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Factors influencing the intention to purchase an innovative tourism service for learning Northern Thai intellectualities using a conditional Logit model

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ABSTRACT

A new type of tourism service is invented called "tourism for learning intellectualities" in Northern Thailand. The intellectualities are mainly categorized in three areas: craftsmanship, health and ecology. This innovative service aims to allow tourists to learn some skills from experts and craftsmen in rural communities and to touch the real feeling of making real products with experts in a real atmosphere. This study is a part of the economic analyses supporting the program to ensure that the innovative tourism service has a market potential to sell to tourists before launching the program. It uses a conditional Logit model to match potential markets with potential tourism services. It finds that tourism for learning ecological knowledge holds significant potential for all markets including North America (excluding Mexico), Western Europe and Oceania (Australia and New Zealand). Tourists from Oceania are also potential clients for the learning of wood carvings and making silverware. Villages which are located in remote areas are disadvantaged for tourists hailing from North America and Western Europe because of the longer travel time from downtown Chiang Mai. Instead, tourists from Oceania are potential clients to these same remote villages due to their high interest in ecology and the demand for experiencing adventure in distant communities.

1. Introduction

Tourism for learning intellectualities is a new tourism service in Northern Thailand. It aims to let tourists touch the real activities in real places with real materials and real craftsmen as their coaches. Tourist fabricate a small product that can be finished within half or one day under the close supervision of skillful craftsmen or experts. They also can take the finished product home as self-produced souvenirs.

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The impetus for this new type of tourism service was a research project, *Potentiality of the Development of Tourism for Learning Northern Thai Intellectualities* (Srichoochart, 2010), funded by the National Research Council of Thailand during 2008 - 2010. The project's goals was to create value added from artistic and natural capital already embedded in rural communities. It believes that a community inherits at least one type of intellectualities which are craftsmanship, health and ecology.

Such a research project needs of course to be accompanied by supporting economic analysis to ensure that the promotion of the new tourism service to

communities brings little or no risk to traditional lifestyles and values. Otherwise, communities may not believe that the service has the potential to yield sustainably higher income for their long-term benefit. This paper is a part of an economic analysis aiming at using conditional Logit models to understand factors influencing the intention of international tourists to purchase the service.

The project not only conducts surveys of tourists' general demand patterns; it also launches prototypes of 28 villages. The prototypes are tested by asking international tourists to choose a village from which they intend to purchase the service. The results of the study are beneficial not only to rural communities in Northern Thailand but also in other regions throughout the country where local intellectualities exist. Moreover, this initiative encourages local Thais to beome teachers of foreigners, rather than passive recipients of imported knowledge from western countries.

2. Objective

The goal of this paper is to investigate factors influencing the intention of international tourists to Northern Thailand to purchase the new type of tourism service called "tourism for learning intellectualities."

3. Conceptual framework

The theory of rational choice behaviour suggests that humans can rank their preferences and then make the choice that maximizes preference. In this study, we apply this concept to the selection of a new type of tourism service. A classic paper that applied the same conceptual framework is Domencich and McFadden (1975). The paper is distinguished among other classic papers in that it introduced econometric estimation which perfectly suits the theory. Although it was originally a study about urban travel demand, it also opened up the opportunity to investigate selection behavior in many other industries. This study follows the same conceptual framework.

First, an individual has a utility level determined by attributes of tourism service (x) and his or her own personal characteristics (v).

$$U_i = f(x, v_i) \quad (1)$$

The utility that that individual derives from choosing a preferred tourism service is also determined by the preferable attributes of the service and the characteristics of the chooser.

$$U_i^P = f(x^P, v_i) \quad (2)$$

The utility that an individual gets from another tourism service that he or she does not choose is defined as U^{NP} which is determined by the attributes of the non-preferable tourism service and also the personal characteristics of the chooser.

$$U_i^{NP} = f(x^{NP}, v_i) \quad (3)$$

The decision of choosing the preferable tourism service over the non-preferable one must satisfy the condition that the utility that an individual gets from the chosen one is greater than the non-chosen one.

$$f(x^P, v_i) > f(x^{NP}, v_i) \quad (4)$$

However, both preferable and non-preferable tourism service may share some identical attributes (x_1) whereas they present other different attributes (x_2). Therefore, the attributes in equation (4) can be separated into two parts as follows:

$$f(x_1^P, x_2^P, v_i) > f(x_1^{NP}, x_2^{NP}, v_i) \quad (5)$$

By an assumption of additive separable utility, the utility can be further separated into two parts. First the utility that an individual gets from the identical attributes and second the utility that he or she gets from the different attributes. This separation can be applied to both preferable and non-preferable services.

$$f(x_1^P, x_2^P, v_i) = \phi_1(x_1^P, v_i) + \phi_2(x_2^P, v_i) \quad (6)$$

$$f(x_1^{NP}, x_2^{NP}, v_i) = \phi_3(x_1^{NP}, v_i) + \phi_4(x_2^{NP}, v_i) \quad (7)$$

Due to the fact that the chooser is the same individual for both preferable and non-preferable tourism services, the terms that represent the utility that he or she gets from the identical attributes cancel out.

$$\phi_1\left(x_1^P, v_i\right) = \phi_3\left(x_1^{NP}, v_i\right) \quad (8)$$

Therefore, the difference between both tourism services is reflected only in the different attributes. When an individual chooses a preferable tourism service over the non-preferable one, it means that the utility that he or she gets from the different attributes of the preferable tourism service exceeds the utility that he or she gets from the non-preferable one.

$$\phi_2\left(x_2^P, v_i\right) > \phi_4\left(x_2^{NP}, v_i\right) \quad (9)$$

Rearranging equation (9) yields an expression whereby the difference between both utilities exceeds zero.

$$\phi_2\left(x_2^P, v_i\right) - \phi_4\left(x_2^{NP}, v_i\right) > 0 \quad (10)$$

This conceptual framework allows a researcher to estimate the influence of attributes of the tourism service upon the choice behaviour of an individual using a Logit model. By setting the value of the dependent variable (y) to 1 (one) if an individual chooses a tourism service and to 0 (zero) if he or she does not choose it, the researcher can figure out which attributes are influential in determining the preferences of international tourists upon the new type of tourism service.

$$y = \begin{cases} 1 \quad if \quad \phi_2\left(x_2^P, v_i\right) - \phi_4\left(x_2^{NP}, v_i\right) > 0 \\ 0 \quad if \quad \phi_2\left(x_2^P, v_i\right) - \phi_4\left(x_2^{NP}, v_i\right) \le 0 \end{cases} \quad (11)$$

4. Methods of data collection

The research project was launched through prototypes based on the characteristics of 28 villages in Chiang Mai, Lampang and Lamphun provinces in Northern Thailand. Their activities were recorded in photographs and collected into a catalogue. Then the catalogue was presented to international tourists at Chiang Mai International Airport during May to July 2009.

The number of international tourists participating in the study was 1,179 persons. The research targeted tourists coming from high-income regions defined as North America (excluding Mexico), Western Europe and Oceania (Australia and New Zealand). A tourist could choose only one village where he or she intended to make a purchase. Moreover, he or she needed to specify the level of intention: surely buy, probably buy, probably not buy and not buy for sure.

Only tourists that specified that they would "surely buy" were taken into account. This is because it is clear that what is stated as "yes" means yes and what is stated as no means no. If the study includes other tourists that say they may buy the service but in fact they are not sure whether to buy or not, then the coding of yes does not mean yes. In the extreme case, if a tourist chooses a village but states that he or she will surely not buy the service, what does it mean? It means that all of observations should be zero. If the study codes the chosen village as one, it will be misled because its attributes does not persuade the tourist to buy it at all.

Through this selection process, the number of observations to be statistically analyzed was reduced to 316 persons out of the original 1,179. Each retained tourist response contained 28 answers for 28 villages. Only one village equaled "yes" and other 27 villages equaled "no." Therefore, in the spreadsheet, there should be 8,848 answers or observations. However, some observations were incomplete and then excluded. Only 8,680 observations were left in the model, corresponding to 310 tourist responses.

Northern Thai Intellectualities were classified into nine categories as follows. Each village in the 28 prototypes offers only one kind of intellectualities

1. Ecology
2. Wood carving
3. Other wooden products

4. Silverware
5. Paper
6. Weaving
7. Pottery
8. Embroideries
9. Healthy products

and lies at a distinct distance in travel time from downtown Chiang Mai city. Meanwhile, tourists origins were separated into three types: North America, Western Europe, and Oceania.

5. Methods of data analysis

Conditional Logit was employed in the analysis. It is the decision of a tourist to 28 choices. Only one choice is chosen whereas other 27 choices are ignored. Therefore the conditional Logit model will analyze the attributes of the tourism village conditioned to the same tourist who makes the decision upon the villages.

The specification of the model is as follows.

Dependent variable:

Each tourism service is classified following this setting.

Y=1 for a tourism service that was chosen by a tourist

Y=0 for a tourism service that was not chosen by the same tourist

Twenty-eight dependent variables were coded for a tourist since they were chosen by the same tourist. Only one observation contains the value of one and other 27 observations contain the value of zero.

Independent variables:

Independent variables include the interaction between attributes and characteristics of international tourists as follows.

1. North America and ecology
2. Western Europe and ecology
3. Oceania and ecology
4. North America and wood carvings
5. Western Europe and wood carvings
6. Oceania and wood carvings
7. North America and other wooden products
8. Western Europe and other wooden products
9. Oceania and other wooden products
10. North America and silverware
11. Western Europe and silverware
12. Oceania and silverware
13. North America and paper
14. Western Europe and paper
15. Oceania and paper
16. North America and weaving
17. Western Europe and weaving
18. Oceania and weaving
19. North America and pottery
20. Western Europe and pottery
21. Oceania and pottery
22. North America and traveling time from Chiang Mai downtown
23. Western Europe and traveling time from Chiang Mai downtown
24. Oceania and traveling time from Chiang Mai downtown

The model does not include non-interacted independent variables. This is because they cause multicollinearity in the model. Only interaction terms remain for the analysis.

6. Findings and discussion

The estimation results are shown in table 1. They may be interpreted as follows:

1. Tourists from North America (excluding Mexico), Western Europe and Oceania (Australia and New Zealand) intend to purchase tourism services related to the learning of ecological knowledge. Among the three markets, tourists from Oceania have the most potential according to its highest coefficient. The second potential market is North America.

2. Tourism service for learning wood carving are preferable to tourists from Oceania. Other markets do not respond to the service significantly.

3. Tourism services for learning the skills of other wooden products are not attractive to any tourist market. However,

it is conversely significant in the Western European market. It means that Western Europeans refuse to purchase the service.

4. Learning to produce silverware has potential in the Oceania market. Other markets do not respond significantly to this intellectuality.

5. Tourists from the Western European market do not like the tourism service learning to produce paper due to its negative coefficient.

6. Cloth weaving and pottery cannot capture the intention to purchase from any market.

7. Travel time from Chiang Mai centre is an obstacle for tourists from North America and Western Europe. Tourism services that are located far away from downtown Chiang Mai have less potential for these markets. However, travel time does not matter for tourists from Oceania. They like to travel further to appreciate the uniqueness of local communities and their intellectualities. This result gives hope (and the possibility of focusing advertising more cost-effectively) to offer this kind of service in remote villages in Lampang and Lamphun province.

Table 1: Factors influencing the intention to purchase the new type of tourism services

Variable	Coefficient	Std. Error	Prob.
North America and ecology	**1.9321**	0.7596	**0.011**
Western Europe and ecology	**1.5297**	0.4878	**0.002**
Oceania and ecology	**3.2524**	1.0334	**0.002**
North America and wood carvings	0.0510	0.8446	0.952
Western Europe and wood carvings	0.1924	0.5332	0.718
Oceania and wood carvings	**1.9135**	1.1055	**0.083**
North America and other wooden products	-1.1364	0.9411	0.227
Western Europe and other wooden products	**-1.2564**	0.5998	**0.036**
Oceania and other wooden products	0.5727	1.4751	0.698
North America and silverware	0.2533	0.9986	0.800
Western Europe and silverware	-0.1709	0.6564	0.795
Oceania and silverware	**3.9989**	1.2482	**0.001**
North America and paper	-1.9672	1.2828	0.125
Western Europe and paper	**-1.2435**	0.6584	**0.059**
North America and weaving	-0.5781	0.8979	0.520
Western Europe and weaving	-0.2364	0.5449	0.664
Oceania and weaving	1.3634	1.2550	0.277
North America and pottery	-0.4903	0.9093	0.590
Western Europe and pottery	-0.5906	0.5802	0.309
Oceania and pottery	0.5012	1.4202	0.724
North America and traveling time	**-0.0129**	0.0053	**0.015**
Western Europe and traveling time	**-0.0150**	0.0035	**0.000**
Oceania and traveling time	**0.0128**	0.0063	**0.044**
Observations with Y=0		8,680	
Pseudo R-squared		0.1243	

Source: Estimation using conditional logit model with Stata10

Note: Oceania and paper is excluded because of its too high standard error in the first estimation. Then this model is re-estimated without the variable.

Conditional Logit serves as a complementary tool that other non-econometric methods cannot provide, for example the matching between the origin of tourists and the service that they prefer. However, it is neither inherently obvious

nor easy to explain from the conditional logit model why tourists in a particular market prefer a particular tourism service. It can be seen that conditional Logit model in this sense is like a data mining method. It only finds the relationship among the data which are characteristics of tourists, attributes of tourism service and the decision that tourists make. Without other surrounding findings, it cannot ensure that the analysis is correct.

To triangulate and enrich the findings of the Logit analysis, Srichoochart (2010) therefore used non-econometric methods to ascertain that the most interesting tourism service is the learning of ecological knowledge. Mae Kam Pong village in Chiang Mai and Sam Kar village in Lampang, which offer such kinds of tourism service, share more than two-thirds of the market share in terms of market value. Tourists with high potential for this service work around 7 to 9 hours per day in front of computers. They do not easily find the time to come into contact with nature. When they travel to Thailand, they like to do adventure, learn local ways of life, learn new skills and touch the nature.

These findings are consistent with the results from the conditional Logit model such that tourists from all markets intend to purchase tourism services for learning ecological knowledge. Moreover, this finding can answer why travel time is not a problem for a particular group of tourists. It can be seen from Sam Kar village which is located further than 130 kilometers away from Chiang Mai downtown. It shares the second biggest portion of the market. This can be supported by conditional Logit that its customers are potentially from Australia and New Zealand.

7. Conclusions

This study investigates factors influencing the intention of international tourists visiting Northern Thailand to purchase a new type of tourism service termed "tourism for learning intellectualities." The intellectualities are categorized into three major areas, craftsmanship, health and ecology. The study presented 28 tourism services offered by 28 villages to international tourists to choose only one preferable activity. The tourist needed to specify the level of his or her intention too. Only the intention of "surely buy" were taken into account. Out of 1,179 tourists, 316 observations were valid.

Conditional Logit analysis was applied to the sample data. The number of observation was 8,680 following the multiplication of the number of tourists by the 28 choices per tourist with some elimination of incomplete observations. The interactions between the characteristics of the tourists, the region of home country, the attributes of the tourism service, and the categories of the intellectuality were set to be independent variables. Through this empirical protocol, it was possible to answer which tourism service has potential in which market.

The findings show that the tourism service for "learning ecological knowledge" is distinguished in all markets. Learning wood carving and silverware making have potential only in the Oceania market. Travel time is a great obstacle for remote villages to offer services to tourists from North America and Western Europe. However, it is still hopeful for them to attract tourists from Oceania who prefer to discover the beauties and intellectualities of rural communities in remote areas.

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