AN ANALYSIS OF TOURIST PREFERENCES
FOR THE DEVELOPMENT OF ECOTOURISM IN UAXACTÚN, GUATEMALA,
USING CHOICE EXPERIMENTS

by

Daisuke Shoka

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science
(Resource Policy and Behavior)
in The University of Michigan
2006

Thesis Committee:
        Professor Michael Moore, Chairman
        Professor Gloria Helfand

To my parents,

ABSTRACT

Ecotourism is becoming more attractive because it is believed that it makes it possible to improve income generation without harming the environment. These goals are sometimes not met, however, and environmentally unfriendly or economically unsuccessful ecotourism tends to prevail in many developing countries, questioning the validity of its original concept. Therefore, careful assessment of cultural, environmental, and economic aspects is necessary when introducing ecotourism to a region.

This paper uses choice experiments as a method to find tourists' willingness to pay (WTP), and it analyzes preferences of tourists to assess the financial potential of the future ecotourism in the village of Uaxactún, Guatemala. Villagers in Uaxactún are faced with a need for another means of income to produce the concession fee for the Maya Biosphere Reserve. With their traditional forest harvesting, which is their primary source of income, becoming unsustainable because of the influx of population into the village, villagers are interested in developing ecotourism.

Three hypothetical ecotourism options were developed with input from the local residents, and three prices, reflecting potential costs, were developed for each option. The survey was conducted of 87 international tourists and 12 local tourists. Survey data were analyzed using the multinomial logit model. The result shows that both sets of tourists have marginal willingness to pay lower than the potential costs of ecotourism, suggesting the difficulty of financial success of ecotourism in Uaxactún. The results should be discussed in combination with the cultural and environmental aspects as the community decides whether to proceed with ecotourism-based development.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

CHAPTER 1
INTRODUCTION

1.1 Background

At present, poverty and environmental problems are some of the most important challenges human society is facing. It is difficult to address both problems at the same time because these two problems sometimes conflict. For example, it is often the case that poor villagers in less developed countries (LDC) have no choice but to exploit natural resources around them, such as trees, to make a living. Cutting trees can lead to deforestation, which is unacceptable from the perspective of environmental preservation. If cutting trees is the only choice for the poor villagers to earn money, however, it may be the case that cutting trees helps to alleviate poverty in this poor village.

Environmental preservation is often neglected in areas, including LDCs, where there is severe financial need. It is also true, however, that environmental problems have become such a critical issue for human beings that we cannot ignore them.

In such a complex situation, "ecotourism" is receiving more attention among conservationists as a means to promote both environmental preservation and income generation, especially in LDCs.

1.1.1 The Motivation of the Study

The traditional way of living of the people of the village of Uaxactún, Guatemala, is endangered because their way of forest harvesting is now becoming unsustainable. In addition, villagers have to pay a lease fee to the Guatemalan government for the concession to extract above-ground resources in the preserved natural forest, Maya Biosphere Reserve (MBR). With their limited income resources, prodcing the concession fee is a big challenge for the community. The environmental non-governmental organization (NGO) Wildlife Conservation Society (WCS) has been helping villagers by working on these problems together. As one alternative source of income, WCS suggested the introduction of ecotourism to villagers, and villagers are interested in developing ecotourism in Uaxactún. Given the controversy over the effectiveness of ecotourism as a conservation project, however, ecotourism should not be blindly implemented in the village. Being in the middle of MBR, careful assessment must be conducted with respect to economic, environmental, and socio-cultural impact before actually introducing ecotourism.

1.1.2 Purpose of This Thesis and Method

This paper considers prospective ecotourism in Uaxactún, and attempts to assess its profitability by investigating tourists' willingness to pay (WTP) for hypothetical tours. To achieve this purpose, a marketing method called choice experiments (CE) was employed. The CE involved presenting survey respondents with several tourism opportunities at various prices. Analysis of their choices provides an estimate of their WTP for different tourism options. That WTP can then be compared to the estimated cost of providing those options to estimate profitability. While the town is unlikely to consider ecotourism as a development option if it is unprofitable, any positive profits from ecotourism must be balanced against the environmental and cultural changes that ecotourism may bring.

1.1.3 The Structure of This Paper

This thesis has five chapters. The first chapter gives an introduction to the thesis, including a definition of ecotourism current issues of ecotourism in less developed countries, and background about Uaxactún. Chapter 2 describes choice experiment, the method used in this paper, and Chapter 3 explains the specific application of choice experiment to achieve the purpose of this paper. Chapter 4 contains the results of empirical analysis, and the discussion and the conclusion are provided in Chapter 5.

1.2 Ecotoursim

1.2.1 The Definition of Ecotourism

Tourism is widely considered to be one of the most quickly growing industries in the world, and ecotourism is believed to be its fastest growing subsector, though the definition of the term *ecotourism* has not been clear to date (Buckley, 1994). However, Weaver (1999) questioned this belief as "very surprising, and equally suspect" because of the lack of consensus over the definitions and quantitative evidence.

Since ecotourism is a relatively new notion, there is no consensus on the definition of ecotourism (Blamey, 1997). There are many definitions available, and there are considerable differences among them. The diagram by Buckley (1994) shown in Figure 1.1 is helpful for understanding what constitutes ecotourism. In a broad sense, most of the definition of ecotourism may fall somewhere within four circles in the figure.
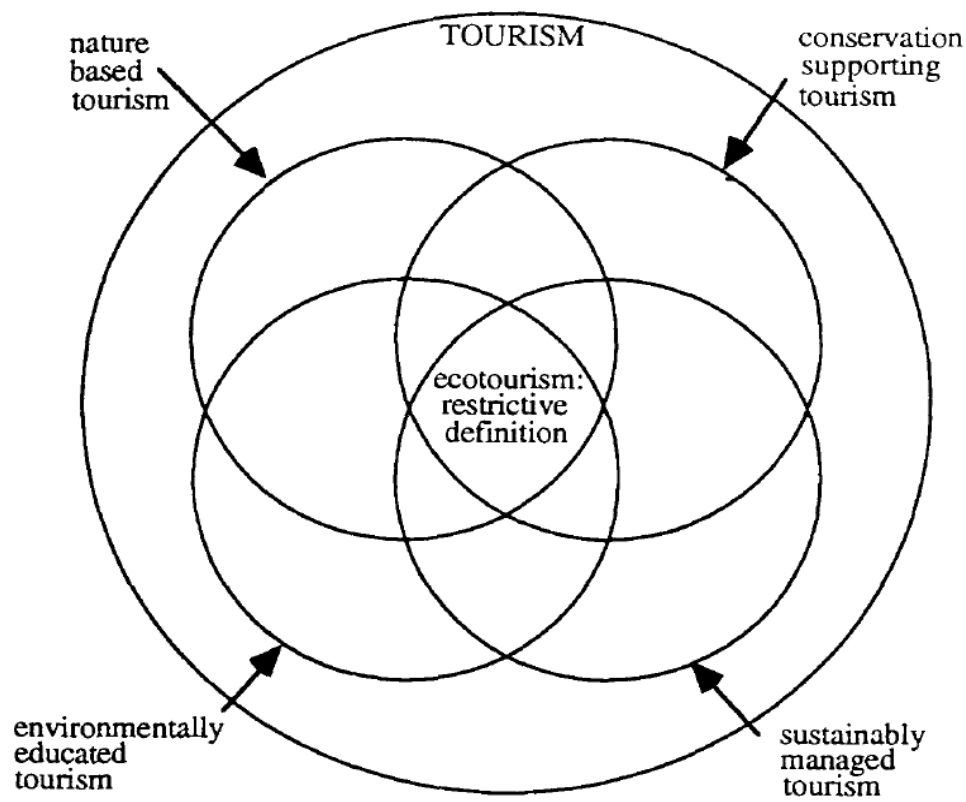
Figure 1.1, An Ecotourism Framework (Source: Buckley 1994, p. 662)

Even this diagram, however, does not cover the entire picture of ecotourism because this diagram focuses on ecotourism as a "good." For those who consider ecotourism as a means of development, significant participation of the local community in the operation of tourism is often required as a condition for ecotourism. Such ecotourism is called community-based ecotourism (CBET). Generally, the words *ecotourism* and *CBET* are not distinguished clearly, which makes the discussion of the definition of ecotourism more complicated.

Shibasaki and Nagata (2005), by investigating 21 definitions of ecotourism, pointed out that the definitions tend to be influenced by the character of organizations which make the definitions. For example, conservationists such as environmental NGOs tend to make more restrictive definitions, requiring sustainable management of the tourism as one the components of ecotourism. On the other hand, in industry and government sectors, ecotourism is often treated as the synonym of "nature-based tourism" (Buckley, 1994). Given the difficulties inherent in defining ecotourism, Buckley (1994) claimed that "[a] precise definition of ecotourism is perhaps unnecessary unless the term is to be used in legal or administrative documents, such as planning and development control instruments or grant guidelines for funding agencies" (Buckley 1994, p. 664).

Since it is beyond the scope of this paper to discuss which definition is more appropriate for ecotourism, this thesis defines ecotourism as follows (Weaver 1999 and Wunder 2000):
1. The primary attraction is nature-based, with cultural features constituting a secondary component;
2. The physical and social impacts on the visited area are small; and
3. Notable economic participation by local residents must be made.

1.2.2 Community-Based Ecotourism: its concept and criticism

CBET has become a popular means of biodiversity conservation, especially in less developed countries, although it has also received criticism (Kiss, 2004). It is widely believed that CBET is a very effective way of achieving dual goals of conservation of natural resources and local development because CBET gives an effective incentive of nature conservation for local community while simultaneously providing an economic benefit (e.g. Wunder 2000, Salafsky et al. 2001). Kiss (2004), however, cast a doubt on this belief as "much of the information available about CBET is anecdotal and subjective, lacks quantitative data and analysis, and appears in non-peer-reviewed sources, such as project reports, workshop proceedings, and in-house publications and websites" (Kiss 2004, p. 232-233). Taylor et al. (2003) argue that "[t]he feasibility and compatibility of these two goals are controversial" (Taylor et al. 2003, p. 979).

In theory, the linkage of nature preservation and local development is considered as follows: CBET's main attraction is usually to appreciate natural/cultural resources in their undisturbed form. Therefore, if tourism earnings are high enough, local people would deliberately take care of those resources so that their tourism income would be continuous. At the same time, it is hoped that tourism employment would divert local people from environmentally destructive activities.

Although this linkage has many benefits, for this linkage to happen, "tourism benefits must be sufficiently high and widespread to out-compete basic livelihoods" (Kiss 2004, p. 234), which is uncommon (Kiss, 2004). Aside from being unlikely, there are some questions left unanswered. First, it is not clear whether higher income obtained from CBET leads local people to invest their money in biodiversity conservation. In some cases, people invest on other activities, such as enlarging

agricultural fields, which can threaten biodiversity. Secondly, even though local people have an incentive to participate in preservation activities, such positive effect on biodiversity conservation might be offset by the increase of demographic pressure caused by outsiders attracted by the economic success of CBET.

Another type of linkage is that an interested party, such as a government or an environmental NGO, helps a local community to develop and maintain ecotourism as a means of supporting biodiversity conservation until it becomes economically self sustainable (e.g. Alexander 2000). This linkage would be successful if the projected ecotourism actually becomes profitable and the local community invests in preservation activities. If it took a long time or failed to be profitable, however, it would be that developing ecotourism itself is a conservation project. In such a case, it might be that the budget used on ecotourism could have been used more effectively by spending on a more direct conservation project.

As discussed so far, the belief that CBET could be a remedy for solving the problems of nature conservation and local development is questionable because the linkage between tourism income and natural conservation has not been confirmed, and most of ecotourism literatures have failed to provide evidence about this problem. The studies by Wunder (2000) and Salafsky et al. (2001) are notable exceptions. Wunder (2000), in investigating tourism income in five villages in Cuyabeno, Ecuador, found that "tourism has contributed significantly to the conservation of the Cuyabeno Reserve" (Wunder 2000, p. 477). Salafsky et al. (2001), from observation of 39 community-based conservation projects, concluded that "a community-based enterprise strategy can lead to conservation, but only under limited conditions and never on its own" (Salafsky et al. 2001, p. 1). Although both of their conclusions give a positive impression on the potential of CBET, their conclusion may not be generalized: Wunder's conclusion may be applicable only in Cuyabeno, Ecuador; samples used in the case of Salafsky et al. (i.e. 39 community-based conservation projects) were chosen from 400 proposals based on criteria such as potential viability of the enterprise, which may have biased their conclusion in a favorable way. Obviously, more rigorous quantitative studies of CBET are necessary to decide whether CBET is truly a good choice for nature conservation. Such rigorous quantitative studies, however, may be difficult to perform because evaluating the effect of the project on biodiversity usually takes much time, and measuring an ambiguous notion such as biodiversity is difficult.

As a conclusion, ecotourism is not something local communities or development organizations can blindly implement as an effective way of biodiversity conservation and local development. Whether ecotourism is going to be successful is entirely case by case. Therefore, region-specific assessment of potential impact of ecotourism on the community, in terms of economic, environmental, and socio-cultural effects, should be conducted before introducing ecotourism. It is also important for all stakeholders to be informed of all potential benefits and risks before the implementation.

The following section describes the research place, Uaxactún, Guatemala, along with its conservation history and the challenges they are facing.

1.3 Uaxactún

1.3.1 Geographic and Demographic Features of Uaxactún

The old Maya village of Uaxactún lies in the northeast of Petén, in the northern part of Guatemala (see Figure 1.2). A small village first appeared at the site of Uaxactún around three thousand years ago. After the prosperity as Maya village around 830 A.D., the villagers somehow died out, or left. The reason is not known.   It has been approximately 80 years since contemporary humans started to live there. Although no reliable census of Uaxactún is available, the population is estimated to be around 1000, consisting of about 140 families at the time of this survey.

Approximately 23km south from Uaxactún lies Tikal, a World Heritage Site declared by United Nations Educational, Scientific and Cultural Organization (UNESCO). Since Tikal is much larger than any other Maya ruin sites in Petén, it is by far the most popular tourist attraction in Petén, perhaps? in Guatemala as a whole.

There is little infrastructure in Uaxactún. Running water and electricity are not available in Uaxactún, and people in need of health care or specialty items must go to Flores, Petén's regional capital, or the neighboring towns of San Benito and Santa Elena, all of which are 80 kilometers south of Uaxactún. The main transportation to these cities is buses that go to Santa Elena via Tikal. The buses leave Uaxactún every day at 6am in the morning going to Flores, and leave Santa Elena everyday at 1pm for Uaxactún. It takes one hour from Uaxactún to Tikal, and two hours from Tikal to Santa Elena.

1.3.2 The Livelihood of Uaxactún

People in Uaxactún make a living mainly by extracting non-timber forest products (NTFPs). Xate, whose leaves are used for floral arrangement in developed countries, is the primary source of their income. In addition, chicle (the thick juice of tree used for making chewing gum) is drained seasonally from chicozapote trees, and allspice is also harvested. These NTFPs are sold to national or international markets and are the villagers' main sources of cash. Also, women make some handiwork items from forest products, such as wicker furniture or traditional dolls called muñeca, and sell them mainly in Tikal. They sell those things also to the tourists who visit Uaxactún, but the sales are very low because of the very low visitation of tourists to Uaxactún.

Although some people also hunt for game meat, engage in slash-and-burn agriculture, known as *milpa*, and cut down forest trees for hardwood, these activities are only for subsistence and therefore their magnitude is small. Overall, villagers have kept a sustainable forest lifestyle, and they have a pride in it.

As for their daily income, no reliable statistics are available. Call (2003) reported that "[w]hile a xate gatherer in Uaxactún earns an average of $5.15 a day – chicle and allspice harvesters earn even more – a waiter in a three-star hotel earns less than $2.50 a day and a maid, about $1.20" (Call 2003: http://www.terrain.org/articles/14/call.htm), but did not reveal any source. According to one xate harvester, their income is dependent on their harvesting: it is around 30-50Q[1] ($4-$6) when harvesting is very poor, and around 100-120Q ($12-$15) when harvesting is very good[2].

---

[1] Guatemalan currency quetzal: $1 = Q7.912 on 8/01/05.

[2] Personal communication with source who prefers to remain anonymous.

Figure 1.2, Petén Region of Guatemala (Source: Call, 2003)

1.3.3 The Conservation History of Uaxactún: Motivation for Ecotourism

Uaxactún village is within the Maya Biosphere Reserve (MBR), which is part of Guatemala's protected areas system. The MBR is spread over the northern half of Petén and other two countries, Mexico and Belize. The MBR was started by national decree in 1990 as a solution to uncontrolled deforestation in that area and is the largest swath of lowland rainforest north of the Amazon basin. The MBR consists of three parts: core conservation areas which are national parks and biological reserves; a Multiple Use Zone (MUZ) where certain extractive and agricultural activities can be conducted; and a buffer zone along the reserve's southern boundary. The village lies in the middle of the MUZ.

Despite the original purpose of the MBR, deforestation kept occurring because of demographic pressure due to migration and fertility-driven population growth. Through about 1970, the population of Petén was around 60,000. During the next 27 years, the population jumped to about 350,000 in 1997. Although this growth seems to have slowed down (the population is 366,735 in 2002[3]), the sudden increase of the population has imposed negative impacts on the MBR through deforestation and land misuse.

As a partial solution to this situation, the Guatemalan government's National Council of Protected Areas (CONAP, for its Spanish initials) started to grant concessions to communities in the MUZ of the MBR in 1996.

On January 12, 2000, Uaxactún village obtained an 83,558-hectare concession from CONAP so that it could maintain its non-timber-dependent lifestyle. While the concession formally gives the villagers exclusive rights to extract above-ground resources, the villagers have to pay lease fees. Although CONAP imposed cheaper rent for Uaxactún in exchange for asking Uaxactún villagers to monitor poaching, producing concession rents is a big challenge for Uaxactún community. Furthermore, previously sustainable xate harvesting is now becoming unsustainable because of overcutting, which jeopardizes their primary income source. Organización de Manejo y Conservacion (OMYC), an organization developed by the villagers for management and conservation of natural resources, is now working on these issues with the help of an international environmental NGO, Wildlife Conservation Society (WCS). WCS has helped Uaxactún for a long time and is suggesting several projects[4] to help the community gain control of the vast resources they have to manage. The introduction of ecotourism is one of the projects, as one possible alternative source of income.

1.3.4 Tourism in Uaxactún

Currently, the community of Uaxactún offers no tourism on its own, although it has the first known Maya astronomical observatory in Guatemala and some Maya ruins considered to be tourist attractions. Almost all tours to Uaxactún are day trips offered by travel agencies outside the community (in Flores). These trips take tourists to the Maya ruins in Uaxactún and back within a day. Since the tours serve food prepared elsewhere to tourists, the Uaxactún community receives little

---

[3] Instituto Nacional de Estatodicica: http://www.ine.gob.gt/

[4] For more details, see *Forest Society – Uaxactun Ecotourism Project:*
http://www.ecotourism-adventure.com/forest.htm#Uaxactun%20Ecotourism%20Project#Uaxactun%20Ecotourism%20Project

economic benefit from the tourists. A small amount of money is made by the village girls selling forest products to tourists as explained in Section 1.3.2.

In addition, the tours, even though they are offered by the travel agencies, are not held consistently because very few tourists want to visit there. The price of tours to Uaxactún depends on the number of people who join the tour since there are few participants. For example, if there is only one person who wants to join, s/he may have to pay $100 to the company, while the cost would be $30 per person if there were five people joining. This cannot be helped because fixed costs for the tour (primarily transportation and guide) do not vary much as the number of participants changes. This way of pricing may decrease the potential participants, especially when they are a small group. They would rather go to another place than pay a very high price.

Finally, there is the problem of a toll. When tourists go through the Tikal National Park gate, they have to pay a park entrance fee (50Q for international tourists, and 15Q for domestic tourists) even though their final destination is Uaxactún (as described in Section 1.3.1., Uaxactún is 23 kilometers north of Tikal). The toll, even though it is paid for going to Uaxactún, does not go to Uaxactún revenue at all. This problem still exists.

Thus, community of Uaxactún does not benefit from tourism. This situation, along with the suggestion by WCS to introduce ecotourism to Uaxactún, has led to the creation of ECOGUYAS, the organization which is initiating the development of ecotourism in Uaxactún. Some members of ECOGUYAS are training to be tour guides, and they are interested in offering multi-day tours such as jungle trekking.

1.4 Research Questions

Although Uaxactún villagers have come to be interested in ecotourism, ecotourism is not as easy an option as it seems, as discussed in Section 1.2. Therefore, careful assessment in terms of financial, environmental, and socio-cultural impact is necessary before the actual introduction of ecotourism. Among these, a financial assessment is especially important because profitability is a critical issue for the success of ecotourism (see Section 1.2). Currently, whether ecotourism will be able to make a profit is unknown. Many tours to various Maya ruins are already being offered by travel agencies in Flores and all over the world, making the Petén tourism industry very competitive. Furthermore, offering tours may be a profitable option for travel agencies outside the community because they are mainly making money from tours to Tikal (that is, their revenue is not dependent on tours to Uaxactún), but it may not be profitable for the Uaxactún community. If such a strategy did not bring regular income flow to the community, villagers would be unwilling to shift to work for ecotourism from current NTFPs extraction. It follows that the community has to increase the number of tourists who visit Uaxactún so that they can offer profitable tourism constantly, but this would not be an easy task. As explained in Section 1.2.3, failing to make sufficient profit would change ecotourism into a conservation project in itself, which may be a waste of limited resources for the community and the WCS.

Considering their motivation for ecotourism as alternative means of making a living and the importance of profitability for the success of ecotourism, whether ecotourism can be financially successful is of great concern. This study examines the following questions:

- If the Uaxactún Community develops ecotourism as another means of income, will it be

profitable?

- What kind of tour will be most popular?
- How should the people of Uaxactún use their limited resources to attract tourism? For instance, what would be an effective way of advertising?　Will English speaking guide be necessary?

In a broad sense, this situation can be deemed as the initial stage of the introduction of a new product (that is, ecotourism) to a market. In such a situation, the marketing method called choice experiments (CE) is useful to assess the consumers' attitude to the new product, and therefore CE was employed as a research methodology. The following chapter gives a more detailed description of CE.

CHAPTER 2
METHODOLOGY

2.1 Conjoint Analysis and Choice Experiments

When a new product or service is introduced to a market, a producer is interested in how consumers will react to it. It is especially important to discover which factors, such as price, quality, and accessibility, influence a consumer's decision making to purchase or not. In such a situation, the marketing method called conjoint analysis is very useful. According to Haaijer (1999), "[c]onjoint analysis is a technique to measure preferences or utilities of consumers for certain characteristics of products or services" (Haaijer 1999 p. 1). A conjoint study can explore many marketing questions, such as what features of a product are preferred by consumers, and how much they are willing to pay for these features.

In conjoint analysis, interviewees are asked to rank their preferences over a certain number of choices. Each choice is a product which consists of bundles of attributes at different levels. Conjoint analysis requires respondents to rank all of the choices provided to them. In choice experiments (CE), a variant of conjoint analysis, they are required to select one choice which they prefer the most. CE has become very popular because CE is much closer to the real marketplace, where people buy only a product they like the most (Haaijer, 1999).

2.2 Theory

According to Hanley et al. (1998), the CE technique is an application of the characteristics theory of value developed by Lancaster (1966), combined with random utility theory which was originally developed in psychology (Thurstone 1927; Manski 1977). Lancaster (1966) made new assumptions about "goods". Rather than thinking of goods as the direct objects of utility, he considered that a good possesses one or more characteristics from which utility is derived.

Manski (1977) paraphrased the definition of random utility models as follows (Manski 1977, p. 1);

> Let α be a finite set of alternatives, T be a finite population of decision makers and let $\in^c$ mean 'is chosen from'. Then choice is consistent with a random utility model if there exist real valued random variables U_{at}, all $a \in \alpha$, $t \in T$ such that $\Pr_t(a \in^c C) = \Pr(U_{at} \geq U_{a't}$, all $a' \in C)$ for all alternatives $a \in C$, all non-null choice sets $C \in \alpha$ and all decision makers $t \in T$.

Combining these two theories makes it possible to estimate respondents' preferences by observing their choice behavior toward alternatives that consist of bundle of characteristics (in CE, these characteristics are called attributes).

In a practical application, those theories are applied as follows:

In random utility choice model, the utility of each alternative i, U_i is represented as:

$$U_i = V_i + \varepsilon_i \tag{1}$$

where V is a deterministic component of the utility function, and ε is the error term. V_i is typically a

function of the attributes under study, including the characteristics of the alternatives and their prices. The analysis uses data on the characteristics, and the chosen alternatives, to estimate the coefficients on the characteristics in the V_i function.

An individual is assumed to choose the alternative that gives maximum utility. Selection of one alternative (bundle of attributes) i over another alternative j means that the utility U_i is greater than U_j. Hence, the probability of choosing alternative i is represented as:

$$\text{Prob}(i) = \text{Prob}(U_i > U_j \Leftrightarrow V_i + \varepsilon_i > V_j + \varepsilon_j; \forall j \neq i) \tag{2}$$

Assuming that errors are independently and identically distributed[5], this probability can be estimated by using the multinominal logit model (McFadden, 1974):

$$\text{Prob}(i) = \frac{\exp(\mu V_i)}{\sum_j \exp(\mu V_j)} \tag{3}$$

where μ is a scale parameter usually assumed to be 1, implying constant error variance.

2.3 Choice Experiments and Environmental Assets

While originally developed as a marketing method, CE is also a useful method to measure the value of environmental assets. Since environmental assets are not transacted in real markets in general, it is impossible to observe a demand curve based on market prices. Therefore, special methods are necessary to estimate the demand for non-marketed goods. Because tourism to Uaxactun currently does not exist, it is impossible to use methods (termed "revealed preference" approaches) that rely on actual behavior in markets related to the environmental good. Instead, stated preference methods, which rely on consumers' responses to hypothetical situations, are a common approach for estimating these values and use the same methods found in marketing research. Stated preference methods have been criticized because they are not based on actual observed behavior. However, they are "the only viable alternative for measuring non-use values and they are commonly used to elicit values in cases in which the environmental quality change involves a large number of attribute changes" (Adamowicz et al. 1994, p. 272). CE is one stated preference approach and is often employed for evaluating environmental assets. CE has some desirable features, such as: (i) it is easy to estimate the value of the individual attributes that make up an environmental good; and (ii) CE provides the opportunity to identify marginal values of attributes (Hanley et al. 1998). See Hanley et al. (1998), Adamowicz et al. (1994), or Boxall et al. (1996) for further discussion on the use of CE compared to other environmental valuation methods.

2.4 Previous Application of Choice Experiments to Ecotourism

To date, the work by Hearne et al. (2002) seems to be the only application of CE to ecotourism in less developed countries. They used CE to identify tourist preferences in Costa Rica to further develop ecotourism there. The Braulio Carrillo National Park in Costa Rica was faced with an immediate need to accept greater numbers of tourists because of improved accessibility caused by the construction of a new road. They developed hypothetical tours consisting of five attributes: infrastructure, information,

---

[5] This assumption is called the Independence of Irrelevant Alternatives (IIA) property.

view, use restrictions, and price. Each attribute has different levels (e.g. infrastructure has three levels, Rustic, Semi-rustic, and Modern). The results of the survey described tourists' preferences for the five attributes described above, and they also found the differences in preferences between national tourists and international tourists.

While Hearne et al. used CE to explore further development of ecotourism where ecotourism was already developed, this survey employs CE in a place where ecotourism is not developed. Consequently, this survey concentrates on evaluating the research location as a sight-seeing destination and is designed differently than theirs. How this survey was designed will be discussed in the following chapter.

CHAPTER 3
DESIGN OF THE CHOICE EXPERIMENTS

3.1 Setting Attributes and Levels

As explained in Section 1.4, the main purpose of this survey is to investigate whether ecotourism will be financially successful in Uaxactún. Therefore, a choice experiment was developed to identify tourist interest in hypothetical tours which the community of Uaxactún could offer. The choice experiment involves asking consumers to choose among several alternative tours, with each tour described by attributes and a price. To discover tourist preferences with regard to tourist activities, this study examines two attributes: type of tour and price.

3.1.1 Attribute 1 – Type of Tour

Uaxactún has some tourist attractions, such as Maya ruins and tropical rain forests. Considering the unique way of life in Uaxactún as described in Section 1.3, even the town itself could be a tourist attraction. We wish to identify what is more attractive to tourists among the many possible tourist attractions.

Although it might appear desirable to know tourists' WTP for each activity, that information would be useless because each activity needs a certain amount of time to be enjoyed, which sometimes conflicts with the time or cost which is necessary to reach the activity site. For example, while one might need at least two days to enjoy a jungle trekking tour, perhaps only half a day is needed to see Maya ruins. In addition, since it takes three hours to travel to Uaxactún from Flores, it is difficult to imagine that tourists would come to Uaxactún only to enjoy activities that require little time. Thus, prospective tours must be at least a day long to be realistic.

Under this guideline, alternative tourism options for the CE were developed through consultation with ECOGUYAS. Because of the amount of information included in the description of each tour, it was expected that showing too many hypothetical tours would require respondents to interpret too much survey information and would make the survey very difficult for them. For this reason, the number of tour options was limited to three: (1) a one-day ruin cultural tour; (2) a two-day overnight ruin tour; and (3) a three-day jungle tour.

(1) One-Day Ruin Cultural Tour

This one-day trip would introduce the history and culture of Uaxactún; it is much like tours now being offered by the travel agencies outside the community. As described earlier, the Uaxactún community is not interested in developing a one-day tour but in developing a multi-day tour because of the potential financial benefit to the community. However, as long as the destination (Uaxactún) is the same for tourists, tourist preferences for this type of one-day tour must be investigated because it introduces a comparison with multi-day tours, which Uaxactún community is interested in developing. Activities included in this tour are:

- Horse ride to Maya well
- Maya ruins in Uaxactún
- Xate plantation
- Pottery museum polychrome ceramics

- 25m high observatory.

(2) Two-Day Overnight Ruin Tour

This two-day trip would take tourists to Tikal and Uaxactún and give them the opportunity to learn about the culture of modern day Uaxactún.

This tour was developed based on the previous plan to build a kiosk in Tikal to advertise Uaxactún. Since it takes only one hour to travel to Uaxactún from Tikal, some people might be interested in coming to Uaxactún after seeing Tikal. Although this kiosk plan was not realized, it still remains a possible idea. Like the original plan, the tour takes tourists to Tikal on the first day, and then tourists spend a night in the Mayan ruins in Uaxactún.

However, the Ministry of Tourism in Guatemala, Instituto Nacional Guatemalteco de Turismo (INGUAT), prohibits tourists from spending a night in the ruins because of the potential danger of wild animals, such as jaguars. Despite the prohibition, camping in the ruins was included in this tour since ECOGUYAS wanted to see how attractive such an activity would be for tourists. If it turned out that this activity could be very successful, they might petition INGUAT for permission to stay in the ruins under the supervision of trained tour guides. Activities included in this tour are:

- Maya ruins in Tikal
- Maya ruins in Uaxactún
- Camping in the Maya ruins in Uaxactún
- Learning how to make traditional food of Uaxactún from Uaxactún people
- Making munieca under the supervision of Uaxactún people
- 25m high observatory.

(3) Three-Day Jungle Tour

In this three-day tour, tourists will be taken to El Zots, another Maya ruin site deep inside the forest. After spending the first day's morning in Uaxactún, tourists will go to El Zots by car and spend a second day there. On the third day, they will do a seven hour jungle hike to Tikal. This tour was included because ECOGUYAS is interested in developing this type of jungle trekking. Activities included in this tour are:

- Maya ruins in Uaxactún
- Maya ruins in El Zots
- Jungle trekking from El Zots to Tikal
- Maya ruins in Tikal.

Detailed descriptions of all three tours are in Appendix I.

3.1.2 Attribute 2 – Price

For each of the three options, three levels of price were developed. The prices were decided with reference to various tour prices to Maya ruin sites offered in Flores, and by discussing the potential cost of the hypothetical tours with ECOGUYAS. Table 3.1 shows prices for the options.

Table 3.1, Prices Used for Each Type of Tour

	Low	**Middle**	**High**
One-day Tour	$30 (Q220)	$45 (Q330)	$60 (Q450)
Two-day Tour	$75 (Q550)	$100 (Q750)	$125 (Q950)
Three-day Tour	$100 (Q750)	$130 (Q1000)	$160 (Q1250)

Low-level prices were based on prices offered to a group of five people or more in Flores, and can be considered as very competitive in the Petén tourism industry. Middle-level prices are derived from prices offered to a group of three or four people. This price range was commonly found in Flores. High-level prices were developed to reflect the prices offered to a single traveler or a pair.

3.2 Base Alternative – No Choice

When conducting a conjoint analysis, whether to include a "base alternative" is always a researcher's concern. A base alternative is an alternative which always shows up in a choice set. It could be a bundle of attributes, or could be "no choice" (e.g. "I would not buy any of them," "I will keep my current brand").

According to Haaijer (1999), the benefits of including the no-choice alternative are: (i) it is possible to scale the utilities between the various choice sets; and (ii) it may make the choice decision more realistic and may lead to better prediction of market penetrations.

Possible disadvantages are: (i) it may lead respondents to avoid difficult choices, which distracts from the validity of the no-choice probability to estimate market shares; and (ii) the no-choice alternative gives no information about preferences for attributes of the choice alternatives, which is the main reason for doing a CE. Also, including the no-choice alternative "presents the problems of how to include it in the design of the choice experiment, and in what way to accommodate it in the choice model" (Haaijer 1999, p. 43). For further discussion of the no-choice alternative, see Chapter 4 of Haaijer (1999).

As discussed above, the no-choice alternative is still controversial, and therefore it is not clear whether it should be included in the choice design. In this survey, the no-choice base alternative is included in every choice set, because the highest priority in this survey is to investigate whether ecotourism is going to be financially successful (see Section 1.4). Unless the no-choice alternative is included, respondents would be required to choose the tour that they like the most, without having an opportunity to decline every alternative. In this case, that they liked one the most does not mean that they are willing to pay for that choice because it is possible that respondents simply chose what they thought was the least bad. In this case, we would not know if the hypothetical tours are attractive enough to make tourists pay their own money.

3.3 Efficient Choice Design

In Section 3.1, three levels of price were set for the three "type of tour" categories, yielding 3*3 = 9 alternatives. In the CE interview, one/some of those 9 alternatives, with the no-choice alternative always present, was shown to the respondents, who were asked to choose the one alternative that they liked the most. Each combination of alternatives is a choice set.   A CE survey consists of one or several choice sets for one respondent. The design of choice sets is called choice design. Constructing an efficient choice design is one of the most important considerations in a CE. Without an efficient choice design, the result would be biased and therefore would be unreliable.

There are two main concerns of developing an efficient choice design. First, it is usually difficult to develop an efficient choice design with a small number of choice sets for a respondent. For instance, showing all possible combinations of alternatives would be efficient, but such an approach is impractical because the number of choice sets becomes huge as the number of alternative increase (Louviere and Woodworth, 1983); because $2^J - J - 1$ choice sets are possible for J alternatives, this approach yields 13 choice sets for 4 alternatives, and 502 choice sets for 9 alternatives. Too many choice sets may make it difficult for respondents to choose reasonably, and there is an argument about how many is "too many" (Hanley et al. 1998), but 502 would definitely be categorized as "too many." Second, properties that characterize efficient choice designs often "conflict so that one cannot be satisfied without degrading the other" (Huber and Zwerina 1996, p. 309). For these reasons, there is no single ideal way to create an efficient choice design.

There are two issues to be resolved: the number of choice sets presented to a respondent, and the combination of alternatives presented in each choice set. Louviere and Woodworth (1983) suggested that, for a CE with a relatively small number of alternatives, fractional factorial designs are helpful to create an efficient choice sets without making the number of the choice sets too large. Fractional factorial designs are statistical way of designing experiments in engineering commonly used to reduce the number of experiments (NIST, 2005), which can be used to create an efficient combination of alternatives with smaller number of choice sets. Still, the same concern exists. That is, while a larger number of choice sets give more efficiency, it is more likely to exhaust respondents, making their choices unreliable. In this study, the 2^{9-5} fractional factorial design for 9 alternatives was employed to create an efficient choice design with 16 choice sets per respondent. Sixteen choice sets have been used in other CE studies (e.g. Louviere and Woodworth 1983). See Table 3.2.

Table 3.2, 2^{9-5} Fractional Factorial Design (Source: NIST, 2005):
"a" represents "absent", "p" represents "present".

	Alternative #	1	2	3	4	5	6	7	8	9
	Tour Type	1-day	1-day	1-day	2-day	2-day	2-day	3-day	3-day	3-day
	Price	$30	$45	$60	$75	$100	$125	$100	$130	$160
Choice Set #										
1		a	a	a	a	a	a	a	a	p
2		p	a	a	a	p	a	p	p	a
3		a	p	a	a	p	p	a	p	a
4		p	p	a	a	a	p	p	a	p
5		a	a	p	a	p	p	p	a	a
6		p	a	p	a	a	p	a	p	p
7		a	p	p	a	a	a	p	p	p
8		p	p	p	a	p	a	a	a	a
9		a	a	a	p	a	p	p	p	a
10		p	a	a	p	p	p	a	a	p
11		a	p	a	p	p	a	p	a	p
12		p	p	a	p	a	a	a	p	a
13		a	a	p	p	p	a	a	p	p
14		p	a	p	p	a	a	p	a	a
15		a	p	p	p	a	p	a	a	a
16		p	p	p	p	p	p	p	p	p

In this design, each alternative is coded as either "present" or "absent" for all choice sets. Literally, "present" means the presence of the alternative in the choice set, and "absent" means the absence of the alternative in the choice set. Accordingly, each choice set consists of the alternatives "present" and the no-choice alternative. However, this table includes choice sets that show alternatives with the same "Type of Tour" at different prices, such as "one-day tour at $30" and "one-day tour at $45". For example, choice set number 4 shows alternatives # 1 and #2 at the same time. In general, the coefficient of price is supposed to be negative, and therefore it is assumed that the utility of the same "Type of Tour" at the lower price is always higher than that at the higher price. Hence if there are more than one same "Type of Tour" in certain choice sets, only an alternative with lowest price was shown, and others were not included and assumed not to be chosen. This manipulation was also necessary to avoid respondents' confusion. Table 3.3 shows the final version of choice sets after the manipulation.

Table 3.3, Final Choice Sets (#16 was not shown)

Choice Set #	Alternative #
1	9, no-choice
2	1,5,7, no-choice
3	2,5,8, no-choice
4	1,6,7, no-choice
5	3,5,7, no-choice
6	1,6,8, no-choice
7	2,7, no-choice
8	1,5, no-choice
9	4,7, no-choice
10	1,4,9, no-choice
11	2,4,7, no-choice
12	1,4,8, no-choice
13	3,4,8, no-choice
14	1,4,7, no-choice
15	2,4, no-choice
16	1,4,7, no-choice

This manipulation, however, yielded two choice sets (#14 and #16) that are identical: they both show alternatives #1, #4, #7, and the no-choice alternative. Therefore, choice set #16 was not shown to the respondents because it makes no sense to make same choice twice. Nevertheless, the result for choice set #16 is necessary. As shown in Table 3.3, choice set #14 and #16 are originally different, and the results for choice set #16 must be in the analysis so that the efficiency of the choice design is maintained. For this reason, the result of choice set #14 was duplicated to be the result of choice set #16 when analyzing the data. The example of a choice set is shown in the next page. The entire choice sets can be found in Appendix I.

Example: Choice Set 2

If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE

TOUR

Uaxactun

$30

(2)

2 DAYS OVERNIGHT

RUIN TOUR

Uaxactun – Tikal

$100

(3)

3 DAYS JUNGLE TOUR

Uaxactun – El Zots – Tikal

$100

(4)

No, I would not join any of them

3.4 Survey Materials and the Logistics of the Survey

After the design of the CE was finished, the information package and questionnaire were developed. The information package included photographs to help the interviewees have an image of the character of Uaxactún and the proposed hypothetical tours, followed by the choice sets. The questionnaire sought information on (i) socioeconomic characteristics (e.g. sex, age, nationality, and daily budget) of the respondents; (ii) their behavior as tourists (e.g. how many travel companies they have, how long they stayed in Petén, and what kind of information sources they used); and (iii) their WTP for entering the village of Uaxactún. Both the information package and the questionnaire were developed in English and in Spanish (see Appendices I – IV).

The interview was conducted as follows. First, the interviewees were shown an information package. After they understood the purpose of this survey and the contents of hypothetical tours, CE was started. After answering one practice problem, fifteen choice sets were given to respondents, and respondents were asked to choose their most preferred alternative in each choice set?. To randomize the order of choice sets shown to the interviewees, they drew cards numbered one to fifteen, and the choice set which corresponded to that number was shown to them. This procedure was repeated until they had drawn all fifteen cards.

After the interview, the questionnaire was given to the interviewees. The survey in English was conducted by the author, and for the Spanish version, Spanish speaking interviewers were trained and supervised by the author.

3.5 Data Collection

The survey was conducted in Tikal National Park during the first week of August 2005. Tikal was selected as the survey place, as opposed to Uaxactún, for two reasons: (i) the extremely low visitation to Uaxactún made it difficult to gather a large enough sample; (ii) because of the geographical proximity of Tikal and Uaxactún, tourists in Tikal can be considered a possible target of future ecotourism in Uaxactún.

The selection of Tikal as the survey place could be a concern, especially with regard to the two-day Tikal-Uaxactún tour (See Section 3.1.1) because tourists in Tikal, of course, had already visited Tikal. It may be positive if tourists liked their experience in Tikal, negative if they had not. Tourist preference for that tour would be affected by their experience in Tikal, though the direction of the effect is not clear. Although some people might think this effect as a bias, it should be considered as a part of tourist preferences. Since most tourists in Petén would visit Tikal, this effect is unavoidable. Rather than being a bias, it should be considered as one characteristic of tourists in Petén

To guarantee random sampling, the interview ideally should have been done at the entrance of the Tikal National Park, where every tourist must pass. Because of the intensity of the survey (15 to 20 minutes per person), however, very few people agreed to take the survey at the entrance. Therefore, the Gran Praza, the main tourist attraction of Tikal National Park, was chosen as the alternative place because it can be considered that almost every tourist would visit there. Since people usually spend at least one hour to see all of the temples in Gran Praza, they were more likely to participate in the survey.

At the end of the survey, 103 interviews from 63 English speaking respondents and 40 Spanish

speaking respondents were conducted. After eliminating four low quality responses [6] , 99 questionnaires were used in the analysis. Among them, 87 were international tourists, and 12 were national tourists.

---

[6] The data was regarded as of low quality either when: (i) it was obvious that a respondent was not taking the survey seriously (e.g. answering the question without looking at a choice set); or (ii) the survey was incomplete, with many missing data.

The four eliminated responses are all from Spanish speakers, making the sample population 63 English-speaking respondents and 36 Spanish-speaking respondents.

CHAPTER 4
ANALYSIS AND DISCUSSION

4.1 Sample Information

The socio-economic information of the respondents is shown in Table 4.1.

Table 4.1, Socio-economic Information of the Sample (n = 99)

Variable	Sample	Mean	Std.dev.	Min	Max
Sex (% Male)	47%				
Age (% < 30 years)	48%	33.08	11.21	18	64
Nationality (%International)	88%				
Daily Budget (% < $40)	54%	$54.02	60.17	$5	$395

Among 99 respondents, 47 (47%) were male, 52 (53%) were female. The average age of the respondents was 33.1 years old, with 18 as the minimum and 64 as the maximum. The age distribution is very right-skewed as shown in Figure 4.2, and about half of the respondents are less than 30 years old.
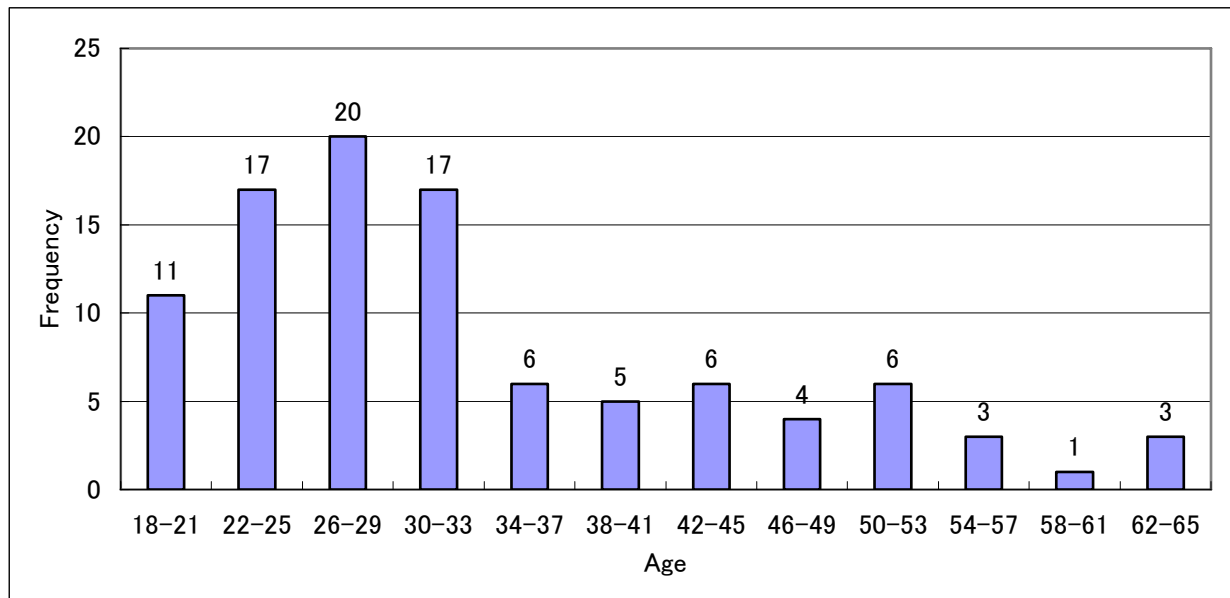
Figure 4.2, Distribution of Age (n = 99)

Figure 4.3 shows the nationality of tourists classified by regions. Among 99 respondents, 87 were international tourists, and 12 tourists were from Guatemala. Most of the international tourists are from either North America or Europe. Classified by nations, USA (18 tourists) was top, followed by Netherlands (11), France (10), then Spain (8). Other than these countries, the number of tourists is less than five for each country.
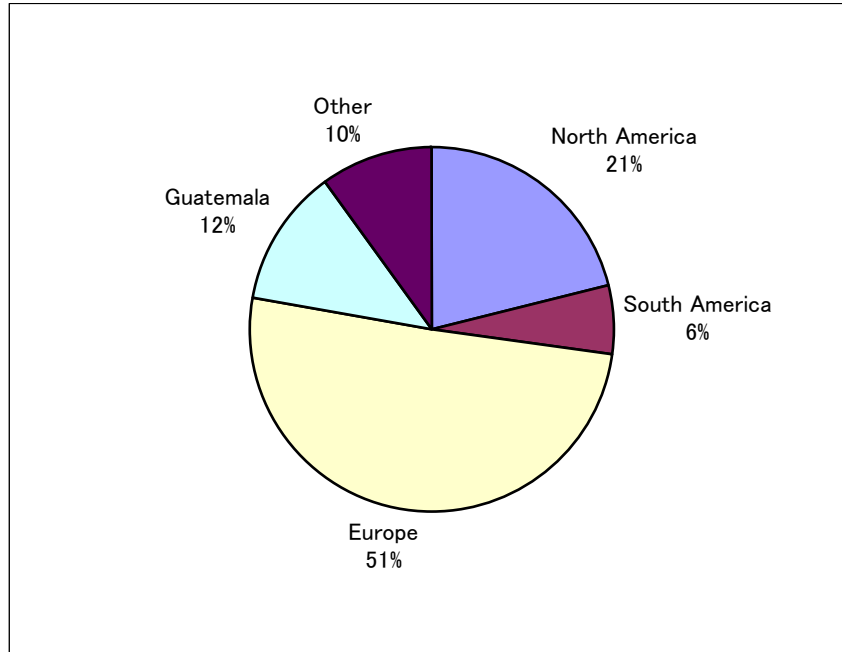
Figure 4.3, Nationality of Respondents

The average daily budget of the respondents was $54, with $5 as the minimum and $395 as the maximum. This average, however, may be misleading because the distribution is bi-modal, as shown in Figure 4.4, dividing tourists into two groups. While some of respondents travel with a very high budget, more than $100 per day, 54% of respondents were traveling with a budget lower than $40 per day. Affluent travelers are likely to have strong demand for modern accommodation, which Uaxactún cannot offer. On the other hand, targeting low-budget travelers would inevitably require low pricing, which would make it difficult to make a profit.
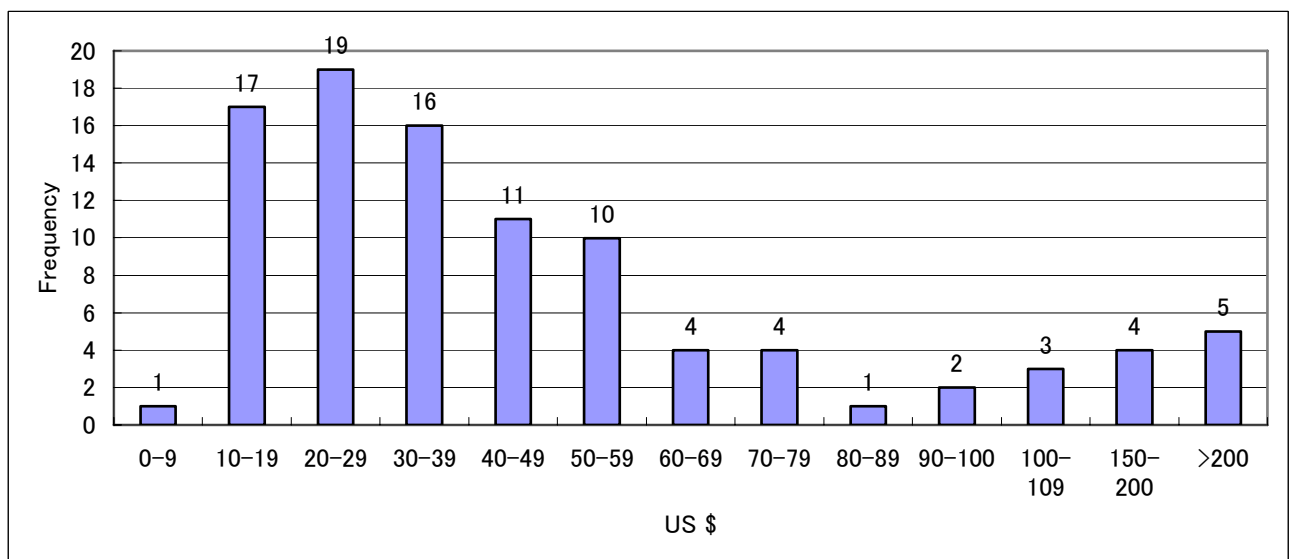
Figure 4.4, Distribution of Daily Budget

4.2 The Results of the Choice Experiments

4.2.1. Background Theory and Data Coding

The collected data were analyzed in order to estimate the parameters of the deterministic component of the utility function. Based on the Lancasterian theory and the random utility theory discussed in Section 2.2, the deterministic component of the utility function for subject j (V_j) is assumed to be linear and estimated as:

$$V_j = \alpha_1\ 1\text{day} + \alpha_2\ 2\text{day} + \alpha_3\ 3\text{day} + \beta\ \text{daily-cost} + \gamma\ \text{no-choice}$$

where α and β represent the vector of coefficients. As discussed in Section 2.2, it is possible to use the multinomial logit model to estimate these coefficients such that the probability of choosing an alternative *i* (choice probability,) can be estimated:

$$\text{Prob}(i) = \frac{\exp(\mu V_i)}{\sum_j \exp(\mu V_j)}$$

where Prob(i) means the probability of choosing an alternative *i*, and μ is a scale parameter usually assumed to be 1, implying constant error variance. Table 4.5 shows the definitions of the variables and how each variable was coded in the choice model.

Table 4.5, Variable Specification and Coding

Variable	Coding Type	Definition
Choice (Y)	*Binary*	*1 if an alternative was chosen*
1day	*Binary*	*1 if an alternative was one-day Uaxactún tour*
2day	*Binary*	*1 if an alternative was two-day Tikal tour*
3day	*Binary*	*1 if an alternative was three-day jungle tour*
Daily cost	*Linear*	*Daily cost of an alternative, US$*
No-choice	*Binary*	*1 if an alternative was 'I would not join any of them'*

All alternatives present in the choice design (see Table 3.2), including the no-choice alternative, were coded as follows: choice, which is the dependent variable of this model, was coded as 1 if an alternative was chosen, otherwise 0 so that it gives the choice probability to alternatives.

The "Type of Tour" attribute (a one-day tour, e.g.) was coded using the binary mode so that α gives the utility of joining each tour. The β represents a generic daily cost coefficient for all alternatives, that is, a constant effect due to daily cost regardless of the type of tour. A daily cost was calculated for each alternative by dividing total cost by the length of the tour. For instance, the daily cost of the two-day Tikal tour was found by dividing the total cost by two, and that of three-day jungle tour was found by dividing total cost by three (see Table 4.6).

Table 4.6, Daily Costs Used for Each Type of Tour:
Inside the parenthesis is the entire cost

	Low	Middle	High
One-day Tour	$30 ($30)	$45 ($45)	$60 ($60)
Two-day Tour	$37.5($75)	$50($100)	$62.5($125)
Three-day Tour	$33.3($100)	$43.3($130)	$53.3($160)

As discussed in Section 3.2, how to accommodate the no-choice alternative in the choice model is a concern. To code no-choice as a series of zeros is one idea, but this manipulation may affect the results of other attributes, producing misleading results. In response to this problem, Haaijer (1999) found that adding a constant to the design for the no-choice alternative can solve this problem; such a constant is called no-choice constant. Therefore, a no-choice constant was included in this study.

The descriptive statistics for these variables are given in Table 4.7.

Table 4.7, Descriptive Statistics

Alternative	Times Chosen (Percent)	Times Chosen at Low price	Times Chosen at Middle Price	Times Chosen at High Price
One-day Tour	328 (21.4)	267	50	11
Two-day Tour	490 (32.0)	366	95	29
Three-day Tour	377 (24.6)	303	50	24
No-choice Alternative	337 (22.0)	N/A	N/A	N/A
Total Choices made	1532 (100)			

Overall, 1584 (16*99) choices were made by respondents, including 52 unavailable data[7]. Among the rest of 1532, 337 (22.0%) were the no-choice alternative ("I would not join any of them"), and 1195 (78.0%) were one of the three tours. The mean daily cost for those 1195 tours was $37.45, with standard deviation 7.61. This is consistent that most of tours were chosen at low prices, as shown in Table 4.7.

According to Haaijer (1999), a choice probability obtained from a choice design with the no-choice alternative can be interpreted as market share, although he suggested the use of the word *preference share* because market shares depend on many other things. As he discussed, considering this 78.0% as the potential market share of Uaxactún ecotourism is misleading. This survey did not include any other Maya ruin sites in the alternatives shown to the interviewees to avoid making the survey too complex. Therefore, respondents' decisions in this survey were basically "Uaxactún or nothing". In a real market situation, however, tourists' decision would be made through the comparison with any other tourist attractions, including other Maya places such as Seibal and El Mirador. The relative strength of Uaxactún when compared to other options should be investigated.

Finally, the multinomial logit model was estimated using STATA, version 5.0.

---

[7] Several mismarkings were caused because of the unsophisticated format of the answer sheet. It must be noted that efficiency of the choice design was partly lost by having the unavailable data.

4.2.2. The Empirical Results of Choice Experiment

The sample was initially divided into two groups, international tourists (n = 87) and national tourists (n = 12) because it is possible that national tourists and international tourists have different preferences, as Hearne and Salinas (2001) found. In such a case, it would be inaccurate to discuss the preferences of pooled sample. The results of the multinomial logit model are in Table 4.8.

Table 4.8, Results of Multinomial Logit Model

Model	International tourists n=87			National tourists n=12		
Variable	Coefficient	Standard error	P>|z|	Coefficient	Standard error	P>|z|
1day	3.841	0.194	0.000	2.865	0.485	0.000
2day	5.377	0.238	0.000	4.835	0.597	0.000
3day	4.247	0.213	0.000	3.642	0.530	0.000
Daily cost	-0.147	0.005	0.000	-0.124	0.013	0.000
No-choice constant	-1.212	0.064	0.000	-1.875	0.224	0.000
Statistic						
Log-Likelihood	-2931.6661			-376.1423		
Pseudo R2	0.4377			0.4312		

First of all, the equality of the multinomial logit model was tested by the likelihood ratio test of the form (Swait and Louviere, 1993):

$$ - 2[\text{loglikelihood (pooled data)} - \text{loglikelihood (international)} - \text{loglikelihood (national)}] $$
$$ = 20.479 \sim \chi^2_6 $$

where the six degrees of freedom represent the five parameters and the varying scale parameter μ. Since the test statistic, 20.479, is larger than the critical value for the χ^2_6 distribution at the 95% confidence level, 12.592, the equality of the combined coefficients and scale parameters between international tourists and national tourists was rejected. Therefore, the analysis was conducted separately for the two samples. Each coefficient reached the 0.01 level of significance (see Table 4.7).

Although the statistical equality of the two populations was rejected, they gave similar results. First, in both populations, the two-day Tikal tour has the highest utility, followed by the three-day Jungle tour, and then the one-day Uaxactún tour. Second, the coefficient of daily cost was negative as expected, showing a preference for lower prices.

It must be noted, however, that it is inappropriate to directly compare the coefficients of these two models. Since the scale parameter is arbitrarily assumed to be one (see Section 2.2) in both models, the estimated parameters of two models are confounded with their respective scale factors (Adamowicz et al. 1998). For this reason, marginal willingness to pay (MWTP) was used to compare the difference of magnitude of preferences between international tourists and national tourists.

4.2.3 Marginal Willingness to Pay

MWTP can be estimated from the marginal rate of substitution between coefficient α and the coefficient for the daily cost, β, in the form of:

$$MWTP_i = -\frac{\alpha_i}{\beta}$$

where the value of β represents the marginal (dis)utility of daily cost.

Since these MWTPs are estimated on a *per day* basis, they were multiplied by the number of days each tour takes to estimate MWTP for each tour on a *per tour* basis. Finally, the differences between these MWTPs and low-level prices were calculated because low-level prices can be considered to be the bottom line for the ecotourism in Uaxactún to be profitable. The MWTP estimates are in Table 4.9.

Table 4.9, Marginal Willingness to Pay for Each Tour

International tourists n=87

	MWTP/day	Rank	MWTP/tour	Low Price	Difference
1day	26.215	3	26.215	30	-3.785
2day	36.697	1	73.394	75	-1.606
3day	28.982	2	86.945	100	-13.055

National tourists n=12

	MWTP/day	Rank	MWTP/tour	Low Price	Difference
1day	23.040	3	23.040	30	-6.960
2day	38.880	1	77.760	75	2.760
3day	29.286	2	87.857	100	-12.143

Overall, the magnitudes of MWTPs are similar in both models. Thus, it seems that preferences are similar for international tourists and national tourists both in direction and magnitude.

More results can be drawn from the comparison of MWTPs and low-level prices. First, only one MWTP, that is, the MWTP for the two-day Tikal tour for Guatemalan tourists, exceeded the low-level price; all the other MWTPs fell below the low-level prices. The low-level prices were developed to be as realistic as possible, using information from tours offered in Flores and prospective costs (see Section 3.1.2). Although definitive conclusion cannot be reached without more detailed cost estimation or without estimating the variance of these estimates, these results of MWTP suggest that ecotourism may not be profitable at prices that consumers are willing to pay.

Second, while the three-day Jungle tour has a higher utility than the one-day tour does in the choice model, the likely amount that consumers are willing to pay for the tour appears to be less than the cost of providing it in both samples. The daily cost for the three-day jungle tour, $33.3 per day, is higher than that of the one-day tour, $30, because multi-day tours have to include the cost of accommodation in their price. Again, the costs were developed based on actual prices of tours in Flores, and it appears no three-day jungle tour is being offered at a price less than $100. This may suggest that the three-day jungle tour, despite its attractive feature for tourists, is more likely to be

rejected at the cost tourists would have to pay. If the Uaxactún community pursues its plan to introduce multi-day jungle tour, this possibility should be taken into consideration.

4.3 Further Analysis Using a Debriefing Questionnaire

This section provides further analysis of tourists' preferences using the results of the debriefing questionnaire. Although two separated samples should ideally be used in this section as in the previous section, the very small sample of national tourists made it difficult to analyze their preferences on their own. For this reason, pooled data were used for this section.

First, Table 4.10 indicates how the 99 respondents answered the debriefing question which asked their attitudes while they were answering the CE.

Table 4.10, Attitudes toward Choices (Respondents could choose multiple answers)

#	Description	Frequency of "Yes" (Percent)
1	*I mainly chose the tour which offers the least <u>daily</u> cost*	43
2	*1-day Uaxactun tour was most attractive for me*	16
3	*2-day Tikal – Uaxactun tour was most attractive for me*	44
4	*3-day Jungle trecking tour to El Zots was most attractive for me*	37
5	*Uaxactún is not an attractive place for me*	6
6	*Most of the offered tours are more expensive than my daily budget*	37
7	*I am not interested in a jungle trekking tour*	19
8	*I am not interested in the cultural components of the tour*	5

Slightly less than half of respondents answered question #1 as yes, indicating that the price was the most decisive factor when they chose an alternative. Results for questions #2, #3, and #4 support the inference from the multinomial logit model that the two-day Tikal tour is the most popular choice, followed by the three-day jungle tour and then the one-day Uaxactún tour. Very few showed their no interest in Uaxactún or cultural components of the tour. These results suggest that Uaxactún and its culture are interesting for most tourists, though whether tourists pay for them is different matter. More than one-third of respondents said that most of the offered tours were more expensive than their daily budgets. This is consistent with the fact that 37 respondents claimed that their daily budget is less than $30 (see Figure 4.4), which is the lowest daily cost. Even those who claimed low daily budget, however, sometimes chose to join the tour, indicating their daily budget is not strictly binding. Considering that half of the respondents were female and that some of the respondents were very old, it makes sense that some people showed their no interest in a jungle trekking, which is physically very tough.

Preferred Activities

Table 4.10 shows which components of the tour were attractive to respondents. Sleeping in a ruin is the most popular activity, followed by the 25m high observatory, learning how to make traditional food, and then horse riding to the Maya Well. Because sleeping in a ruin could be a very appealing tourist attraction, it may be a good idea for the Uaxactún community to negotiate with INGUAT so that they can offer tours which include such an activity.

Table 4.11, Preferred Activities (Respondents could choose multiple answers)

Q: Which activity was attractive for you?

Activities	Frequency (Percent)
Horse riding to Mayan Well	50 (51)
Museum	22 (22)
Learning how to make muñeca	21 (21)
Bird watching	39 (39)
Observatory	61 (61)
Visiting xate plantation	19 (19)
Learning how to make traditional food	51 (52)
Sleeping in a ruin	67 (68)

Language

Sixty-five respondents chose to answer the survey in English. These respondents got questions asking about their Spanish skill to investigate the importance of English to them. Forty-three (66%) indicated that they can speak daily-conversation-level Spanish or are traveling with someone who can speak Spanish. Thirty (46%) said that an English-speaking guide is important or very important, while 35 (54%) said that an English-speaking guide is not important or of little importance (see Table 4.12). Overall, 30 (34%) out of 87 international tourists consider an English-speaking guide important. If the Uaxactún community introduces ecotourism, it may be important for them to train English-speaking guides so that they can recruit as many tourists as possible.

Table 4.12, Importance of English Guide (n = 65)

Importance	Frequency (Percent)
Not Important	15 (23)
Little Important	20 (31)
Important	16 (25)
Very Important	14 (21)

Tourist Behavior in Petén

Table 4.13 includes responses to questions on other Maya sites tourists visited or planned to visit. Most tourists come to Petén only to visit Tikal and leave Petén without seeing any other Maya ruin sites (86% of respondents); only 14% of tourists visited other Maya ruin sites.

Table 4.13, Visited Maya Ruin Sites (Respondents could choose multiple answers)

Maya Ruin Sites	Frequency
El Zots	0
El Mirador	4
Ceibal	7
Yaxha	3
Uaxactun	6
El Peru	0
Other	0
Tikal Only	85

The length of stay in Petén shown in Figure 4.14 also supports this result. Eighty-five (86%) tourists left Petén within three days. Since people usually spend one to two days in Tikal and one extra day to move to the next destination, these data also suggest that most tourists come to Petén only to visit Tikal. Considering the difference of scale between Uaxactún and Tikal, that only a small portion of tourists in Petén would visit Uaxactún does not seem a big problem. This result, however, imposes further questions: who should Uaxactún ecotourism target and how should the community advertise?
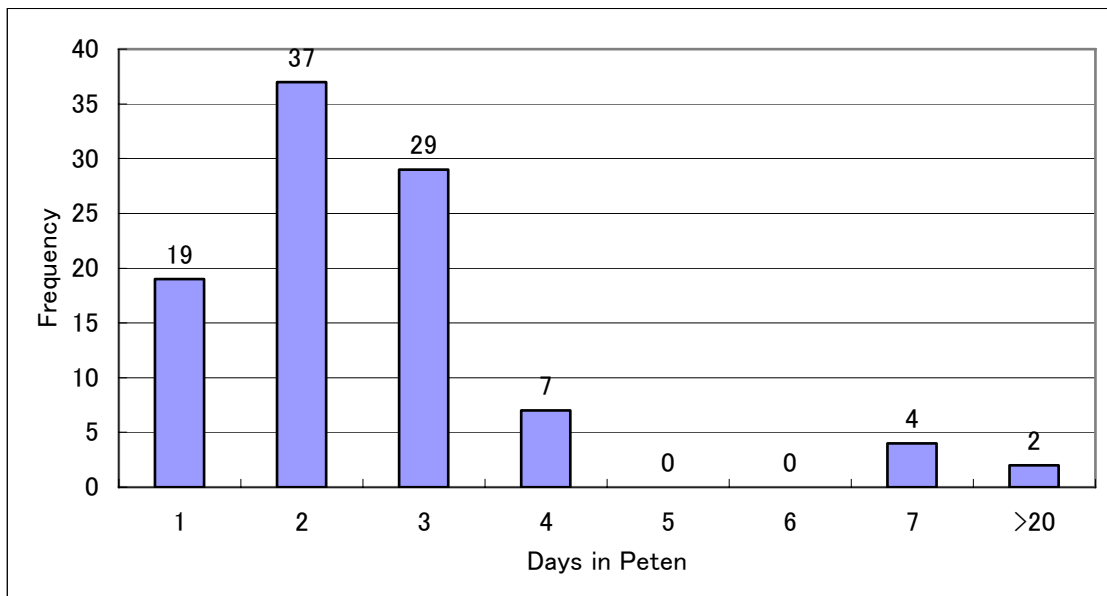
Figure 4.14, Days in Petén

Targeting long-term travelers would be one idea. Of the 6 tourists who stayed in Petén longer than 7 days (see Figure 4.14), 5 visited one or more Maya ruins other than Tikal. On the other hand, all of those 5 were traveling with a daily budget less than $30 (4 of them were less than $20), suggesting that they are very price-sensitive travelers. Probably such low-budget travelers would not join any kind of organized tour because organized tours are usually more expensive than arranging everything by oneself. It may be difficult to offer profitable tourism to them.

Another possibility is to change the plans of short-term travelers. As shown in Table 4.15, most tourists are traveling with a flexible plan; it may be possible to change their minds if the Uaxactún ecotourism is advertised appropriately.

Table 4.15, Flexibility of Tourists

Q: How did you make your travel plans?	
Answer	Frequency
I decided all plans before I started travelling	15
I made some plans, but am somewhat flexible	39
I made no reservations before I started travelling	39

Then, where should they advertise? Table 4.16 shows what information sources tourists use. Guide books are the most popular information source, followed by friends and then the Internet. Advertisements in guide books in the USA, Netherlands, and France might be effective.

Table 4.16, Information Source (Respondents could choose multiple answers)

Information Source	Frequency (Percent)
Travel Agency in Your Country	11 (11)
Guide Book	75 (76)
Friends	63 (64)
Local Travel Agency	26 (26)
Internet	51 (52)

In sum, these tourist characteristics in Petén suggest the necessity of a clear marketing strategy.

4.4. Willingness to Pay for the Entrance Fee for Uaxactún

Finally, tourist willingness to pay (WTP) for an entrance fee for Uaxactún was investigated. As discussed in Section 1.3.4, Uaxactún is not charging an entrance fee, but it may start charging one because it could be another source of revenue for the community. In such a case, tourist WTP for the entrance fee would be useful information when they decide the amount to charge.

This study used the "payment card" contingent valuation method (CVM). Payment card CVM lists a number of possible WTP values on a card and ask the respondent to pick the amount that best represents his willingness to pay. There are some limitations with this method: first, the range of values and the size of intervals can affect responses; second, value responses take the form of interval, rather than point, data, which causes modeling issues (Cameron and Huppert 1988). Despite these drawbacks, payment card CVM is a common way of eliciting WTP (FAO, 2000).

In this survey, the valuation question was: "If you were asked to pay a park entrance fee for Uaxactun, how much would you be willing to pay? This entrance fee would be used for community development projects in Uaxactun, such as the constructing garbage disposal facilities, or paying community members to maintain the ruins. Choose only one." The listed values were 0Q, 5Q, 10Q, 15Q, 20Q, 25Q, 30Q, 40Q, 50Q, 75Q, 100Q, and 200Q (see Appendix II).   From the response, it is

possible to estimate the interval in which their valuation lies. For example, if 10Q was chosen, it is assumed that their true value at least 10Q but less than 15Q (Cameron and Huppert 1988). Since it is not within the scope of this survey to explain tourist WTP using a model, only averages were calculated using the midpoint of interval as their WTP. It must be noted, however, that using the midpoint of interval is not the best method to estimate WTP (Cameron and Huppert, 1988), especially when open-ended interval for upper value is used. In this survey, however, there is no concern over an open-ended interval because nobody chose 200Q (see Table 4.17).

Table 4.17, Interval Selection Frequencies

Interval (Q)	Midpoint	National (n = 12)	International (n = 87)	Pool (n = 99)
		Raw frequency		
0 – 5	2.5	0	0	0
5 – 10	7.5	0	1	1
10 – 15	12.5	3	3	6
15 – 20	17.5	2	5	7
20 – 25	22.5	3	11	14
25 – 30	27.5	2	19	21
30 – 40	35	0	25	25
40 – 50	45	0	7	7
50 – 75	62.5	1	14	15
75 – 100	87.5	0	0	0
100 – 200	150	1	2	3
200+	N/A	0	0	0
Mean		33.96	37.56	37.12

As shown in Table 6.4, the average of WTP for the park entrance fee was 33.96Q for national tourists, 37.56Q for international tourists, and 37.12Q for pooled sample. As in the case of CE analysis, two samples (national/international tourists) were assumed to have different WTP, but the equality of the averages was not rejected (P = 0.75). Therefore, there seems to be no difference of WTP between national tourists and international tourists. This result is interesting considering that national tourists have to pay only 15Q for entering the Tikal National Park while international tourists are charged 50Q. Although the reliability of this result could be questioned because of the small sample of national tourists, it may be the case that national tourists have a higher WTP than they are considered to do.

4.5 Methodological Issues

Some methodological issues of this survey must be noted. They are:

(1) Validity of Using Multinomial Logit Modal

In this research, the Multinomial Logit Model (MNL) was used to estimate choice probability under the assumption of Independence of Irrelevant Alternatives (IIA). The IIA property "implies that the probability of choosing one alternative over another must be constant regardless of whatever other

alternatives are present" (Haaijer 1999, p27).   This assumption may not hold. Although assuming the IIA property is common in published literatures (e.g. Hearne and Salinas 2002), some alternatives are available. For example, Multinomial Probit Model does not require the IIA property. In the future study, these issues should be taken into consideration.

(2) Sample Bias

As discussed in Section 3.5, the interviews of tourists were conducted in the first week of August. Since the survey was conducted in a very short time period, the sample of this survey may have a seasonal bias. For example, there may be an over-representation of some nationality in the sample if the first week of August happens to be a vacation season for some countries. The implication of this survey may not be applicable to other periods over the year. Also, the sample size was not large. Although the results were statistically significant, this is because each respondent made sixteen choices. Larger sample collected through a year should be used in the future surveys.

(3) Hypothetical Setting of Choice Experiment

As discussed, this study used three hypothetical tours, and CE was conducted under the assumption that the price of the tours includes all costs, such as transportation, meals, accommodations, and guides (see Appendix II). Although this study design was necessary to see the pure attractiveness of the Uaxactún ecotourism, it imposes several restrictions.

First of all, it must be noted that the quality of transportation, meals and accommodations, which is not included in this study design, may also affect tourists' decisions. Tourist preferences for those services should be investigated in a future study.

Secondly, this assumption may be impractical with regard to monetary/human resources available for the Uaxactún community. At current stage, it may be impossible for them to provide all three tours with transportation and meals.

These issues are potential, not actual, concerns. Overall, the choice experiment interview was well understood and performed by the respondents without any problems.

CHAPTER 5
CONCLUSION

5.1 Inferences from the Analysis

In the analysis of CE, it turned out that (i) the two-day Tikal tour had the highest utility, followed by the three-day Jungle tour, and then the one-day Uaxactún tour; (ii) preferences were similar for international tourists and national tourists both in direction and magnitude; and (iii) most of tourist MWTPs were lower than low-level prices, which were developed as the lowest price range feasible for the Uaxactún community, indicating that it would be difficult for ecotourism in Uaxactún to be profitable.

However, there are some ways that the town may be able to improve the likelihood that it is profitable. As the analysis showed, a general characteristic of tourists in Petén is that: (i) they leave Petén within three days, without visiting Maya ruins other than Tikal; (ii) they are traveling in a somewhat flexible schedule; and (iii) they are relying on information sources such as guide book or the internet. These results suggest that the Uaxactún ecotourism should target tourists that would have a higher WTP, so that they can efficiently advertise its ecotourism to them. Considering the difference of scale between Tikal and Uaxactún, Uaxactún does not have to capture all tourists in Tikal; just small fragment of them may be enough to be profitable. Advertising in guide books and making an internet website could be one idea, but further market research would be necessary.

5.2 Recommendations

Considering the possible initial investment (e.g. providing transportation from Flores to Uaxactún, advertising, or training guides) for introducing an ecotourism in Uaxactún, it may be very difficult, both in terms of financial and human resource, to manage all things only with local people. In such a case, collaboration with outside travel companies may be one idea. There seems to be a belief among ecotourism analysts and NGOs, however, that more autonomous tourism is better than paternalistic tourism, in which local groups are dependent on outside tourist agencies, because autonomous tourism is expected to create larger economic benefits (Colvin 1996). As Wunder (2000) suggested, however, this does not necessarily hold. Although his conclusion was based on very limited sample and therefore may not be generalized, he did not find a correlation between the degree of local participation and local income. Hence, collaborating with outside tourist agencies could be an option when introducing ecotourism in Uaxactún. In such a case, of course, care must be taken not to construct an unfair partnership.

Finally, the financial aspect, though very important on its own, is just one factor of ecotourism, and not the entire picture of ecotourism, as discussed in Chapter 1. Environmental/social impacts, along with the introduction of ecotourism to the village, must also be taken into consideration. For example, in other studies, a small number of local individuals are profiting substantially from tourism (Madrigal 1994), indicating social structure is also an important factor for the success of ecotourism. Successful financial results are necessary, but not sufficient for the community to benefit from ecotourism.

BIBLIOGRAPHY

Adamowicz, W., Louviere, J., and Williams, M. (1994) 'Combining Revealed and Stated Preference Methods for Valuing Environmental Amenities', *Journal of Environmental Economics and Management* 26(3): 271-292

Adamowicz, W., Boxall, P., Williams, M., and Louviere, J. (1998) 'Stated Preference Approaches for Measuring Passive Use Values: Choice Experiments and Contingent Valuation', *American Journal of Agricultural Economics* 80(1): 64-75

Alexander, E., S. (2000) 'Resident attitudes towards conservation and black hawler monkeys in Belize: the Community Baboon Sanctuary', *Environmental Conservation* 27(4): 341-350

Blamey, R., K. (1997) 'Ecotourism: The Search for an Operational Definition', *Journal of Sustainable Tourism* 5: 109-130

Boxall, P. et al. (1996) 'A comparison of stated preference methods for environmental valuation', Ecological Economics 18: 243-253

Buckley, R. (1994) 'A Framework for Ecotourism', *Annals of Tourism Research* 21(3): 661-665

Campbell, L. (1999) 'Ecotourism in Rural Developing Communities', *Annals of Tourism Research* 26(3): 534-553

Colvin, G. (1996) 'Indigenous ecotourism: the Capirona programme in Napo province Ecuador', Unasylva 187(47), FAO, Rome.

Haaijer, M. (1999) 'Modeling conjoint choice experiments with the probit model', Dissertation, University of Groningen
http://irs.ub.rug.nl/ppn/182404854 (Received on 3/8/2006)

Hanley, N., Wright R., and Adamowicz, V. (1998) 'Using Choice Experiments to Value the Environment', *Environmental and Resource Economics* 11(3-4): 413-428.

Hearne, R. and Salinas, Z. (2002) 'The use of choice experiments in the analysis of tourist preferences for ecotourism development in Costa Rica', *Journal of Environmental Management* 65: 153-163.

Huber, J. and Zwerina, K. (1996) 'The Importance of Utility Balance in Efficient Choice Designs', *Journal of Marketing Research* 33: 307-317

Kiss, A. (2004), 'Is community-based ecotourism a good use of biodiversity conservation funds?', *TRENDS in Ecology and Evolution* 19(5): 232-237

Lancaster, K. (1996) 'A New Approach to Consumer Theory', *Journal of Political Economy* 74: 132-157.

Louviere, J. and Woodworth, G. (1983) 'Design and Analysis of Simulated Consumer Choice or Allocation Experiments: An Approach Based of Aggregate Data', *Journal of Marketing Research* 20(4): 350-367

Madrigal, R. (1994) 'Residents' Perceptions and the Role of Government', *Annals of Tourism Research* 22: 86-102

Manski, C. (1977) 'The Structure of Random Utility Models', *Theory and Decision* 8: 229-254.

McFadden, D. (1974) 'Conditional logit analysis of qualitative choice behavior', in P. Zarembka, ed., *Frontiers in Econometrics*, Academic Press, New York

Salafsky, N. et al. (2001) 'A Systematic Test of an Enterprise Strategy for Community-Based Biodiversity Conservation', *Conservation Biology* 15(6): 1585-1595

Shibasaki, S. and Nagata, S. (2005) 'Reconsidering of the Definition of Ecotourism: Is Ecotourism a sustainable tourism for local area?', *Ringyou Keizai* 57(10): 2-21

Swait, J. and Louviere, J. (1993) 'The Role of the Scale Parameter in the Estimation and Comparison of Multinomial Logit Models', *Journal of Marketing Research* 30(3): 305-314

Taylor, J. et al. (2003) 'The Economics of Ecotourism: A Galapagos Islands Economy-Wide Perspective', *Economic Development and Cultural Change* 51: 977–997

Thurstone, L. (1927) 'A Law of Comparative Judgment', *Psychological Review* 4: 273-286.

Weaver, D. (1999), 'Magnitude of Ecotourism in Costa Rica and Kenya', *Annals of Tourism Research* 26(4): 792-816

Wunder, S. (2000), 'Ecotourism and Economic Incentives − An Empirical Approach', *Ecological Economics* 32: 465-479

Websites
Call, W. (2004) 'Seeing the Forest, Not Just the Trees − A Guatemalan Village and Conservation', *Terrain. org*.
http://www.terrain.org/articles/14/call.htm (Received on 6/20/2006)

Forest Society – Uaxactun Ecotourism Project
http://www.ecotourism-adventure.com/forest.htm#Uaxactun%20Ecotourism%20Project#Uaxactun%20Ecotourism%20Project (Received on 7/02/2006)

NIST/SEMATECH e-Handbook of Statistical Methods
http://www.itl.nist.gov/div898/handbook/ (Received on 7/15/2005)

Non-Published Documents

Litow, P., 'Food Security and Household Livelihood Strategies in the Maya Biosphere Reserve Community of Uaxactún, Petén, Guatemala', *Wildlife Conservation Society, Flores, Petén, Guatemala*

McNab, B. R., 'The Secondary impacts of Extraction Industries in the Maya Biosphere Reserve', *Wildlife Conservation Society, Flores, Petén, Guatemala*

Appendix I
Information Package in English

1 DAY RUIN – CULTURAL TOUR
Uaxactún

This 1 day trip introduces the history and culture of Uaxactún.

Early in the morning, you will leave Flores. After a 3 hour drive to Uaxactún, you will take a horse ride in which you will visit a Mayan well, which is made in 600 B.C. Then, you will spend the rest of the morning visiting the oldest astronomy observatory in Mesoamerica and other ruins, including palaces and temples.

After having lunch, you will visit a Xate plantation to see how modern day residents of Uaxactún make a living.

Then, you will visit the pottery museum with polychrome ceramics from the northern lowland of Petén.

Finally, on the way back to Flores, you will stop by a 25m high observatory from which you can look at the tropical rain forest below and the temples of Tikal in the distance.

2 DAYS OVERNIGHT RUIN TOUR
Tikal – Uaxactún

This 2 day trip will take you to Tikal and Uaxactún and will give you the opportunity to learn about the culture of modern day Uaxactún.

1st day
Early in the morning, you will leave Flores to go to Tikal to see the largest Mayan temples. At 3pm, you will be taken to Uaxactún.

After dinner in Uaxactún, you will be brought to the ruins and will stay the night there with local guides. With luck, you will be able to explore the ruins by moonlight.

2nd day
You will spend the morning watching the several species of tropical birds that live around the ruins.

During the day you will cook traditional foods, such as tortillas and tamales, out of local ingredients, under the instruction of local residents.

You will also learn how make *munieca*, a traditional doll that is made from natural products.

On the way back to Flores, you will stop by the 25m observatory.

3 DAYS JUNGLE TOUR
Uaxactún – El Zots – Tikal

This 3 day trip will take you to many ruins, including those in Uaxactún, El Zots and Tikal.

1st day
Early in the morning, you leave Flores for Uaxactún. After a 3 hour drive, you will visit the ruins there.

In the afternoon, you will be driven to El Zots and will sleep in the camp.

2nd day
You will spend the whole second day in El Zots, exploring Mayan ruins. In the afternoon, you can see millions of bats. You will sleep in the camp.

3rd day
You will hike 7 hours to Tikal from El Zots.   After seeing the ruins in Tikal you will be taken back to Flores.

Practice Question
If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE TOUR
Uaxactun
$40

(2)

2 DAYS OVERNIGHT RUIN TOUR
Uaxactun – Tikal
$110

(3)

3 DAYS JUNGLE TOUR
Uaxactun – El Zots – Tikal
$150

(4)

No, I would not join any of them

Choice Set 1
If you are offered these tours, which would you choose?

(1)

> 3 DAYS JUNGLE TOUR
> Uaxactun – El Zots – Tikal
>
> **$160**

(2)

> No, I would not join any of them

Choice Set 2
If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE TOUR
Uaxactun
$30

(2)

2 DAYS OVERNIGHT RUIN TOUR
Uaxactun – Tikal
$100

(3)

3 DAYS JUNGLE TOUR
Uaxactun – El Zots – Tikal
$100

(4)

No, I would not join any of them

Choice Set 3
If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE TOUR

Uaxactun

$45

(2)

2 DAYS OVERNIGHT RUIN TOUR

Uaxactun – Tikal

$100

(3)

3 DAYS JUNGLE TOUR
Uaxactun – El Zots – Tikal

$130

(4)

No, I would not join any of them

Choice Set 4
If you are offered these tours, which would you choose?

(1)

> 1 DAY RUIN & CULTURE TOUR
> Uaxactun
>
> **$30**

(2)

> 2 DAYS OVERNIGHT RUIN TOUR
> Uaxactun – Tikal
>
> **$125**

(3)

> 3 DAYS JUNGLE TOUR
> Uaxactun – El Zots – Tikal
>
> **$100**

(4)

> No, I would not join any of them

Choice Set 5
If you are offered these tours, which would you choose?

(1)

> 1 DAY RUIN & CULTURE TOUR
> Uaxactun
>
> **$60**

(2)

> 2 DAYS OVERNIGHT RUIN TOUR
> Uaxactun – Tikal
>
> **$100**

(3)

> 3 DAYS JUNGLE TOUR
> Uaxactun – El Zots – Tikal
>
> **$100**

(4)

> No, I would not join any of them

Choice Set 6
If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE TOUR
Uaxactun

$30

(2)

2 DAYS OVERNIGHT RUIN TOUR
Uaxactun – Tikal

$125

(3)

3 DAYS JUNGLE TOUR
Uaxactun – El Zots – Tikal

$130

(4)

No, I would not join any of them

Choice Set 7
If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE TOUR
Uaxactun

$45

(2)

3 DAYS JUNGLE TOUR
Uaxactun – El Zots – Tikal

$100

(3)

No, I would not join any of them

Choice Set 8
If you are offered these tours, which would you choose?

(1)
1 DAY RUIN & CULTURE TOUR
Uaxactun

$30

(2)
2 DAYS OVERNIGHT RUIN TOUR
Uaxactun – Tikal

$100

(3)
No, I would not join any of them

Choice Set 9
If you are offered these tours, which would you choose?

(1)

> **2 DAYS OVERNIGHT RUIN TOUR**
> Uaxactun – Tikal
>
> **$75**

(2)

> **3 DAYS JUNGLE TOUR**
> Uaxactun – El Zots – Tikal
>
> **$100**

(3)

> No, I would not join any of them

Choice Set 10
If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE TOUR
Uaxactun
$30

(2)

2 DAYS OVERNIGHT RUIN TOUR
Uaxactun – Tikal
$75

(3)

3 DAYS JUNGLE TOUR
Uaxactun – El Zots – Tikal
$160

(4)

No, I would not join any of them

Choice Set 11
If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE TOUR
Uaxactun
$45

(2)

2 DAYS OVERNIGHT RUIN TOUR
Uaxactun – Tikal
$75

(3)

3 DAYS JUNGLE TOUR
Uaxactun – El Zots – Tikal
$100

(4)

No, I would not join any of them

Choice Set 12
If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE TOUR
Uaxactun

$30

(2)

2 DAYS OVERNIGHT RUIN TOUR
Uaxactun – Tikal

$75

(3)

3 DAYS JUNGLE TOUR
Uaxactun – El Zots – Tikal

$130

(4)

No, I would not join any of them

Choice Set 13

If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE TOUR

Uaxactun

$60

(2)

2 DAYS OVERNIGHT RUIN TOUR

Uaxactun – Tikal

$75

(3)

3 DAYS JUNGLE TOUR

Uaxactun – El Zots – Tikal

$130

(4)

No, I would not join any of them

Choice Set 14
If you are offered these tours, which would you choose?

(1)

1 DAY RUIN & CULTURE TOUR
Uaxactun

$30

(2)

2 DAYS OVERNIGHT RUIN TOUR
Uaxactun – Tikal

$75

(3)

3 DAYS JUNGLE TOUR
Uaxactun – El Zots – Tikal

$100

(4)

No, I would not join any of them

Choice Set 15

If you are offered these tours, which would you choose?

(1)

| 1 DAY RUIN & CULTURE TOUR |
| Uaxactun |
| **$45** |

(2)

| 2 DAYS OVERNIGHT RUIN TOUR |
| Uaxactun – Tikal |
| **$75** |

(3)

| No, I would not join any of them |

Appendix II
Following Questionnaire in English

Section 1

In section 1, you will be asked to choose one tour that you would join out of a few choices.

There are three types of tours:
- One day ruin and cultural trip to Uaxactun
- Two day ruin trip to Tikal and Uaxactun
- Three day jungle trekking trip to Uaxactun, El Zots, and Tikal.

If none of the offered tours are attractive to you, you can choose the "Don´t join" option. Assume that the price of the tour includes all costs, such as transportation, meals, accommodations, and guides.

Although the same tour will be offered at different prices, assume that the contents and service level of the tour is the same even though the price changes. (e.g. 1 day Uaxactun ruin trip for $30 offers the same contents and services as a 1day ruin trip for $45)

If you have any question, please ask the interviewer.

Thanks, we appreciate your help.

_____

For interviewer

Choice set 1	1 ( )			No ( )
Choice set 2	1 ( )	2 ( )	3 ( )	No ( )
Choice set 3	1 ( )	2 ( )	3 ( )	No ( )
Choice set 4	1 ( )	2 ( )	3 ( )	No ( )
Choice set 5	1 ( )	2 ( )	3 ( )	No ( )
Choice set 6	1 ( )	2 ( )	3 ( )	No ( )
Choice set 7	1 ( )	2 ( )		No ( )
Choice set 8	1 ( )	2 ( )		No ( )
Choice set 9	1 ( )	2 ( )		No ( )
Choice set 10	1 ( )	2 ( )	3 ( )	No ( )
Choice set 11	1 ( )	2 ( )	3 ( )	No ( )
Choice set 12	1 ( )	2 ( )	3 ( )	No ( )
Choice set 13	1 ( )	2 ( )	3 ( )	No ( )
Choice set 14	1 ( )	2 ( )	3 ( )	No ( )
Choice set 15	1 ( )	2 ( )		No ( )

1. Which of the following statements best describe your criteria when you choose a tour to join? Answer one or more.

(   )   I mainly chose the tour which offers the least <u>daily</u> cost.

(   )   1 day Uaxactun tour was most attractive for me.

(   )   2 day Tikal – Uaxactun tour was most attractive for me.

(   )   3 day Jungle trecking tour to El Zots was most attractive for me.

(   )   Uaxactun is not an attractive place for me.

(   )   Most of the offered tours are more expensive than my daily budget.

(   )   I am not interested in a jungle trekking tour.

(   )   I am not interested in the cultural components of the tour.

2. Which activity was attractive for you? Answer one or more.

(   ) Horse Riding to *Mayan Well*   (   ) Observatory
(   ) Museum   (   ) Visiting Xate Plantation
(   ) Learning how to make *Munieca*   (   ) Learning how to make traditional food
(   ) Bird Watching   (   ) Sleeping in a ruin

3. If you were asked to pay a park entrance fee for Uaxactun, how much would you be willing to pay? This entrance fee would be used for community development projects in Uaxactun, such as the constructing garbage disposal facilities, or paying community members to maintain the ruins. Choose only one.

1. ( ) Pay Nothing	**2. ( ) 5 Q**	**3. ( ) 10 Q**
4. ( ) 15 Q	**5. ( ) 20 Q**	**6. ( ) 25 Q**
7. ( ) 30 Q	**8. ( ) 40 Q**	**9. ( ) 50 Q**
10. ( ) 75 Q	**11. ( ) 100 Q**	**12. ( ) 200 Q**

Section 2

1. Are you male or female?　　　　(　　) Male　　　　　　　(　　) Female

2. How old are you?　　　　　　　　　　_____　　years old

3. What is your nationality?　　　　_____

4. What is your native language?　　_____

5. On average, what is your daily budget (including food and accommodations) for this trip? Answer in U.S. dollars.

$_____

6. How many people are you traveling with?
　　(　　) I am traveling by myself　　　　　(　　) I am traveling with _____ people.

7. Can you speak Spanish (Daily conversation level), or are you traveling with someone who can speak Spanish?

(　　) Yes　　　　　(　　) No

8. How important is English speaking guide for you? Check one which is the closest to your feeling.

(　　) Not Important　　　　　　　　　　(　　) Little Important
(　　) Important　　　　　　　　　　　　(　　) Very Important

9. How long are you going to be in Peten region? (Peten region includes Flores, Tikal, Yaxha, El Zots, Uaxactun, El Mirador, El Peru, etc)

_____ days

10. During this trip, which place did you go, or do you plan to go?

(　　) Tikal　　　　　　(　　) Ceibal　　　　　　　(　　) El Peru
(　　) El Zots　　　　　(　　) Yaxha
(　　) El Mirador　　　(　　) Uaxactun　　(　　) Other: _____

11. Did you join any package tour? If yes, list them. (e.g. one day trip to Tikal, or three day jungle trekking to El Zots, etc)

_____

Next Page

12. How did you make your travel plans?

       (   )   I decided all plans before I started traveling.

       (   )   I made some plans, but am somewhat flexible.

       (   )   I made no reservations before I started traveling.

13. What kind of information source do you use when you make your itinerary?

( ) Travel Agency in your country	( ) Local Travel Agency
( ) Guide Book	( ) Internet
( ) Friends	

Thank you very much!

Appendix III
Information Package in Spanish

TOUR 1 DÍA RUINAS – CULTURA
Uaxactún

Tour de 1 día introduccion de la historia y cultura de Uaxactún.

Temprano en la mañana, saldras de Flores. Después de unas tres horas de manejar para Uaxactún, montaras un caballo en el cual tu visitaras un pozo Maya, el cual fue hecho en el año 600 antes de cristo. Entonces   tu estaras el vesto de la mañana visitando el antiguo observatorio astronomico en mesoamerica y otras ruinas, incluyendo palacios y templos.

Después de tomar el almuerzo, tu visitaras una plantación de xate para ver como los residentes de Uaxactún hacen para vivir.

Después tu visitaras el museo de alfareria con ceramica polycromada y monocromada de las tierras bajas del norte de Petén.

Finalmente, en el camino de regreso a Flores, a 4km de Uaxactún   hay un mirador de 25m de altura donde pararas del cual puedes ver el bosque tropical y los templos de Tikal a la distancia.

TOUR DE 2 DÍAS PASAR 1 NOCHE EN LAS RUINAS
Tikal – Uaxactún

Estos 2 días te llevara a Tikal y Uaxactún, y te dara la oportunidad de aprender acerca de la cultura moderna de Uaxactún

Primer día
Temprano en la mañana, saldras de Flores para ir a Tikal para ver los grandes templos Mayas. A las 3pm, tomaras el autobús para Uaxactún.

Después de la cena en Uaxactún, seras traido a las ruinas y pasaras la noche allí con los guias locales. cal guides. Con suerte estaras abil para ver las estrellas y la luz de la luna.

Segund día
Pasaras la mañana observando varias especies de aues que viven al rededor de las ruinas.

Durante el día tu cocinaras comidas tradicionales como tortillas y tamales bajo las instrucción de los residentes locales.

Tambien aprenderas como hacer muñecos una tradicional muñeca que es hecha de productos naturales.

Finalmente, en el camino de regreso a Flores, a 4km de Uaxactún   hay un mirador de 25m de altura donde pararas del cual puedes ver el bosque tropical y los templos de Tikal a la distancia.

TOUR 3 DÍAS A LA SELVA
Uaxactún – El Zots – Tikal

Este viaje de 3 días te llevara a muchas ruinas, incluyendo las de Uaxactún, El Zots, y Tikal.

Primer día
Temprano en la mañana, saldras de Flores para Uaxactún. Después de 3 horas, visitaras las ruinas allí.

En la tarde, te conduciras para El Zots en carro y dormiras en el campamento.

Segund día
Tu estaras todo el día en El Zots, visitando los temños Mayas, y por la tarde, tu puedes ver millones de murciélagos.

Trecero día
Caminaras 7 horas para Tikal de El Zots. m El Zots. Después de ver las ruinas de Tikal seras llevado a Flores.

Pregunta Practica

¿Si se te ofrecen estos tours, cual escojerias?

(1)

> TOUR 1 DÍA RUINAS Y CULTURA
> Uaxactun
>
> **Q300**

(2)

> TOUR DE 2 DÍAS PASAR
> 1 NOCHE EN LAS RUINAS
> Uaxactun – Tikal
>
> **Q800**

(3)

> TOUR 3 DÍAS A LA SELVA
> Uaxactun – El Zots – Tikal
>
> **Q1100**

(4)

> No, deseo unirme a ninguno de ellos.

Opcion 1
¿Si se te ofrecen estos tours, cual escojerias?

(1)

<div style="border:1px solid black">

TOUR 3 DÍAS A LA SELVA
Uaxactun – El Zots – Tikal

Q1200

</div>

(2)

No, deseo unirme a ninguno de ellos.

Opcion 2
¿Si se te ofrecen estos tours, cual escojerias?

(1)

> TOUR 1 DÍA RUINAS Y CULTURA
> Uaxactun
>
> **Q220**

(2)

> TOUR DE 2 DÍAS PASAR
> 1 NOCHE EN LAS RUINAS
> Uaxactun – Tikal
>
> **Q750**

(3)

> TOUR 3 DÍAS A LA SELVA
> Uaxactun – El Zots – Tikal
>
> **Q750**

(4)

> No, deseo unirme a ninguno de ellos.

Opcion 3

¿Si se te ofrecen estos tours, cual escojerias?

(1)

> **TOUR 1 DÍA RUINAS Y CULTURA**
> Uaxactun
>
> **Q330**

(2)

> **TOUR DE 2 DÍAS PASAR 1 NOCHE EN LAS RUINAS**
> Uaxactun – Tikal
>
> **Q750**

(3)

> **TOUR 3 DÍAS A LA SELVA**
> Uaxactun – El Zots – Tikal
>
> **Q1000**

(4)

> No, deseo unirme a ninguno de ellos.

Opcion 4
¿Si se te ofrecen estos tours, cual escojerias?

(1)

TOUR 1 DÍA RUINAS Y
CULTURA
Uaxactun

Q220

(2)

TOUR DE 2 DÍAS PASAR
1 NOCHE EN LAS RUINAS
Uaxactun – Tikal

Q950

(3)

TOUR 3 DÍAS A LA SELVA
Uaxactun – El Zots – Tikal

Q750

(4)

No, deseo unirme a ninguno de ellos.

Opcion 5

¿Si se te ofrecen estos tours, cual escojerias?

(1)

> TOUR 1 DÍA RUINAS Y CULTURA
>
> Uaxactun
>
> **Q450**

(2)

> TOUR DE 2 DÍAS PASAR 1 NOCHE EN LAS RUINAS
>
> Uaxactun – Tikal
>
> **Q750**

(3)

> TOUR 3 DÍAS A LA SELVA
>
> Uaxactun – El Zots – Tikal
>
> **Q750**

(4)

> No, deseo unirme a ninguno de ellos.

Opcion 6

¿Si se te ofrecen estos tours, cual escojerias?

(1)

TOUR 1 DÍA RUINAS Y CULTURA
Uaxactun
Q220

(2)

TOUR DE 2 DÍAS PASAR 1 NOCHE EN LAS RUINAS
Uaxactun – Tikal
Q950

(3)

TOUR 3 DÍAS A LA SELVA
Uaxactun – El Zots – Tikal
Q1000

(4)

No, deseo unirme a ninguno de ellos.

Opcion 7
¿Si se te ofrecen estos tours, cual escojerias?

(1)

<div style="border:1px solid black">

TOUR 1 DÍA RUINAS Y CULTURA

Uaxactun

Q330

</div>

(2)

<div style="border:1px solid black">

TOUR 3 DÍAS A LA SELVA

Uaxactun – El Zots – Tikal

Q750

</div>

(3)

<div style="border:1px solid black">

No, deseo unirme a ninguno de ellos.

</div>

Opcion 8
¿Si se te ofrecen estos tours, cual escojerias?

(1)

> TOUR 1 DÍA RUINAS Y CULTURA
> Uaxactun
>
> **Q220**

(2)

> TOUR DE 2 DÍAS PASAR
> 1 NOCHE EN LAS RUINAS
> Uaxactun – Tikal
>
> **Q750**

(3)

> No, deseo unirme a ninguno de ellos.

Opcion 9
¿Si se te ofrecen estos tours, cual escojerias?

(1)

TOUR DE 2 DÍAS PASAR
1 NOCHE EN LAS RUINAS
Uaxactun – Tikal

Q550

(2)

TOUR 3 DÍAS A LA SELVA
Uaxactun – El Zots – Tikal

Q750

(3)

No, deseo unirme a ninguno de ellos.

Opcion 10
¿Si se te ofrecen estos tours, cual escojerias?

(1)

TOUR 1 DÍA RUINAS Y
CULTURA
Uaxactun

Q220

(2)

TOUR DE 2 DÍAS PASAR
1 NOCHE EN LAS RUINAS
Uaxactun – Tikal

Q550

(3)

TOUR 3 DÍAS A LA SELVA
Uaxactun – El Zots – Tikal

Q1250

(4)

No, deseo unirme a ninguno de ellos.

Opcion 11
¿Si se te ofrecen estos tours, cual escojerias?

(1)

TOUR 1 DÍA RUINAS Y CULTURA
Uaxactun

Q330

(2)

TOUR DE 2 DÍAS PASAR
1 NOCHE EN LAS RUINAS
Uaxactun – Tikal

Q550

(3)

TOUR 3 DÍAS A LA SELVA
Uaxactun – El Zots – Tikal

Q750

(4)

No, deseo unirme a ninguno de ellos.

Opcion 12
¿Si se te ofrecen estos tours, cual escojerias?

(1)

TOUR 1 DÍA RUINAS Y CULTURA Uaxactun **Q220**

(2)

TOUR DE 2 DÍAS PASAR 1 NOCHE EN LAS RUINAS Uaxactun – Tikal **Q550**

(3)

TOUR 3 DÍAS A LA SELVA Uaxactun – El Zots – Tikal **Q1000**

(4)

No, deseo unirme a ninguno de ellos.

Opcion 13
¿Si se te ofrecen estos tours, cual escojerias?

(1)

TOUR 1 DÍA RUINAS Y
CULTURA
Uaxactun

Q450

(2)

TOUR DE 2 DÍAS PASAR
1 NOCHE EN LAS RUINAS
Uaxactun – Tikal

Q550

(3)

TOUR 3 DÍAS A LA SELVA
Uaxactun – El Zots – Tikal

Q1000

(4)

No, deseo unirme a ninguno de ellos.

Opcion 14
¿Si se te ofrecen estos tours, cual escojerias?

(1)

TOUR 1 DÍA RUINAS Y CULTURA
Uaxactun

Q220

(2)

TOUR DE 2 DÍAS PASAR
1 NOCHE EN LAS RUINAS
Uaxactun – Tikal

Q550

(3)

TOUR 3 DÍAS A LA SELVA
Uaxactun – El Zots – Tikal

Q750

(4)

No, deseo unirme a ninguno de ellos.

Opcion 15
¿Si se te ofrecen estos tours, cual escojerias?

(1)

TOUR 1 DÍA RUINAS Y CULTURA
Uaxactun
Q330

(2)

TOUR DE 2 DÍAS PASAR 1 NOCHE EN LAS RUINAS
Uaxactun – Tikal
Q550

(3)

No, deseo unirme a ninguno de ellos.

Appendix IV
Following Questionnaire in Spanish

Sección 1

En sección 1, tu preguntaras para escojer escojer un tour que disfrutarias de unas pocas opciones.

Hay tres clases de viajes:
- Un día ruinas y cultura tour a Uaxactún
- Dos días tour ruinas Tikal y Uaxactún
- Tres días tour a la selva caminando de Uaxactún, El Zots, y Tikal.

Si ni uno de los tours ofrecidos son atractivos para ti, tu puedes escojer la opcion "no unirme". Asume que el precio del tour incluye todo el costo como tambien transporte, comida, acomodación, y guias.

Aunque el mismo tour sera ofrecido en diferentes precios, assume que el contenido y servicio anivel del tour es el mismo aunque los precios cambian. (Un día viaje a las ruinas de Uaxactún por $30 ofrece el mismo contenido y servicio como un día viaje a las ruinas por $45)

Si tienes alguna pregunta, por favor pregunta al entrevistador.

Gracias, apreciamos tu ayuda para entrevistador.

_____

Para entrevistador

Opcion 1	1 ( )			No ( )
Opcion 2	1 ( )	2 ( )	3 ( )	No ( )
Opcion 3	1 ( )	2 ( )	3 ( )	No ( )
Opcion 4	1 ( )	2 ( )	3 ( )	No ( )
Opcion 5	1 ( )	2 ( )	3 ( )	No ( )
Opcion 6	1 ( )	2 ( )	3 ( )	No ( )
Opcion 7	1 ( )	2 ( )		No ( )
Opcion 8	1 ( )	2 ( )		No ( )
Opcion 9	1 ( )	2 ( )		No ( )
Opcion 10	1 ( )	2 ( )	3 ( )	No ( )
Opcion 11	1 ( )	2 ( )	3 ( )	No ( )
Opcion 12	1 ( )	2 ( )	3 ( )	No ( )
Opcion 13	1 ( )	2 ( )	3 ( )	No ( )
Opcion 14	1 ( )	2 ( )	3 ( )	No ( )
Opcion 15	1 ( )	2 ( )		No ( )

1. ¿Cual de las siguientes declaraciones mejor describes en tu criterio cuand escojes un tour para disfrutar? Contesta una o mas.

(   )   Principalmente escojo el tour que ofrece el menos costo diario.

(   )   El tour un día en Uaxactún fue mas atractivo para mi.

(   )   El tour de dos días en Tikal y Uaxactún   fue mas atractivo para mi.

(   )   El tour de tres días caminando en la selva fue mas atractivo para mi.

(   )   Uaxactún no es un lugar atractivo para mi.

(   )   Muchos de los tours ofrecidos son mas caros que mi presupuesto diario.

(   )   No estoy interesado en hacer tour caminata a la selva.

(   )   No estoy interesado en los componentes de el tour cultural.

2. ¿Cual actividad fue atractiva para ti? Contesta una o mas.

(   ) Montar a caballo hacia el poso Maya   (   ) Mirador
(   ) Museo   (   ) Visitar la
Plantación de Xate
(   ) Aprender como hacer muñecas   (   ) Aprender como cocinar comida tradicional
(   ) Observar Aves   (   ) Dormir en Ruina

3. ¿Si te preguntaran la cuota para pagar la entrada al sitio de Uaxactún, cuanto estarias dispuesto a pagar? Esta couta de entrada servira para el desarrollo de los proyectos en la comunidad de Uaxactún, como tambien para la construccion de depositos de basura, o pagar miembros de la comunidad para man tener limpias las ruinas. Escoje solo una.

1. ( ) No Pagar Nada	2. ( ) 5 Q	3. ( ) 10 Q
4. ( ) 15 Q	5. ( ) 20 Q	6. ( ) 25 Q
7. ( ) 30 Q	8. ( ) 40 Q	9. ( ) 50 Q
10. ( ) 75 Q	11. ( ) 100 Q	12. ( ) 200 Q

Sección 2

1. ¿Eres masculino o femenino?   (   ) Masculino   (   ) Femenino

2. ¿Cuantos años tiene?   _____   años

3. ¿Cual es tu nacionalidad?   _____

4. ¿Cual es tu lengua natal?   _____

5. ¿Cual es tu presupresto diario (incluyendo comida y acomodacion), para este viaje?

Q_____

6. ¿Con cuantas personas estas viajando?
   (   ) Estoy viajando solo   (   ) Estoy viajando con _____ personas.

7. Cuanto tiempo vas a estar en la region de Petén (Region de Petén incluyendo Flores, Tikal, Yaxha, El Zots, Uaxactún, El Mirador, El Peru)

                _____ días

8. ¿Durante este viaje, a cual lugar fuistes, o a que lugar planeas ir?

   (   ) Tikal   (   ) Ceibal   (   ) El Peru
   (   ) El Zots   (   ) Yaxha
   (   ) El Mirador   (   ) Uaxactun   (   ) Otro: _____

9. ¿Disfrutastes algun paquete de viaje? Si, la lista de ellos. (Por ejempro, Tour 1 día a Tikal, o 3 días al Zots caminando en la selva)

   _____

10. ¿Como hicistes tu plan de viaje?

   (   )   Decidí todo el plan antes empezar a viajar.

   (   )   Hice alguno planes, pero soy un poco flexible.

   (   )   No hice reservaciones antes empezar a viajar.

11. ¿Que clase de informacion usas cuando haces tu itinerario?

   (   ) Agencia de viaje en tu pais   (   ) Agencia de viajes local
   (   ) Libro guia   (   ) Internet
   (   ) Amigos