

Yingwanna, S., Ruengtrakul, A., & Wongwanich, S. 2013. "Multilevel structural equation model of teachers' organizational engagement with self and group confidence in performance as the mediating variables." **Journal of Research Methodology** 26 (2): 120.