TOURISM GOLF REPEAT CHOICE BEHAVIOUR IN THE ALGARVE: A MIXED LOGIT APPROACH

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Abstract

This paper focuses on the behavioural intention of repeater golf tourists in the Algarve. The analysis employs a questionnaire undertaken in 2004 to ascertain the significant characteristics of the returning golf playing tourists. A random parameter logit model is used to analyse which characteristics (e.g. individual characteristics, motivations, tripographic variables and the most quoted attributes of golf destinations) are associated with the probability of golf tourists playing in Algarve to return to this Portuguese tourist region, taking into account uncontrolled heterogeneity of the data. This model outperforms the standard logit model. Some policy implications are presented.

Keywords: Tourism, Golf, Mixed Logit Model, Public Policy.
Introduction

The aim of this paper is to analyse the probability of a sport tourist, golf player, who played in the Algarve during the questionnaire to return to play golf at the same destination. For this endeavour we employed a mixed logit model to take into account the possible heterogeneity of the golf players interviewed.

Sport tourism could be asserted as “all forms of active and passive involvement in sport activity that necessitate travel away from home and work locality” (Standeven and DeKnop, 1999). Although tourism has been analysed in a variety of ways, sport tourism has rarely been differentiated from other forms, and has been relatively understudied (Glyptis, 1991). As an emergent form of sport tourism, the golf industry is experiencing growth worldwide, with around 25 million practitioners in the USA, 15 million in Japan and 2.5 million in Europe, Shmanske (2004). The Algarve region in southern Portugal is a major tourism destination due to its privileged location and weather conditions. Regarded by tourism developers as a vehicle for overcoming the seasonal patterns of “mass tourism”, this activity has a great economic impact in the Algarve. In 2002, more than 200,000 golfers visited the Algarve, which represented over 900,000 rounds sold and resulted in the receipt of 337 million Euros. This value highlights the importance of golf at the regional level. Despite its importance, the development of golf courses in the Algarve region was dictated by the offer, without a clear recognition of the demand motivations in choosing courses. Therefore, based on its growing importance for the Algarve region, the sport of golf needs to be analysed. A golf destination as any other tourist destination could be seen as a product that comprises attributes, some of them similar to other destinations while others are more related to the sport by itself. Assuming that the golf destination is a bundle of attributes the theory of Lancaster (1966) could be used to analyse why golf tourists playing in the Algarve plan to return to the same destination. The return will be based in the reputation of the Algarve,
Shapiro (1983) and in the perceptions of the individuals who answer the questionnaire, Fishbein and Ajzen (1980). This theory allows the identification of the individual preferences of golf tourists who state their intention to return. Assuming that these are the best premises in what concerns golf destination preferences, an extension of the model was proposed assuming that psychographic and tripographic variables could also explain the choices, based on the theory of Fishbein and Ajzen (1980). Previous research analysing the returning hypothesis is Ledesma, Navarro and Perez Rodriguez (2005) who apply a negative binomial model to analyse the returning of tourists to the Canary Isles.

Within this present paper we analyse golf tourism, employing a mixed logit, which permits heterogeneity in the estimated coefficients, enabling the proposal of a policy that takes into account the identified heterogeneity. The model permits the identification of significant statistical variables that explain the variation in the probability of a sport tourist to return to the Algarve as their destination for golf practice. The value of such research is that it could contribute to policy formulation in the attracting of golf tourists. If one knew the characteristics identifying certain sport tourists, then one could better allocate resources in managing such events. There are in econometric models, variables which are important but exhibit low variation throughout the sample. Moreover, this low variation may be organised by clusters. A procedure to use these variables in regression models is to decompose the variable by clusters. See for example the decomposition of income adopted by Nicolau and Más (2005). In this case we obtain a parameter for each cluster. An alternatively way to handle this problem is to account for the pattern of similarity and dissimilarity among the decision alternatives, the procedure adopted by the Mixed logit model, Train (2003). In this case we obtain a sole parameter for the variable, but if this parameter is random due to unobservable heterogeneity it signifies that we allow for individuals within the sample population to have different parameter values. This procedure is the most efficient in cases of
small samples, since the sample span will not allow the decomposition of the variable. The goal is to understand the behavioural process that leads the tourist golf player to choose to return to the Algarve. In a causal perspective there are factors that collectively determine, or cause, the tourist's choice. Some of these factors are observed and others are not. Among the observed variables, some are random, e.g. varies along the sample in a random way and depend on the non-observed characteristics. The mixed logit overcome the challenge to pick up the right segmentation criteria and the cut-offs whenever we decompose the data, Nicolau and Mås (2005). The mixed logit estimates the individual preferences by deriving within the sample individual's distribution based on their known choices. The conditional density is estimated by simulation allowing for different distributions of the error term, see Hensher, Rose and Greene (2005) for details.

The Mixed logit is considered one of the most promising techniques currently available to analyse questionnaire data, Hensher and Greene (2003). The advantage of the Mixed Logit over alternative models is based on two improvements. First, it allows for the error term to combine different statistical distributions, which is an improvement relative to alternative specifications which rely on one specific distribution. Second, it allows for random taste variation parameters (parameters that describe characteristics not linked to observed characteristics, whenever the traditional logit allows for taste variation related to observed characteristic).

This model is currently being applied in different fields, in areas such as terrorism, Barros and Proença (2005), agriculture, Alfnes (2004), transportation, (Bath, 1996; Brownstone and Train, 1999; Brownstone, Bunch and Train, 2000), recreation, Train (1998), energy, Revelt and Train (1998) and marketing, Bonnet and Simioni (2001). So far this model has been applied in tourism by Nicolau and Mås (2005) with a Bayesian procedure. Therefore this paper enlarges previous research in tourism, adopting this novel approach, the
mixed logit model, to analyse the probability of a return to the Algarve by the golf players who were interviewed while playing golf there. A thorough survey of state choice methods and applications can be found in Louviere, Hensher and Swait (2000) and Hensher, Rose and Greene (2005).

This paper is organised as follows, in the second section we present the contextual setting. In the third we present the literature survey. In the fourth section we present the theoretical framework. In the fifth section we present the empirical framework, followed by the discussion presented in the sixth section with conclusions, limitations and extensions of the research presented in the seventh section.

**Contextual Settings: Golf in Algarve**

At the end of 2002 there were 62 golf courses in Portugal, which were each equivalent to 18 hole courses, of which 45% were located in the Algarve and 8.5% in the Azores and Madeira. The fundamentally international demand of this product feeds the interest of the tourist distribution channels as well as the desire to segment and better understand those who seek golf in the Algarve and why. Portugal is ranked in second place as the destination of preference of the European countries with the highest number of golfers – England and Germany, where the Algarve which has 45% of the supply assumes a position of leadership. In 2002 the number of rounds sold exceeded 913 thousand which translates into 200,000 golf players per year, (Martins and Correia, 2004). Golf is responsible for an added gross value of 337 million euros in the Algarve region, of this total 25.7% is spent within the actual golf courses and 74.3% outside the courses. The disbursements outside the golf courses represent an induced effect over the other tourist sectors, particularly accommodation, internal transportation as well as food and beverages (Martins and Correia, 2004).
Attention must also be drawn to the fact that when measured the golf industry’s direct and indirect impacts represent about 8.5% of the income of Algarve’s NUT II in terms of the consolidated tourism data for 2002. This is a fact that is noteworthy on all levels for a product which has its highest demand outside of the summer high season. The most essential component of this impact is that 6.3% of the 8.5% occurs outside of the golf courses, we have already commented on the indirect affects of other tourist outflows, namely accommodation, internal transportation and food and beverage among others (Martins and Correia, 2004).

We may conclude that golf not only contributes with 8.5% of the total spending in the region, as well the fact that is spending occurs mainly outside of the summer high season and by means of a segment of tourists whose daily spending is 1.74 times that of the regional average. This is a product whose commercial affects are not limited unto itself, as merely 1/3 of the spending is in actual fact expended directly at the golf course, the rest is indirect spending in other dominions of tourism (Martins and Correia, 2004). The economic weight of golf as a product is clearly demonstrated by these figures and its importance for the Algarve warrants preservation and exploration of its potential through sustainable development.

**Literature Review**

Most of the studies performed on behavioural intention are based on the theory of reasoned action of Fishbein and Ajzen (1980). This theory constitutes an extension of Fishbein’s original model (1967). While maintaining the behavioural theory as a basis for the development of the model, it defines the behavioural intention as a function of expectations, social and individual factors (Fishbein and Ajzen, 1980). The purchase intention is a function of the attitude towards behaviour as well as social norms. The attitude consists of perceived expectations in terms of the possibility of adopting a certain form of behaviour and the
evaluation of how the consumer feels towards this behaviour. This model represents an integration of the components of the attitude, so that it becomes possible to better fit the behaviour of the consumer. The subjective norms constitute a measure of influence of the social environment on behaviour. Its evaluation is carried out in terms of the motivation of the consumer to adopt the attitude that social groups consider to be correct. The behavioural intention is defined as a subjective probability to either adopt, or not adopt, a certain form of behaviour.

This model permits the following presuppositions: an object with multiple attributes is evaluated as a set of attributes which generates costs and benefits at different levels; the attitude index does not increase indefinitely with the acquisition of new expectations, because the attitude is determined by a limited number of visible attributes.

The conceptual problem consists on understanding the existing relationships between expectations and attitudes within the behavioural intentions, as well as in the relationship between the intentions and the subsequent behaviour. Fishbein (1967) defends that the behavioural intentions are a function of the attitude and the subjective norms. The subjective norms represent the expectations of others as to the behaviour of a certain individual.

Although the selected variables could be considered insufficient in explaining consumer behaviour, the equation does not state that factors such as personality, social status, economic and demographic variables are not taken into account. Rather, their effect is contained in the two main variables of the theory, i.e. attitudes and subjective norms.

The models studied, which are commonly referred to as multi-attribute in the specialized literature, since they consider that a product possesses several self-compensating attributes (compensatory), find their basis in the value-expectancy theory. This theory defines expectation as the probability that a certain attitude will lead to positive or negative benefits, thus allowing the isolation of determining factors of behaviour and, furthermore, specifying
how expectation and value can be combined in order to make choices. There are numerous possibilities when combining expectation with value. The motivation for adopting a certain form of behaviour is determined by the value and the expectation for each benefit. The greater or lesser tendency to adopt a certain behaviour depends on the expectations and the consequent value of these attitudes for the individual. The expectancy value theory is a way of measuring the subjective utility. It is based on Edwards’ (1954) behavioural theory on decision. This theory deals with expectation as to the consequences of adopting a certain form of behaviour. It measures this view of expectation, from the stance that individual chooses in accordance with his/her expectations and values. In general, the main advantages of the expectancy value theory are the following: it enables the utilisation of some of the concepts present in the same model; it allows the integration of the emotional component in tourist motivation; it can incorporate any of the reasons for travelling put forward in the studies about motivation; it enables the resolution of the problem of the “push” and “pull” factors, as well as the evaluation of personality; the theory allows a more realistic and sophisticated view of tourist motivation.

Qualitative choice models in tourism are based on questionnaires, and rely either on binomial or multinomial logit models. The nested logit model (McFadden, 1974; 1981) has proven very successful in distilling information about attributes across a broad, though discrete, set of choice alternatives into a single “‘index of desirability’” or “‘inclusive price of travel’” (Domencich and McFadden, 1975; McFadden, 1981). McFadden and Domencich are a nested design of household and work location choice, vehicle ownership, trip versus no trip, destination, time of day, and mode choices reduced statistical complexity, thus greatly facilitating model estimation and application.

Examples of literature that use the binomial logit model are Fleischer and Pizam (2002) who determined the constraints of senior Israelis tourists; De la Vina and Ford (2001)
who described the demographic and trip factors of potential cruise passengers based in a sample of individuals who previously requested travel information; Costa and Manente (1995) who investigated the characteristics of visitors to the city of Venice with respect to their origin and socio-economic profile, their preferences and their holiday decisions; Sheldon (1995) who examined the travel incentive among U.S. corporations, and Stynes and Peterson (1984) who proposed the logit model to estimate recreational choices. Kockelman and Krishnamurthy (2004) propose a micro economically rigorous method to characterize travel demand across a great variety of choice dimensions, including trip generation. It applies a multivariate negative binomial model for trip demand functions derived from an indirect underlying translogarithmic utility function. Both time and money budgets were incorporated into the model structure via an effective or generalized budget constraint. A nested logit model of trip mode and destination was used to calculate the effective prices for each trip purposed via nested logsum expressions. Time-of-day and other choice attributes could be added.

Multinomial and nested logit models can be developed from a rigorous behavioural theory of utility maximization such as for the processional choice models supported by the theory of reasoned action of Fishbein and Ajzen (1980). However, standard multinomial logit models require discretion of choices (e.g., peak vs. no-peak travel times, trip vs. no trip); this causes a loss of cardinality and continuity, which determine many travel choices, such as time of day and number of trips made (Kockelman and Krishnamurthy, 2004). Examples of the Multinomial logit model are Luzar, Diagne, EcGan and Henning (1998) who investigate socio-economic and psychographic factors which influence tourists from Louisiana’s decision to participate in nature-based tourism; Morley (1994) who assesses the independent effects of tourists from Kuala Lumpur to Australia with eight contexts where the prices of the
Sydney alternative varied, and finally, Nicolau and Más (2005) who applied a mixed logit model.

**Theoretical Framework**

Consider the tourist population who play golf in the Algarve. The main goal is to determine the probability of repeater golf players to return to the Algarve to play golf given some characteristics, denoted by the vector $x_i$. Define a binary random variable $y_i$, that verifies $y_i = 1$ if the tourist chooses to return to the Algarve to play golf and $y_i = 0$ otherwise, then the aimed probability is $P(y_i = 1 | x_i)$.

Models to determine the probability of an event given a set of characteristics, $x_i$ can be derived based on a latent variable, $y_i^*$, that is not observed and verifies $y_i^* = \beta' x_i + \varepsilon_i$, where $\beta$ is a vector of unknown parameters, and $\varepsilon_i$ is an unobserved random variable allowing that individuals with the same characteristics $x_i$ have different outcomes. To use the general framework of binary dependent models, let us simply suppose that $y_i = 1$ if $y_i^* > 0$ and $y_i = 0$ otherwise. Then $P(y_i = 1 | x_i) = P(\varepsilon_i > -\beta' x_i)$ and the desired probability depends on the statistical assumptions about $\varepsilon_i$. When $\varepsilon_i$ is independent and identically distributed as extreme value type I the above probability is given by the highly popular logit model,

$$P(\varepsilon_i > -\beta' x_i) = \frac{e^{\beta' x_i}}{1 + e^{\beta' x_i}}$$

McFadden (1974), Ben-Akiva and Lerman (1985) and Train (1986) used the logit model to relate the probability of making a choice to a set of variables reflecting decision-maker preferences.
In most applications a better specification for the latent variable is \( y_i^* = \beta' x_i + \nu_i + \varepsilon_i \)
where \( \nu_i \) is a random term that accounts for unobserved heterogeneity among golf players, with zero mean and possibly heteroscedastic with distribution that frequently depends on the explanatory variables and underlying parameters. In our case, it represents characteristics which influence the probability that tourist golf players will return to the Algarve, and are not measured or observed, or measurement errors in the variables. Unobserved heterogeneity has been a subject of concern and analysis in many recent works, such as, Chesher and Santos Silva (2002), and McFadden and Train (2000). This happens to be frequent in the behaviour of individuals and neglecting it is likely to lead to inconsistent parameter estimates or more importantly, inconsistent fitted choice probabilities.

In this paper we have adopted the random coefficients logit or mixed logit of McFadden and Train (2000). The model needs sophisticated calculations and some assumptions on the form of the distribution of \( \nu_i \) and consistently estimates the parameters and the choice probabilities provided the distributional assumptions are correctly stated.

**Empirical framework**

Let us now consider the golf player tourist in Algarve who declares that they plan to return to the Algarve to play golf again. This declaration is based in the utility the sport tourist receives from playing there compared with the utility received from playing golf in an alternative location. This utility is based on the reputation of the tourism destination, Shapiro (1983) and the perception of the respondent, formed during the visit, Fishbein and Ajzen (1980). This hypothesis has been tested in tourism by Ledesma, Navarro and Perez Rodriguez (2005) and allows the definition of the following hypothesis:

*Hypothesis 1*: Tourist golf players who declare that they plan to return to the Algarve to play golf are those who consider the Algarve to be cheap in comparison to the quality it
offers. These traditional hypotheses in demand models, where the price and quality are the main focus of analyse, De la Vina and Ford (2001).

Hypothesis 2: Tourist golf players who declare that they plan to return to the Algarve to play golf are those who are attracted by local attractions such as beach, climate, safety and accessibility. This is also a traditional hypothesis in tourism demand models, where the attractions are considered a main issue, Costa and Manente (1995).

Hypothesis 3: Tourist golf players who declare that they plan to return to the Algarve are older and more educated and they are from countries which traditionally choose the Algarve as their vacation destination. This is also a traditional hypothesis of demand models based on questionnaire data.

Hypothesis 4: Tourists golf players who declare that they plan to return to the Algarve are those who have been adequately informed. Tourist information is a main part of the tourist policy adopted by public entities responsible for tourism management.

Hypothesis 5: Tourists golf players who declare that they plan to return to the Algarve are those who are attracted by the hotel facilities and by housing destination attributes.

Hypothesis 6: Tourists golf players who declare that they plan to return to the Algarve are those who have already been there and therefore are returning to their preferred tourist destination.

Hypothesis 7: Tourists golf players who declare that they plan to return to the Algarve value the Algarve golf course attributes adequately.

In order to test these hypotheses, we used a mixed logit representation which assumes that the probability of returning can be described by a cumulative logit-probability function of the exogenous variables Xi, \( \text{Prob}(\text{return}/\text{type}) \):

On the basis of this definition, we estimate the above-mentioned probability for event \( i \) as,
\[ Pr(\text{Return}_i \mid v_i) = \int_{-\infty}^{+\infty} P(\beta, v_i) N(\beta_5 \mid \mu_5, \sigma_5) \, d\beta_5 \]  

where \( N(\bullet) \) is the normal distribution, and

\[ v_i = \beta_0 + \beta_1 \text{Country} + \beta_2 \text{Education} + \beta_3 \text{Firstmot} + \beta_4 \text{Typehotel} + \beta_5 \text{inform1} + \beta_6 \text{Upkeep} + \]
\[ + \beta_7 \text{Housing} + \beta_8 \text{Climate} + \beta_9 \text{Beach} + \beta_{10} \text{Price} + \beta_{11} \text{Travel} + \beta_{12} \text{Quality} + \beta_{13} \text{Safety} + \]
\[ \beta_{14} \text{Age} + \beta_{15} \text{Inform2} + \beta_{16} \text{Previous} \]  

We chose the variables from the questionnaire undertaken on this population based in the literature review. We measure \( v_i \) by the probability that the golf player declares that he will return (Yes = 1, No = 0) and measure \( X_i \) as observed characteristics. Firstly, we considered individual characteristics: (i) the country of origin, to take into account the different cultural traditions and tourism preferences for the Algarve. This is a control variable; (ii) education, to analyse the role played by education in this context (Hay and McConnel 1979); (iii) age, because different ages could determine different ways of perceiving the destination (Hay and McConnel 1979; Miller and Hay 1981); (iv) firstmotive, first motive that considered the main motives for playing golf abroad; (iv) Typehotel, type of hotel that accounts for the preferred type of accommodation for tourist golf players; (v) inform1, first source of information that accounts for the effect principal source of information received about the region; (vi) inform 2, second source of information, that accounts for the effect of other sources of information. Finally the most quoted attributes of golf destinations were considered in order to measure their effect on the behavioural returning intention, such as (vii) upkeep; the conditions of the turf; (viii) housing, the surrounding accommodations; (ix) climate, weather conditions; (x) beach, the attraction for beach leisure; (xi) price the most important characteristic according to the economic models (Nicolau and Más 2005; Crawford and Goodbey 1987); (xii) travel (mode of travel) to look for different types of influence of the mode of travel on the declaration that he or she will return; (xiii) quality, a subjective evaluation of the Algarve; (iv) safety also a characteristic
of the tourist destination and (v) previous, the information that the respondent has already visited the Algarve in the past, which may explain a tradition of choosing the Algarve as the vacation destination.

**Empirical Study**

The empirical study was carried out by means of the previously-mentioned questionnaire, which was presented to a cluster, random sample of Algarve’s golf tourists, with the central aim of determining the extent to which he/she plans to return to the Algarve to play golf. The sample was stratified by golf courses situated in Algarve, using a Golf club database. Because of budgetary constraints and the limited time available, it was decided to collect data from 1,000 golf tourist players. The authors distributed 1,000 questionnaires at the golf club headquarters. A professional conducted the interviews and achieved 610 returns. Randomisation was achieved selecting the tourists who arrived at the club headquarters according to a random number procedure. The golf players in the Algarve can be residents, tourists and non-residents who own vacation property in the zone. The questionnaire targeted tourists, and since the majority of golf players are of UK origin, the questionnaire was in English with the support of the golf course manager and a professional who conducted the interview to achieve this objective. The second most important nationality in golf courses is German. A small proportion is from other countries. We have taken into account that there are some tourists who play golf occasionally, and established a question which enabled us to drop these questionnaires from the analysis, and the 610 answers achieved resulted in 593 usable, which gives a response rate of 59.3%. Therefore, the questionnaire focuses on tourists who visit the Algarve with the purpose of playing golf.
The general characteristics of these respondents were male (98.4%), with an average age of 48, and a college degree. This profile leads to an overall definition of the responding tourist golf players as male, middle-aged and middle-class.

**Questionnaire**

Our objective was to evaluate the behavioural intention of golf tourists in the Algarve. In order to investigate this issue a questionnaire was delivered to the randomly-selected golf players who played golf at cluster selected golf clubs. The players were approached at their golf club headquarters by the interviewer, after having been approached by the club manager. This procedure allowed us to discard causal players, who were in Algarve for generic vacations, as well as foreign resident players. In order to detect eventual errors and difficulties in question interpretation, the questionnaire was subjected to a pre-test that result in minor amendments.

The questionnaire was structured in three sections. The first, entitled golfer profile, enquires into the main socio-economic characteristics of the player. The second sets questions related to travel and accommodation. The third is centred on the attributes that led to the selection of Algarve’s golf courses and on the evaluation of the golfer satisfaction level. The questionnaire construct adopted asked a set of variables most quoted on literature (Sirikaya, Uysal and McLellan, 1996; Iso-Ahola and Mannel, 1987; Lundberg, 1990; Fodness, 1994; Holden, 2003; Mohsin and Ryan, 2003; Shoemaker, 1989; Cossens, 1989; Petrick, 1999). Table 1 shows the observed variables that assume statistical significance in this model, the proposed questions and the corresponding scales.

**Table 1 here**
Results

To estimate the mixed logit model, we used a Mixed Logit simulator in Gauss programming language, available on Kenneth Train’s home page (http://elsa.berkeley.edu/~train/ps.html). Other results were obtained with TSP. We present a standard logit model and the mixed logit model for comparative purposes.

Focusing on the adequacy of the standard logit model, we implemented the RESET test. The result gives evidence of mis-specification of the logit model. This may be due to the presence of unobserved heterogeneity, depending on the aforementioned explanatory variables. We applied the HAL test of Chesher and Santos-Silva (2002), using likelihood ratio procedures to test against this type of heterogeneity. First, we considered that it was dependent on all of the explanatory variables. Next, we applied a classic selection procedure. The results display evidence of unobserved heterogeneity depending on age, inform2 and previous, inducing the estimation of a mixed logit with random coefficients for these variables. The final results can be seen in Table 2.

Table 2 here

For the mixed logit framework, the probability of a return increases with upkeep, climate, travel and age. These variables are positive and statistically significant in the mixed logit. However age is a random parameter. The probability of return decreases with country, typehote, housing, inform2 and previous. These variables are negative and statistically significant, but inform2 and previous are random.

Comparing the standard logit with the respective mixed logit by means of an LR test, we obtain a test statistic with $p$-values equal to 0.00, indicating that the mixed logit is the more appropriate specification. The fact that a parameter is random means that the effect of this variable has a widespread variance, so that it varies greatly along the sample.
Discussion

The results confirm empirical subjective perceptions of the stakeholders of the tourism activity, namely customers, employees and politicians, which consider that the Algarve needs to redefine its golf image in order to attract foreign tourists. Golf has a demand characterised by male players, with an average age of 47 years, an upper income level, and an addicted relationship with golf, inducing fidelity of the customer to the course. Our results show that the probability of returning is related to destination attributes more than with golf courses attributes and this is only possible when the golf players are aware of the golf courses’ attributes. The only golf attribute reflected in the model is upkeep, which means the quality of the turf, a positive relation between this variable and the probability of returning show that the conditions of the turf are good enough to keep the golfers returning to the Algarve to play golf.

Related to the hypothesis, based on the estimated model we reject hypothesis 1, because price is negative but statistically insignificant and quality is positive but also statistically insignificant. This result may signify that price and quality are average and therefore are not important decision variables in this context.

We partially accept hypothesis 2 since beach is negative and statistically insignificant; safety is negative but also statistically insignificant. However, climate is positive and statistically significant, as well as travel (modes of transport) which is also positive and statistically significant. This result signifies that climate and travel (which captures accessibilities) have a positive correlation with the probability of return and these are the main competitive attributes of the region.

We partial accept hypothesis 3 because age is positive, random and statistically significant, but education despite being positive is not statistically significant. Moreover, country is negative and statistically significant. As the most important tourists in Algarve are
from the UK and Germany, its negative sign signifies that it is significant for those traditional countries, based in the codification of the variable.

We reject hypothesis 4, because inform 1 is positive but statistically insignificant. Inform 2 is negative, random and statistically significant at 10% significance level. Firstmot is negative and statistically insignificant. Curiously the first source of information used determine the next trip but the second not, that means that the repeater golf player does not have a high involvement in the decision of returning to the Algarve because they only use one source of information.

We also reject hypothesis 5 because typehote is negative and statistically significant and housing is also negative and statistically significant. The hotel and the housing around the courses negatively influence the probability of returning that means that special attention must be given to raising the quality of the hotels and giving particular attention to the buildings around the courses, blocking and spoiling the landscape scenery, Barros (2005). The accommodation supply as far as we could ascertain from the results are not a competitive advantage, golf tourists seems to demonstrate some concern about this issue.

We also reject hypothesis 6 because previous experience is negative, random and statistically significant. Special attention must be paid to previous experiences that have a negative influence on the next decision and this could mean that the golf players have some reason to be unsatisfied with the Algarve as a golf destination.

Finally, we accept hypothesis 7 because upkeep is positive and statistically significant.

The findings presented in this study also have the potential to redirect marketing strategy, because the model when integrating different kinds of variables allows the managers to know, why golf tourists intend to return, what are the most important constructs that determine the final decision of repeating a golf destination. The behavioural intention has
importance in developing a destination because behavioural intention happens in the long range, and this is the time frame the tourist managers need to satisfy customers enabling a competitive advantage, Kozak (2001). This study focuses on golf which as an under researched tourism product surpasses the classic analysis that in general tries to assess behavioural intention by satisfaction. This study investigated whether the (i) destination attributes, (ii) previous visit, (iii) psychographic and (iv) tripographic variables as well as destination attributes influence the behavioural intention. This study shows that destination attributes related to the quality of the turf and the conditions of the course, the surrounding cement environment (houses), and the climate seem to be critical success factors, and this means that these can be a competitive advantage. If not properly explored, it can also signify a disadvantage to the development of tourism in the Algarve. This conclusion shows the managers which are our main competitive advantages, at the same time it answers the question, why tourists intend to return to the Algarve to play golf.

The previous experience has been considered in studies before not to determine the behavioural intention but to determine the satisfaction level. Our model proves that the first experience was not good enough to influence the future behaviour, moreover this is the most important variable to explain behavioural intention. This statement shows that the best practices are not to continue working on the demand and this could be further investigated in order to understand why the past behaviour is not perceived as good enough to be repeated.

In what concern psychographic variables the most statistical significant ones are age and country, the first one with a positive association of future behaviour and the second with a negative one. From these results we can understand that the loyalty of the demand grows with age and decreases among residence countries. Further research which tests the heterogeneity of the nationalities must be developed.

In what concerns tripographic variables the most significant one is type of hotel, that
means level of concern with the lodging services. This study provides evidence that the strength of the association between behavioural motives and behavioural intentions are strong. This paper contributes to the scientific research explaining that the behavioural intention is related to behavioural variables. This study, consistent with prior research in tourism consumer behaviour literature, extends the reach of this golf destination analysis particularly in the Algarve.

Conclusions, Limitations and Extensions of the Research

This study has important managerial implications for planning golf activity. The main being what is the profile of repeater golf players. They are males who travel in groups with an average age of 48. That means that the golf courses must invest on diversification of markets to try to appeal young people, if not in less than 10 years they will not have a demand. The second one shows that the repeat golf player does not have an intensive information process which was inferred by the sources of information used, these players decide to return based on only one source of information. The third one relates to the motives that lead the golf players to repeat the Algarve as a golfing destination, it seems that they came to the Algarve mainly because of the climate and the quality of the courses.

Considering that other destinations also have a good climate and are developing quality golf courses, other services or even some different attributes must be developed in the Algarve to surprise the golf players, who seem to know the Algarve golf courses quite well. Tourists knowledge of the Algarve is so good that they don't need information about the golf courses’ attributes and they don't consider the previous experience fairly satisfying to determine future behaviours. This requires further research in order to determine what could be expected by the golf players. Additionally, some investigation about services or attributes that improve the perceived image of the golf courses is needed in order to upgrade the
product. Furthermore, as we find that the probability of returning is related to destination attributes rather than with golf course attributes, managers should manage the role of golf in Algarve tourism.

In light of the extensive literature on tourism research, it is useful to consider the potential contributions of the current research. The first contribution is the estimation of a mixed logit to analyse questionnaire data. Past studies relied on the traditional logit or probit model, or used a mixed logit model with Bayesian procedure, Nicolau and Más (2005).

One major limitation affecting this study concerns the data. The data was conceived for characterising the tourist golf players in the Algarve, Martins and Correia (2004). The research issue analysed in this paper was considered a minor issue in the data gathering process. Therefore some variables obtained were not statically significant and were therefore deleted from the analysis.

As general conclusion we verify that the mixed logit outperforms the logit model in estimating the data, based in the statistical tests performed in table 2. Therefore tourist golf players have an increased probability of returning to the Algarve based on some characteristics such as age, climate, upkeep and travel. However, age is heterogeneous and therefore a policy to attract golf players has to take into account this characteristic of the sample and to define different policy for the different segments of the golf players age. Moreover, the probability of returning to play golf in the Algarve decreases based on country, firstmot, tyehote, housing, inform2 and previous. However, inform2 and previous are heterogeneous and therefore different policy should be adopted for heterogeneous variables, focusing on clusters. For the homogenous variables a single policy can be adopted to attain the objective. For the variables affecting the reputation of the return negatively, a public policy is needed to overcome the moral hazard problems related to the public good nature of Algarve tourism. What is the implication for golf players of this study? They have two
options: voice and exit, Hirschman (1970). Individuals dissatisfied with the performance of an attribute of a tourism destination, may try to improve it, by choosing alternative destinations, or returning to the destination but voicing their discontent. In principle both forms of response may motivate regional policy leaders in adopting preventive measures. While Hirschman (1970) work focused an organisations and states, it can be generalised to markets, such as the one we are analysing. Assuming that golf players enjoy several Algarve attributes, these attributes may be developed and the ones with which golf players are dissatisfied have to be addressed by a public policy to overcome the moral hazard related to the public nature of the Algarve’s reputation as a tourism destination.

More research is needed in the domain of golf player returns in order to confirm our findings.

References


Petrick, J. F. (1999), An Examination of the Relationship Between Golf Travelers’ Satisfaction, Perceived Value and Loyalty and Their Intentions to Revisit, Dissertation Presented to the Graduate School of Clemson University to obtain the Degree Doctor of Philosophy, and Tourism Management, Clemson.


Table 1 Characterisation of the variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return Country</td>
<td>Do you plan to visit Algarve again?</td>
<td>0 (no)</td>
<td>1(yes)</td>
<td>0.976</td>
<td>0.151</td>
</tr>
<tr>
<td>Education Country</td>
<td>Country of residence</td>
<td>1</td>
<td>7</td>
<td>2.062</td>
<td>1.787</td>
</tr>
<tr>
<td>Education Education</td>
<td>Academic qualifications</td>
<td>1</td>
<td>5</td>
<td>3.984</td>
<td>0.941</td>
</tr>
<tr>
<td>Age</td>
<td>Age</td>
<td>18</td>
<td>78</td>
<td>47.935</td>
<td>13.082</td>
</tr>
<tr>
<td>Previous Previous</td>
<td>Have you visited Algarve before to play golf?</td>
<td>1</td>
<td>3</td>
<td>1.184</td>
<td>0.440</td>
</tr>
<tr>
<td>Firstmot Firstmot</td>
<td>What is the main motivation for your trip?</td>
<td>1</td>
<td>8</td>
<td>2.128</td>
<td>1.871</td>
</tr>
<tr>
<td>Typehote Typehote</td>
<td>What type of accommodation are you using?</td>
<td>1</td>
<td>4</td>
<td>2.868</td>
<td>1.377</td>
</tr>
<tr>
<td>Travel Travel</td>
<td>How did you travel to the Algarve?</td>
<td>1</td>
<td>4</td>
<td>2.001</td>
<td>0.295</td>
</tr>
<tr>
<td>Inform1 Inform1</td>
<td>Where did you obtain the first information about golf courses?</td>
<td>1</td>
<td>5</td>
<td>2.443</td>
<td>1.423</td>
</tr>
<tr>
<td>Inform2 Inform2</td>
<td>Second source of information</td>
<td>1</td>
<td>5</td>
<td>6.311</td>
<td>1.550</td>
</tr>
<tr>
<td>Upkeep Upkeep</td>
<td>Golf course attribute</td>
<td>0</td>
<td>5</td>
<td>3.345</td>
<td>1.492</td>
</tr>
<tr>
<td>Housing Housing</td>
<td>Destination attributes</td>
<td>0</td>
<td>5</td>
<td>3.008</td>
<td>1.633</td>
</tr>
<tr>
<td>Climate Climate</td>
<td>Destination attributes</td>
<td>0</td>
<td>5</td>
<td>3.819</td>
<td>1.465</td>
</tr>
<tr>
<td>Beach Beach</td>
<td>Destination attributes</td>
<td>0</td>
<td>5</td>
<td>2.636</td>
<td>1.612</td>
</tr>
<tr>
<td>Price Price</td>
<td>Destination attributes</td>
<td>0</td>
<td>5</td>
<td>2.731</td>
<td>1.450</td>
</tr>
<tr>
<td>Quality Quality</td>
<td>Destination attributes</td>
<td>0</td>
<td>5</td>
<td>3.467</td>
<td>1.568</td>
</tr>
<tr>
<td>Safety Safety</td>
<td>Destination attributes</td>
<td>0</td>
<td>5</td>
<td>2.883</td>
<td>1.569</td>
</tr>
</tbody>
</table>
Table 2 Parameter estimates and t-statistics (Dependent variable: To declare that he or she has the intention of returning to Algarve to Play Golf=1, and zero elsewhere)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Standard Logit</th>
<th></th>
<th>Mixed Logit</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficients</td>
<td>t-stat</td>
<td>Coefficients</td>
<td>t-stat</td>
</tr>
<tr>
<td>Intercept</td>
<td>5.2540</td>
<td>**2.223</td>
<td>5.0384</td>
<td>***3.104</td>
</tr>
<tr>
<td>Country</td>
<td>-0.2888</td>
<td>**-2.366</td>
<td>-0.3386</td>
<td>***-3.964</td>
</tr>
<tr>
<td>Education</td>
<td>0.0268</td>
<td>0.103</td>
<td>0.0476</td>
<td>0.314</td>
</tr>
<tr>
<td>Firstmot</td>
<td>-0.0772</td>
<td>-0.585</td>
<td>-0.1204</td>
<td>-1.547</td>
</tr>
<tr>
<td>Typehote</td>
<td>-0.2623</td>
<td>-1.250</td>
<td>-0.3247</td>
<td>**-2.446</td>
</tr>
<tr>
<td>Inform1</td>
<td>0.1317</td>
<td>0.709</td>
<td>0.1800</td>
<td>1.457</td>
</tr>
<tr>
<td>Upkeep</td>
<td>0.4644</td>
<td>**2.263</td>
<td>0.5029</td>
<td>***3.939</td>
</tr>
<tr>
<td>Housing</td>
<td>-0.2750</td>
<td>-1.380</td>
<td>-0.2887</td>
<td>***2.233</td>
</tr>
<tr>
<td>Climate</td>
<td>0.2702</td>
<td>1.519</td>
<td>0.3108</td>
<td>***2.713</td>
</tr>
<tr>
<td>Beach</td>
<td>-0.0040</td>
<td>-0.016</td>
<td>-0.0469</td>
<td>-0.282</td>
</tr>
<tr>
<td>Price</td>
<td>-0.1026</td>
<td>-0.486</td>
<td>-0.0482</td>
<td>-0.407</td>
</tr>
<tr>
<td>Travel</td>
<td>0.5105</td>
<td>0.693</td>
<td>0.8396</td>
<td>*1.869</td>
</tr>
<tr>
<td>Quality</td>
<td>0.0305</td>
<td>0.125</td>
<td>0.1048</td>
<td>0.654</td>
</tr>
<tr>
<td>Safety</td>
<td>-0.0193</td>
<td>-0.072</td>
<td>0.0959</td>
<td>0.559</td>
</tr>
<tr>
<td>Random Effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.0461</td>
<td>**2.382</td>
<td>0.0825</td>
<td>***4.924</td>
</tr>
<tr>
<td>Inform2</td>
<td>-0.2987</td>
<td>-1.320</td>
<td>-0.3197</td>
<td>*1.874</td>
</tr>
<tr>
<td>Previous</td>
<td>-2.4009</td>
<td>***-5.787</td>
<td>-2.9738</td>
<td>***-7.184</td>
</tr>
<tr>
<td>Observations</td>
<td>593</td>
<td></td>
<td>593</td>
<td></td>
</tr>
<tr>
<td>LogLikelihood</td>
<td>-66.021</td>
<td></td>
<td>-66.085</td>
<td></td>
</tr>
</tbody>
</table>

Specification tests:
- RESET on stand. Logit: -2.579 0.01
- HAL on standard Logit: 20.379 0.0002
- LR: standard vs. Mixed: 39.22 0.0003

RESET: Detects misspecification in the logit model and was performed with $\hat{\beta}^{\prime}x_i^2$;

HAL: Detects evidence of heterogeneity in the logit model depending on Age, inform 2 and previous

LR: Likelihood ratio test

* means statistical significant at 1% ** means statistical significant at 5%; * means statistical significant at 10%