



The decline of the traditional travel agent model

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ABSTRACT

This article analyzes the struggle between traditional travel agencies and airlines to gain control of the Spanish airline services market. Also analyzed is the strong emergence of a third player, online travel portals that act as online travel agencies. We use a multinomial logit model to study the influence of 27 socio-economic factors and trip attributes on passenger purchase channel choice. The results show that the profile of a passenger who has a greater likelihood of making his/her bookings online is that of a young person, a student or educated to a high level, a habitual traveler, booking a simple journey and using an LCC. The factors linked to an increased likelihood of making purchases by phone include: being male, middle-aged, on a business or short trip, and the passengers usually use a travel agency. Finally, passengers who are over 65 years of age, with a lower academic level, who use a travel agency and are going to make a more complicated journey, are more likely to purchase their tickets in-store.

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1. Introduction

The generalized use of the Internet and related information and communication technologies (ICT) has changed the understanding of the tourism market (Buhalis and Licata, 2002; Harison and Boonstra, 2008). The tourism industry supports Internet-based distribution channels (Tretheway and Mak, 2006) because they are the most appropriate means for selling tourism products, which are characterized by being time-constrained and non-stockable (Cao and Schniederjans, 2006). Thus, travel-related products have become the largest category of goods sold on the Internet (Yu, 2008). These changes in consumer purchasing habits undermine the traditional intermediary role of travel agencies in the distribution chain (Tsai et al., 2005). According to Yoon et al. (2006), the future of these agencies may be uncertain since consumers increasingly prefer individually planned trips to the travel packages offered by travel agencies. In order to maximize their potential profit, traditional travel agencies cannot shy away from this new technology: in addition to creating their own websites (Tsai et al., 2005; Yu, 2008), they must act as more than a mere ticket-reservation office and provide greater added value to the information and advice they offer clients (Alamdari, 2002; Cheyne et al., 2005). They may even choose to specialize in new market niches to help customers manage travel-related procedures, such as obtaining a visa or renewing their passports (Tsai et al., 2005).

Given that tourism and air transport are closely linked (Bieger and Wittmer, 2006; Papatheodorou and Lei, 2006), the changes observed in the tourism sector are also reflected in airline distribution (Alamdari and Mason, 2006). In particular, the airlines have jumped on the technological bandwagon (Buhalis, 2004; Harison and Boonstra, 2008) with a view to increasing business opportunities and serving clients directly through their websites. Initially, this capturing strategy was directed at price-sensitive customers and involved offering lower fares online (Muthitacharoen et al., 2006; Alamdari and

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Mason, 2006). According to Yu (2008), by 2010, Asia–Pacific airlines expect 40% of their revenues to be Internet-based. As such, airlines were able to reduce their distribution costs, which represent, on average, 17% of total airline operation costs (Alamdari, 2002).

This reduction in distribution costs justifies the efforts made by the airlines to adapt their businesses to the Internet. Around the 2000 dot-com boom, many airlines thought they could coordinate their efforts, both directly and indirectly, to create an overarching e-travel agency. This move was met with formal complaints from travel agency associations in North America and Europe. Nevertheless, some projects were directly initiated by the airlines: four North-American airlines (Delta, Continental, Northwest Airlines and United) and 11 European airlines (Iberia, KLM, Air France, Lufthansa, Alitalia, British Airways, SAS, Aer Lingus, Austrian Airlines, British Midland and Finnair) worked together to develop their own agencies. The latter project culminated in the creation of a travel portal called Opodo, which was taken over by Amadeus in 2003. There was also an indirect strategy that consisted of transforming airline-owned booking systems into technological companies that combined with telecommunication firms to create e-travel agencies. This was the case of Amadeus, in which Iberia, Air France and Lufthansa all initially had a stake. At the beginning of this decade, Amadeus planned to gain access to the e-commerce tourism market through alliances with companies such as British Telecom and Broadvision.

As they became familiar with the Internet, the airlines soon focused their efforts on individual projects to transform their websites into full travel agencies, extending their services from basic information on flight schedules and ticket sales to complementary services, such as rental car and hotel reservations (Dobruszkes, 2006).¹ Paradoxically, airlines are now aiming to become what they used to fight against, that is, intermediaries for other tourism companies whose services they offer on their websites (according to O'Connell and Williams (2005), for example, Ryanair made €28 million from commissions on car rentals in 2003).

The increase in the number of airline websites has been crucially boosted by the deregulation of the airline market and the emergence of low-cost carriers (LCCs) (Harison and Boonstra, 2008; Buhalis, 2004). The latter introduced aggressive low-fare policies based, among other factors, on online booking systems that avoided intermediary travel agencies and their commissions (Francis et al., 2004; Barrett, 2004; Dobruszkes, 2006; Papatheodorou and Lei, 2006). Before deregulation, airline costs were not a focus for competitive advantage since increases were transferred to passengers (Barrett, 2004). However, these strategies proved to be no longer sustainable as, together with deregulation and the “price war” brought about by the presence of the LCCs (Chi and Koo, 2009; Mantin and Koo, 2009), the Internet has favored competition, as it has allowed consumers to identify fare differences very rapidly (Chen, 2006).

Nevertheless, the use of the Internet as an airline ticket purchase channel is not fully developed. According to some studies discussed by Yu (2008), most consumers in the Asia–Pacific region use the Internet only to search but not to book. The authors of Law and Wong (2003) and Cheyne et al. (2005) come to the same conclusion; according to Cheyne et al. (2005), people have a greater tendency to use the Internet when they organize small and low-cost trip components, like car rental, but they prefer the security of a travel agency to book and pay for their flights. It seems that, up to now, Internet-based purchasing technologies have not yet taken hold, so travel agencies have generally maintained their market position with regard to bookings. According to Alamdari (2002), 75% of airlines tickets are sold by conventional travel agencies since most airlines, except for LCCs, still entrust travel agencies with selling their tickets retail. A more recent study (Yoon et al., 2006) shows a similar percentage for South Korea, despite its technological leadership and the fact that more than 70% of households have a high-speed Internet connection there.

Analysis of the factors determining airline ticket purchase channels is currently a relevant topic in air transport management (Mason, 2001; Fourie and Lubbe, 2006; Yoon et al., 2006; Yu, 2008). Certain aspects have been studied, such as differences in the use of the Internet to book flights being dependent on the number of passengers or their ages (Yoon et al., 2006). The concerns of online purchasers regarding offers and the quality–price relationship have also been analyzed (Yu, 2008). Finally, a few studies have investigated the purchase channels preferred by business passengers according to airline type (Mason, 2001; Fourie and Lubbe, 2006).

Our work complements these studies and offers a detailed profile of airline users according to the chosen purchase channel, determining which socio-demographic factors and trip attributes have an influence on the choice. We differentiate between three possible channels: in-store (i.e., personal contact), by phone and online. In doing so, we aim to answer the following questions about the influence that socio-demographic factors have: considering that there appear to be no significant differences between men and women with regard to visits to travel websites (Law and Wong, 2003), will gender also be a non-significant variable in explaining the choice of purchase channel with regard to airline tickets? If age correlates with greater or lesser access to travel websites (Law and Wong, 2003), can we conclude that a generational factor is the determinant aspect in the purchase channel decision (Yoon et al., 2006)? Do Spanish passengers have a preference for in-store purchases compared to their neighbors in the EU? If, as suggested by Chu (2001), frequent flyers expect to receive information on frequent flyer programs online, will they also prefer this channel for booking their trips? Do group trips favor the purchase of tickets through travel agencies (Yoon et al., 2006)? Are the passenger's income and academic level important in his/her decision to use the Internet (Law and Wong, 2003) as opposed to booking through a travel agency?

¹ For example, on Ryanair's website, consumers can design *ad hoc* travel packages from Spain to London. Services include airline ticket and hotel booking, airport transportation by bus or rental car, the scheduling of daytrips and travel insurance. In addition, there is a free travel guide of London available for download. Just a few years ago, these services were only offered in-store by the best travel agencies.

Table 1
Survey of technical data.

Airport	Alicante	Seville	Valencia	Santiago
Airport traffic in 2008	9,578,308	4,391,794	5,779,336	1,917,434
<i>Information gathering</i>	Available in 12 languages			Available in six languages
Questionnaire	Departing passengers > 15 years of age			
General				
<i>Sampling</i>				
Sample size (before weighting)	2420	4140	4965	3497
Sampling method	Stratified by traffic segments in which a selection of flights was made for each route, and a group of passengers was selected by means of systematic sampling			
Sampling error (%) ^a	±2	±1.5	±1.4	±1.5
Number of waves	1			
<i>Field work</i>				
Time period	22–28 September	6–12 June	12–18 July	28 June–4 July
Location	Departure lounges			
Timetable	Monday–Sunday. Shifts were conducted from 6am to 10pm, with times extended in cases of high traffic			
Year	2006			

^a Note that $\pm \text{Error} = k\sqrt{(N-n)/(N-1)}\sqrt{pq/n}$, where N is the population size; n is the sample size; $p = q = 0.5$ are the complementary probabilities of an event at the point of greatest indeterminacy; k is an event parameter, where $k = 2$ for a 95.45% confidence level.

In the same way, answers will be given to the following questions about the influence that trip attributes have on the choice of purchase channel: Are traditional airline users more likely to buy their tickets through travel agencies while LCC customers opt for online purchases (Mason, 2001; Ong and Tan, *in press*)? How does opting for the services of a travel agency affect the choice of purchase channel? Does the objective of the trip (e.g., vacation or business) influence the use of a travel agency for booking the tickets? Does the complexity of the trip (measured with variables such as the length of the journey and the final destination) favor in-store purchase and the use of travel agencies? Given the extensive presence of rental car firms on LCC and network carrier websites (Dobruszkes, 2006), is there any positive correlation between the demand for these services and opting for the online purchase of airline tickets?

2. Data and methodology

For this study, we used data collected through surveys conducted in summer 2006 by the Spanish Public Airport Authority (AENA). The key characteristics of AENA's survey campaigns are listed in Table 1 (see Castillo-Manzano (*in press*) for a full explanation of this database). In contrast to the limited sample sizes in similar studies (Mason, 2001; Law and Wong, 2003; Cheyne et al., 2005; Yoon et al., 2006; Fourie and Lubbe, 2006; Yu, 2008), our research uses a database of 15,022 passengers who were interviewed in the departure lounges at four different Spanish airports, namely, Alicante, Seville, Valencia and Santiago de Compostela. We focused on 37 different variables (one dependent, 27 explanatory, eight interaction effects² and one to estimate the cluster variance) that were available for 14,996 passengers. As with similar databases, each observation was weighted according to the total number of passengers on the flight so that the sample could be expanded to the total population; see Dresner (2006) for an explanation of the weighting methodology.

Given the size of the sample and the wide geographical distribution of the four airports included in the study, the conclusions can easily be extrapolated to other regional airports on the Spanish mainland. It may even be possible for them to be extrapolated to other airport systems with similar characteristics to the Spanish system (a not very high rate of Internet penetration into the home, and/or a dense network of travel agency branches), as is found in other Mediterranean countries. Extrapolation of the results is further supported by the fact that a third of the passengers interviewed, over 5000, were foreigners, most of them from other European Union countries, mainly France, Germany and the United Kingdom.

A multinomial logit model was used to analyze the factors that condition passenger decisions towards a specific purchase channel (i.e., in-store, by phone or online) for airline tickets.³ The multinomial logit model is used when the dependent variable is not ordinal but rather consists of more than two categories, as well as when there are case-specific independent vari-

² The interaction effects aim to go into any possible differences in the behavior of LCC passengers in greater detail which are not detected by the *b.1. Low-cost carrier* variable (see Table 2). For example, due to the pressure LCCs put on passengers to directly make bookings on their own websites. An empirical criterion has been used for their definition, estimating Model (1) only for LCC passengers and including among the interaction effects any variable that is statistically different from its result in the complete sample. The results of the intermediate estimates are available from the authors upon request.

³ In our case, this model is superior to a multinomial probit model with the same number of regressors in the sense that it generates a higher log pseudo-likelihood. In addition, we ruled out the possibility of increases in the number of categories by combining booking channels with, for example, the use of a travel agency or an airline category (LCC versus traditional airline) since this would generate a substantial reduction of approximately 50% of McFadden's pseudo R^2 , irrespective of its use as a multinomial model or a nested logit model.

Table 2
Independent variables and their descriptive statistics.

Name	Explanation	No. obs.	Mean	Max.	Min.	Median	Stand. dev.
<i>a. Socio-demographic factors</i>							
a.1. Sex	1 if male; 0, if female	7908	0.527	1	0	1	0.499
a.2. Age. Base category includes passengers 50–64 years old							
Under 30	1 if passenger is under 30; 0, otherwise	4382	0.292	1	0	0	0.455
30–49	1 if passenger is aged 30–49; 0, otherwise	7145	0.476	1	0	0	0.499
Over 65	1 if passenger is over 65; 0, otherwise	885	0.059	1	0	0	0.236
a.3. Nationality	1 if passenger is not Spanish; 0, otherwise	5080	0.338	1	0	0	0.473
a.4. Frequent flyer	Number of flights taken by passenger in previous twelve months: 0 = 0 flights; 1 = 1–3; 2 = 4–12; and 3 = more than 12 flights	–	1.380	3	0	1	0.998
a.5. Group size	0 = traveling alone; 1 = 2 people; and 2 = 3 people or more	–	0.719	2	0	1	0.750
a.6. Children	1 if traveling with children; 0, otherwise	1311	0.087	1	0	0	0.282
a.7. Education	1 = no formal or only primary education; 2 = completed secondary education; and 3 = holds university degree	–	2.477	3	1	3	0.685
a.8. Employment status. Base category includes salaried workers							
Unemployed	1 if passenger is an unemployed; 0, otherwise	424	0.028	1	0	0	0.166
Student	1 if passenger is studying; 0, otherwise	1653	0.110	1	0	0	0.313
Homemaker	1 if passenger is a homemaker; 0, otherwise	486	0.032	1	0	0	0.177
Self-employed	1 if passenger is non-salaried, self-employed; 0, otherwise	2545	0.169	1	0	0	0.375
Retired	1 if passenger is retired; 0, otherwise	1324	0.088	1	0	0	0.284
<i>b. Trip attributes</i>							
b.1. Low-cost carrier	1 if passenger is flying by LCC; 0, otherwise	4662	0.310	1	0	0	0.463
b.2. Travel agency	1 if passenger bought his or her airline ticket through a travel agency; 0, otherwise	10981	0.731	1	0	1	0.443
b.3. Purpose of trip. Base category includes passengers visiting friends and relatives (VFR)							
Vacation	1 if vacation trip; 0, otherwise	7157	0.477	1	0	0	0.499
Business	1 if business trip; 0, otherwise	4046	0.269	1	0	0	0.444
b.4. Length of stay (LOS). Base category includes passengers who travel 7–14 days							
Short	1 if the passenger returns after one night or earlier; 0, otherwise	1298	0.086	1	0	0	0.281
Up to a week	1 if the passenger will be traveling two nights to a week; 0, otherwise	8108	0.540	1	0	1	0.498
More than 2 weeks	1 if the passenger will be traveling more than 2 weeks but less than a month; 0, otherwise	1940	0.129	1	0	0	0.335
Long-term	1 if the passenger stays away more than a month; 0, otherwise	669	0.045	1	0	0	0.206
b.5. Destination. Base category includes passengers on a domestic flight							
Eurozone international destination	1 if passenger is taking an international flight with a final destination in a Eurozone country; 0, otherwise	6457	0.430	1	0	0	0.495
Non-Eurozone international destination	1 if passenger is taking an international flight with a final destination outside the Eurozone; 0, otherwise	621	0.041	1	0	0	0.199
b.6. Connecting flight	1 if passenger is connecting to another flight at the airport; 0, otherwise	2392	0.159	1	0	0	0.366
b.7. Rent-a-car	1 if passenger arrived at the airport using a rented vehicle; 0, otherwise	3487	0.232	1	0	0	0.422
b.8. Weekend	1 if the survey was taken on a Saturday or Sunday; 0, otherwise	4295	0.286	1	0	0	0.452
<i>c. Interaction effects</i>							
c.1 Low-cost carrier							
Group size	1 = 2 people flying by LCC; 2 = 3 people or more flying by LCC; 0, otherwise	–	0.563	2	0	0	0.937
Children	1 if passenger is flying by LCC with children; 0, otherwise	406	0.027	1	0	0	0.162
Travel agency	1 if passenger bought his or her airline LCC ticket through a travel agency; 0, otherwise	2695	0.179	1	0	0	0.384
Business	1 if business trip by LCC; 0, otherwise	631	0.042	1	0	0	0.201

Table 2 (continued)

Name	Explanation	No. obs.	Mean	Max.	Min.	Median	Stand. dev.
Non-Eurozone	1 if passenger is taking an international flight by an LCC with a final destination outside the Eurozone; 0, otherwise	27	0.002	1	0	0	0.042
Connecting flight	1 if passenger is connecting to another LCC flight at the airport; 0, otherwise	298	0.020	1	0	0	0.139
Rent-a-car	1 if passenger arrived at the airport using a rented vehicle and is flying by LCC; 0, otherwise	1325	0.088	1	0	0	0.284
Weekend	1 if passenger is flying by LCC and the survey was taken on a Saturday or Sunday; 0, otherwise	1373	0.091	1	0	0	0.288

ables only (see Cameron and Trivedi, 2009). According to Greene (2003), the multinomial logit probability formula for passenger i when he or she chooses purchase channel j for three category outcomes and frequency weights is:

$$p_{ij} = \Pr(y_i = j) = \begin{cases} 1/1 + \sum_{m=2}^3 e^{(x_i\beta_m)}, & \text{if } j = 1 \\ e^{(x_i\beta_m)} / 1 + \sum_{m=2}^3 e^{(x_i\beta_m)}, & \text{if } j \neq 1 \end{cases} \tag{1}$$

Note that x_i is the row vector of the values observed for passenger i in the case-specific independent variables and β_m is the coefficient vector for outcome m .

The log pseudo-likelihood is $\ln L = \sum_i w_i \sum_{j=1}^3 I_j(y_i) \ln p_{kj}$, where w_i is the passenger frequency weight for each passenger i , and $I_j(y_i) = \begin{cases} 1, & \text{if } y_i = j \\ 0, & \text{otherwise} \end{cases}$.

As in binary-outcome models, in multinomial models only the sign of the coefficient has a direct interpretation. Thus, a positive coefficient in the multinomial logit means that as the regressor increases, alternative j is more likely to be chosen than alternative k (Cameron and Trivedi, 2009).

In order to facilitate interpretation of the results, the odds ratios or relative-risk ratios for every explanatory variable are also considered; see Bodea et al. (2009) for a recent analysis of these ratios with regard to categorical variables, and Cameron and Trivedi (2009) and Long and Freese (2006), for a more general description of their econometric implementation. The relative probability or odds ratio of choosing alternative j rather than alternative 1 also called the base outcome, is given by

$$\frac{\Pr(y_i = j)}{\Pr(y_i = 1)} = e^{x_i\beta_j}$$

Therefore, the odds ratio or relative-risk ratio of choosing alternative j over alternative i for a one-unit change in x_{im} is then:

$$\frac{e^{\beta_{vj}x_{i1} + \dots + \beta_{mj}(x_{im} + 1) + \dots + \beta_{kj}x_{ik}}}{e^{\beta_{vj}x_{i1} + \dots + \beta_{mj}x_{im} + \dots + \beta_{kj}x_{ik}}} = e^{jm} \tag{2}$$

However, multinomial logit coefficients and odds ratios only allow us to study the substitutability relations between options set in pairs, that is, the relation between each option and the base category. In our case, this means that use of the tele-sales purchase channel is considered in opposition to that of the in-store purchase, and online purchases are also viewed in opposition to in-store purchase. In order to overcome this focus on pair-wise oppositions we calculate the marginal effects across all considered options. This way, we can study the effects of variation in each one of the independent variables along three possible categories (that is, in-store, by phone or online). This would thus enable us to obtain a direct substitutability relation between the three purchase channels. According to Cameron and Trivedi (2009), the marginal effects at the mean (MEMs) for the multinomial logit model are:

$$\frac{\delta p_{ij}}{\delta \mathbf{x}} = p_{ij}(\beta_j - \bar{\beta}_i) \tag{3}$$

Note that $\bar{\beta}_i = \sum_j p_{ij}\beta_j$ a probability-weighted average of β_j .

Table 2 shows the case-specific independent variables, their different categories and the descriptive statistics that were used to estimate the probability of passenger i choosing purchase channel j .

3. Results

Table 3 shows the estimated results, including the odds ratios, based on (1) and (2). Applying a strict 95% level criterion for significant results, we observe the following. First, we identified 10 relevant variables that are 99% significant and four that are 95% significant, all of which allow us to explain a customer's decision to use the phone as the airplane ticket purchase channel as opposed to making an in-store purchase. Furthermore, there are 14 other relevant variables, two of which

Table 3
Results.

Variable	By phone		Online	
	Coefficient (Std. Err.)	Odds ratio (1/odds ratio)	Coefficient (Std. Err.)	Odds ratio (1/odds ratio)
β	-0.636(0.524)		1.057(0.417)**	
Sex	0.136(0.049)***	1.146(0.873)	-0.017(0.050)	0.983(1.018)
Age				
Under 30	-0.344(0.196)*	0.709(1.411)	0.264(0.085)***	1.302(0.768)
30–49	-0.235(0.182)	0.790(1.265)	-0.035(0.126)	0.966(1.035)
Over 65	-0.211(0.063)***	0.810(1.234)	-0.291(0.139)**	0.747(1.338)
Nationality	0.429(0.148)***	1.536(0.651)	0.409(0.022)***	1.505(0.664)
Frequent flyer	0.371(0.057)***	1.450(0.690)	0.365(0.052)***	1.440(0.694)
Group size	0.052(0.096)	1.053(0.949)	-0.020(0.028)	0.981(1.020)
Children	-0.416(0.189)**	0.660(1.516)	-0.398(0.108)***	0.672(1.488)
Education	0.078(0.143)	1.081(0.925)	0.288(0.081)***	1.333(0.750)
Employment status				
Unemployed	0.331(0.077)***	1.392(0.719)	0.115(0.065)*	1.122(0.891)
Student	0.373(0.196)*	1.452(0.689)	0.408(0.135)***	1.503(0.665)
Homemaker	0.335(0.231)	1.398(0.716)	0.043(0.156)	1.044(0.958)
Self-employed	-0.071(0.120)	0.932(1.073)	0.078(0.071)	1.081(0.925)
Retired	0.060(0.102)	1.062(0.942)	0.047(0.124)	1.048(0.954)
Low-cost carrier	0.069(0.118)	1.072(0.933)	0.845 (0.211)***	2.327(0.430)
Travel agency	-1.421(0.316)***	0.241(4.143)	-2.313(0.416)***	0.099(10.101)
Purpose of the trip				
Vacation	-0.361(0.086)***	0.697(1.435)	-0.246(0.104)**	0.782(1.279)
Business	0.846(0.097)***	2.330(0.429)	-0.150(0.112)	0.861(1.162)
Length of stay				
Short	0.316(0.130)**	1.372(0.729)	0.139(0.088)	1.149(0.870)
Up to a week	-0.027(0.068)	0.974(1.027)	0.164(0.049)***	1.178(0.849)
15–30 days	-0.181(0.187)	0.835(1.198)	0.072(0.055)	1.074(0.931)
Long-term	-0.526(0.218)**	0.591(1.693)	-0.180(0.062)***	0.835(1.197)
Destination				
Eurozone	-0.048(0.133)	0.954(1.049)	0.049(0.087)	1.050(0.952)
Non-Eurozone	-0.887(0.232)***	0.412(2.429)	-0.901(0.177)***	0.406(2.463)
Connecting flight	-0.253(0.172)	0.777(1.287)	-0.193(0.141)	0.824(1.213)
Rent-a-car	0.160(0.133)	1.173(0.852)	0.236(0.328)	1.266(0.790)
Weekend	-0.080(0.119)	0.923(1.083)	-0.137(0.169)	0.872(1.146)
LCC \times Group size	-0.061(0.198)	0.941(1.063)	-0.202(0.126)	0.817(1.224)
LCC \times Children	0.812(0.392)**	2.252(0.444)	0.699(0.383)*	2.011(0.497)
LCC \times Travel agency	0.099(0.285)	1.104(0.906)	0.434(0.243)*	1.543(0.648)
LCC \times Business	-0.441(0.300)	0.643(1.555)	-0.207(0.069)***	0.813(1.230)
LCC \times Non-Eurozone	-28.370(1.015)***	0.000(-)	-0.378(0.505)	0.685(1.460)
LCC \times Connecting flight	-0.287(0.430)	0.750(1.333)	-0.050(0.267)	0.952(1.051)
LCC \times Rent-a-car	-0.314(0.191)	0.730(1.369)	0.280(0.230)	1.323(0.756)
LCC \times Weekend	0.071(0.221)	1.073(0.932)	0.195(0.145)	1.215(0.823)
No. Observations (before weighting)			14,996	
Wald Chi ² without clusters (<i>p</i> -value)			6,533,096.19 (0.000)	
Pseudo R ²			0.1744	

Note: In the coefficient column, standard errors robust to heteroscedasticity and clustered by airport of origin are presented in brackets.

* Coefficient significance at 10% level.

** Coefficient significance at 5% level.

*** Coefficient significance at 1% level.

are 95% significant, with the rest being 99% significant. These variables explain the decision of the customer to use the Internet as the purchase channel as opposed to making an in-store purchase. Of these variables, eight are used for both by-phone and online purchase channels: age over 65, non-Spanish, frequent flyer status, traveling with children, use of a travel agency, vacation trip, long-term length of stay, and having a non-Eurozone international destination. These eight variables have the same sign for both by-phone and online purchase channels.

Table 4 shows the statistically significant MEMs for variables analyzed with regard to all three types of purchase channels. Therefore, in addition to the significant variables shown in Table 3, we add the following: age between 31 and 49, group size, homemaker, self-employed workers, length of stay between 15 and 30 days and the interaction variables, LCC \times Group size, LCC \times Travel agency and LCC \times Rent-a-car.

In addition, the MEMs allow us to reconsider two weakly-relevant effects that are significant at the 90% level in Table 3 but not significant in Table 4. These include: a high preference for Internet use among unemployed people and a high probability that students will choose telesales.

The interpretation of the odds ratios is rather direct, though the marginal effects allow us to revisit the meaning of some of the results presented in Table 3. For example, the odds ratios tell us that it is 1.146 times more likely that a man will use telesales rather than the in-store purchase option. The marginal effects confirm that there is a differential behavior among

Table 4
Marginal effects at the mean (%).

Variable	In-store (%)	By phone (%)	Online (%)
Sex	$\Delta 0.013$	$\Delta 1.165^{***}$	$\nabla 1.178$
Age			
Under 30	$\nabla 3.330$	$\nabla 3.841^{***}$	$\Delta 7.171^{***}$
30–49	$\Delta 0.937$	$\nabla 1.611^{**}$	$\Delta 0.673$
Over 65	$\Delta 5.018^{**}$	$\Delta 0.052$	$\nabla 5.070$
Nationality	$\nabla 6.904^{***}$	$\Delta 0.899$	$\Delta 6.005^{***}$
Frequent flyer	$\nabla 6.101^{***}$	$\Delta 0.710^{***}$	$\Delta 5.391^{***}$
Group size	$\Delta 0.197$	$\Delta 0.524$	$\nabla 0.721^{***}$
Children	$\Delta 7.309^{***}$	$\nabla 0.917$	$\nabla 6.392^{***}$
Education	$\nabla 4.424^{***}$	$\nabla 1.117^*$	$\Delta 5.541^{***}$
Employment status			
Unemployed	$\nabla 2.260^{**}$	$\Delta 2.067^{***}$	$\Delta 0.193$
Student	$\nabla 6.095^{***}$	$\Delta 0.380$	$\Delta 5.715^{***}$
Homemaker	$\nabla 1.288$	$\Delta 2.644^{**}$	$\nabla 1.356$
Self-employed	$\nabla 1.025$	$\nabla 0.986^{**}$	$\Delta 2.011^{**}$
Low-cost carrier	$\nabla 12.166^{***}$	$\nabla 4.365^{***}$	$\Delta 16.530^{***}$
Travel agency	$\Delta 30.267^{***}$	$\Delta 3.073^{***}$	$\nabla 33.340^{***}$
Purpose of trip			
Vacation	$\Delta 4.292^{***}$	$\nabla 1.345^{***}$	$\nabla 2.947^*$
Business	$\Delta 0.122$	$\Delta 9.522^{***}$	$\nabla 9.643^{***}$
Length of stay			
Short	$\nabla 2.558^*$	$\Delta 1.747^{***}$	$\Delta 0.811$
Up to a week	$\nabla 2.397^{***}$	$\nabla 1.196^{**}$	$\Delta 3.593^{***}$
15–30 days	$\nabla 0.767$	$\nabla 1.713^*$	$\Delta 2.481^{***}$
Long-term	$\Delta 3.744^{***}$	$\nabla 2.628^{***}$	$\nabla 1.116$
Destination			
Non-Eurozone	$\Delta 18.401^{***}$	$\nabla 1.909$	$\nabla 16.492^{***}$
LCC \times Group size	$\Delta 3.122$	$\Delta 0.736$	$\nabla 3.858^{**}$
LCC \times Children	$\nabla 9.662^{**}$	$\Delta 2.047^{**}$	$\Delta 7.614^*$
LCC \times Travel agency	$\nabla 6.238^*$	$\nabla 1.788^{**}$	$\Delta 8.026^{***}$
LCC \times Business	$\Delta 4.074^{***}$	$\nabla 2.000$	$\nabla 2.074$
LCC \times Non-Eurozone	$\Delta 9.481$	$\nabla 9.056^{***}$	$\nabla 0.424$
LCC \times Rent-a-car	$\nabla 3.599$	$\nabla 3.545^{***}$	$\Delta 7.144^{**}$

* Coefficient significance at 10% level.

** Coefficient significance at 5% level.

*** Coefficient significance at 1% level.

men when it comes to using the phone, but this differential behavior is completely due to their low preference for the Internet rather than less preference for in-store purchases.

However, applying the inverse function of the odds ratios, we find that if a passenger decides to use the services of a travel agency, he/she is 4.143 times less likely to use the phone than make an in-store purchase. This result could mistakenly lead us to think that there is a certain incompatibility between telesales and the use of travel agencies. Yet the marginal effects refute this hypothesis since, even though the link between travel agencies and in-store purchases is strong (the probability of an in-store purchase increases by 30% when a travel agency is used), there is also a positive relationship between the use of travel agencies and purchases made via telephone (the probability of the latter increases by 3% when travel agencies are used). As expected, the real incompatibility that travel agencies have is with regard to the Internet and online purchases: the likelihood of using the Internet decreases by 33% when the passenger requires the services of a travel agency.

Thus, the marginal effects, rather than the odds ratios, are the main support for our conclusions.

4. Discussion

On the whole, the results obtained indicate the following trends regarding purchase channels in the airline ticket market:

- (a) In the airline ticket market, online purchases have not attained the simplicity or security that in-store purchases or purchases by phone enjoy. Factors such as age, academic level and travel frequency all influence Internet use for this purpose.
 - Age matters. Elderly people (over 65 years of age) clearly prefer to buy their tickets at a travel agency or airline company office; membership in this age group increases the probability of purchase through this channel by 5%. Young people (15–30 years old) are more than 7% more likely to use the Internet, thus reflecting the new generation's greater comfort and trust⁴ regarding the use of ICT. This specific generational behavior was also noticed by Law

⁴ Online purchase requires trust in Internet security systems, especially when people must submit their credit card number to an airline's or travel agency's website. According to Koufaris and Hampton-Sosa (2004), this lack of trust in online companies is the main reason for many web users not purchasing online.

and Wong (2003) and by Yoon et al. (2006), who attributed it to the fact that while young people look for cheaper flights on the Internet, older people prefer the human touch offered in an office. Therefore, we expect that ageing among those who are young now will reinforce the growing market share of online purchases.

- In addition to the effects of age, people with a university education are 11% more likely to use the Internet than people with only a primary education. Accordingly, Law and Wong (2003) have stated that the percentage of visits to travel websites increases with academic level.
 - Also as expected, overcoming the barriers to online purchases in order to gain access to the usually-better prices is more profitable for frequent flyer. Thus, if the passenger flies more than 12 times a year, the probability that he/she will buy his/her tickets online is 16% higher than if this was the only flight they planned to take in 2006. Regarding frequency, Teichert et al. (2008) noted that passengers who fly several times a week have very little time to book in advance; they therefore do not look for their tickets on carriers' websites but mainly rely on a travel agency, either by phone, or face to face or on different online travel portals which act as online travel agencies, such as Tripadvisor.com, Momondo.com and Priceline.com, for example.
- (b) As a purchase channel, telesales is linked to commercial or business trips. This conclusion can be proven directly through the 'purpose of the trip' variable, as business trips increase the probability of using the phone by 9.5%. If the trip is for vacation, the probability decreases by 1.3%. This can also be confirmed indirectly through a series of indirect indicators usually related to business trips. Firstly, short trips correspond to a 1.7% increase in the probability of using telesales. Secondly, these trips are closely associated with traditional airline flights (Ong and Tan, in press)⁵; with LCCs, the probability of a purchase being made by phone decreases by 4%. Accordingly, Mason (2001) has mentioned that most business class passengers of LCCs booked their trip on the airline's website while most business class passengers of traditional airlines booked theirs through a travel agent; although it is not explicitly stated, it is likely that booking a trip with an agency occurs by phone and not in person, since the most widely-used booking method for these passengers is through their secretary. Finally, the fact that being a self-employed worker – as opposed to being a salary earner – reduces the probability of choosing the telesales channel by almost 1% could also be related to this outcome.
- (c) The Internet reduces the possibility of making a profit through economic intermediaries. This is corroborated by the finding that choosing a travel agency reduces the probability of buying a ticket online, to be specific by 25% for LCC passengers and 33% for the remainder. In addition, low-cost companies, whose survival is closely linked to the minimization of all costs, more frequently use the Internet,⁶ with a 16.5% increase in the probability of online purchases among their passengers (Ong and Tan, in press obtain a slightly higher percentage of 23% for Malaysia).⁷ Given that LCC passengers are usually "price-sensitive" customers (Mason, 2001), this outcome is consistent with Yu (2008), who describes the online ticket purchaser as a person with price consciousness and an increased propensity to respond to a purchase offer when the price is presented in a discounted form.
- (d) The increased complexity of a trip favors in-store purchase and the use of travel agencies, while it negatively affects the propensity for online purchase. This outcome is consistent with Cheyne et al. (2005), who maintained that people are more likely to use the Internet when they travel to familiar destinations, because they have been there before. It also supports Alamdari (2002), who argued that travel agencies must be oriented towards designing complex itineraries for their clients.
- If the journey is very long (over 30 days) and therefore more preparation is needed, there is an increase of almost 4% in the probability of in-store purchase. If the trip includes a transcontinental or transoceanic flight and booking it is therefore more complicated (e.g., from Spain to a destination outside the Eurozone), in-store purchase is 18% more probable.⁸ Moreover, as the passengers have been interviewed at a regional airport, they must almost always transfer to another flight in order to reach a final destination outside the Eurozone, which increases journey complexity.⁹

⁵ However, this situation is changing. According to a survey conducted by the Barclays Group discussed in Papatheodorou and Lei (2006), 70% of business class travelers use LCCs.

⁶ According to Dobruszkes (2006), EasyJet sells 95% of its seats through the Internet.

⁷ This outcome is not striking if we consider the aggressive policies of certain LCCs against travel agencies. Ryanair is an example; the company periodically advertises in Spain that the commissions charged by travel agencies on the tickets they sell are abusive and, moreover, threatens to cancel or deny responsibility for any tickets booked through travel agents. Traditional travel agencies' usually respond by putting pressure on local and regional governments not to give economic aid for the introduction of new LCC lines, especially for Ryanair, arguing that LCC tourists are "low quality" (see, for example, Ryanair's criticisms of pressure brought to bear by Andalusian travel agencies for aid not to be given for new flights that are planned for Seville airport at <http://www.ryanair.com/site/ES/news.php?yr=09&month=jul&story=gen-es-130709>).

⁸ This likelihood would rise by up to 27.8% if only LCC passengers flying to a destination outside the Eurozone are taken into account. This is supported by the fact that many LCCs have a general point-to-point ticket sales policy so that no connections are possible (Dobruszkes, 2006). In addition, LCCs are not allied with other airlines, and so they cannot offer passengers a global product. This indicates great difficulties for online purchasers and introduces anxiety into the trip regarding a possible missing of connections, thus indirectly encouraging in-store purchases.

⁹ On the other hand, the lack of significance of the connecting flight variable could be due to a deficient construction of this independent variable. This variable does not include all passengers making connections in their trips; it only includes those who are making connections at the airport in which they were interviewed. Therefore, we must wait for future research and studies to be carried out with more precise statistical sources for this relationship to be confirmed.

- If it is a vacation trip and requires more preparation than a business trip (e.g., hiring day trips and spare time activities) or a trip to visit friends or relatives,¹⁰ the probability that the consumer will choose to make an in-store purchase is 4% higher.
- The specific preparations that are required for journeys made with children and the greater security that is sought in these cases entail a 7.3% increase in the likelihood of air tickets being purchased in-store, with a 6.3% fall in the likelihood of the purchase being made online.
- If the passenger does not fly alone and the trip involves substantial preparation before departure, the probability of an online purchase decreases. This effect is even greater for LCC passengers as the likelihood that passengers will purchase online falls by almost 4.6% if they are traveling in a group (a fall that comes from in-store purchases for the most part). Note that Yoon et al. (2006) reached a similar conclusion.
- Finally, it is quite striking that 80% of the increased probability of choosing in-store purchase due to these factors (i.e., long-term trip, destination outside the Eurozone, vacation trip, group trip and/or with children) comes from a decrease in online purchases, while only the remaining 20% comes from fewer purchases being made by phone.

Consequently, it seems that despite the continuous efforts of the airlines and e-travel agencies to incorporate various services into their websites, in 2006 the Internet still does not seem to be the best means to plan a complicated trip.

- In addition to the above-mentioned results, we add the existence of a strong correlation between in-store purchases and the use of travel agencies, since when the latter is chosen there is a 30% increase in the probability of buying in-store. Also, this 30% correlation between choosing a travel agency and opting for an in-store purchase comes from decreases in online purchases. The results are similar for LCC passengers although the increase is only 24% in this case.

From these two results, we conclude that the market niche for intermediary travel agencies necessarily involves value-added services to the sale of a ticket (Alamdari, 2002; Tsai et al., 2005; Cheyne et al., 2005), which in a standard tourism package are produced *ad hoc* or offered by an international tour-operator. Thus, the ticket sale is complemented with the booking of accommodation, spare time services, travel insurance, rented cars and so on.

In addition to these general trends, there are other relevant results:

- There are no signs of a clear relation between the passenger's joint demand of airline tickets and rental car services and the purchase channel. Notwithstanding, in the specific case of LCC passengers, the results (a 7% increase in likelihood of using the Internet) would seem to indicate a successful cross-selling strategy on the part of the online providers. There is therefore a clear positive correlation between the two variables (online purchase and rent-a-car) among LCC passengers, although it is difficult to interpret the direction of the causation between the variables. This correlation is logical, however, if we take into account the efforts of the LCCs to offer both services jointly on their websites through alliances with rental car companies, such as Ryanair's alliance with Hertz or EasyJet's with Europcar.
- Men show a small but significantly higher preference for telesales, while women opt for the Internet. In particular, if the passenger is a man, the probability that he will choose telesales as a purchase channel is 1.2% higher, while the probability that he will use the Internet diminishes in the same proportion. Note that Law and Wong (2003) did not find any significant differences between men and women, but their work only considered visits to travel websites, while we also include ticket bookings.
- Spaniards, as opposed to foreigners, who were mainly European Union citizens, show a preference for in-store purchases as opposed to online purchases. In other words, if a passenger is a foreigner, the likelihood of in-store purchase decreases 7% in favor of the Internet. This result could be explained by the lower level of Internet penetration in Spanish households compared to the rest of the European Union¹¹ as well as by the greater preference of Spanish citizens for buying in-store services. Interestingly, the number of travel agencies in Spain has not decreased with the development of e-airlines and e-travel agencies in the last decade; on the contrary, this figure has risen from 7000 to 9000.¹² The Internet should not be regarded as a potential threat but rather as a key management tool in the administration of these new offices.

¹⁰ According to our results, passengers visiting friends and relatives are more likely to purchase their tickets online. As, for Pels et al. (2009), passengers traveling to visit friends and relative may be more price sensitive than other segments of leisure travel, our result would be consistent with the profile of the online purchaser described by Yu (2008).

¹¹ According to Eurostat data (see <http://www.ine.es/prensa/np451.pdf> for a summary from the National Statistics Institute), only 39% of Spanish households had an Internet connection in 2006, whereas the average across the European Union was 52%. This difference was even larger when we compared Spain with the main tourist-emitting markets, including Germany (67%) and the United Kingdom (63%), which were the countries of origin of most of the foreign travelers who were interviewed.

¹² An important element for supporting the Spanish travel agency network, especially on the islands and, to a lesser extent, on the mainland coasts, is the significant market share held by charter flights and their generally associated package deals. This share stands at an average of slightly over 11 %, but in these areas might represent over 40 % of air traffic.

5. Conclusions

The tourism industry has been affected by progress in information and communication technologies (ICT) and by the generalized use of the Internet in planning and purchasing trips. The airlines have incorporated these new innovations and have tried to eliminate intermediary travel agencies by selling tickets through their own websites or telesales systems. As was analyzed in the introduction, this trend has been encouraged by the entry of LCCs into the market and the spread of the e-ticket, which threatens the traditional predominance of travel agency branch offices in the airline ticket market. And yet, the future dominance that was being attributed to airlines is in turn being threatened by the new online travel agencies, with their low intermediary commissions and powerful search engines that quickly offer the best fare offered by any airline for the required destination.¹³

In this regard, this paper seeks to determine the market niches for each of the purchase channels and how they correlate with each of the agents in this market (airlines – both LCCs and network carriers – and both traditional and online travel agencies). A simple random sample of 15,000 passengers was used to achieve this objective, with direct observation of the data telling us that traditional and online travel agencies together hold a 73% market share, which is similar to the figure that the previous literature gave for traditional travel agencies until recently (an average of 75% at the beginning of the decade, according to *Alamdari, 2002* or, at a date nearer our sample, over 70% for Korea, according to *Yoon et al., 2006*). What is brand new is that this market share is split almost half and half between the traditional type of travel agency (in-office and by phone) and online travel agencies. In short, what can be seen is a market that is segmented in three almost equal parts: 27% airlines, 36% online travel agencies and 37% traditional travel agencies. So, any changes that are taking place seem to be from traditional travel agencies to online travel agencies, which show that the airlines' strategies for attracting customers to their websites are having little success.¹⁴

As far as purchase channels are concerned, the Internet dominates, with 59% of the market, and its dominance is even greater in the case of LCC passengers (81.5%) and foreign passengers (70%). Nevertheless, the market share for traditional channels – in-office (30%) and by phone (11%) – continues to be high enough to justify an analysis of the features that determine a passenger's choice of purchase channels.

The results obtained with the multinomial logit model have allowed us confirm some of the hypotheses put forward in the previous literature, such as the influence that age or academic level have on the choice of purchase channel when buying airline tickets and LCC passengers' clear preference for online purchasing. Nevertheless, in our case, the size and range of the sample, 15,000 passengers, makes the results more robust and allows their relative importance to be quantified. As an example, the new generation of youngsters is 7% more likely to use the Internet as their purchase channel for airline tickets, whereas university passengers are 11% more likely to use this channel compared to those who have only completed primary education.

Apart from these largely anticipated conclusions there are also some original results, of which the following can be highlighted: the different behavior of men and women, the significant effect that the reason for the journey has (VFR, Vacation and Business), the synergies that can be found with rent-a-car firms on LCC websites, that fact that the average Spanish passenger opts less for making his/her purchase online than residents in other, generally EU, countries, and the preference shown for the personal contact provided by in-store purchases when the journey is more complex to organize and prepare, such as is the case of long trips, of group trips and family trips with children, or when transoceanic or transcontinental flights are involved and transfers to connecting flights are unavoidable.

According to the results that were obtained, the profile of passengers who are more likely to make their bookings online is that of a young person (of between 15 and 30 years of age), more likely to be female, a student or with a high academic level, a habitual traveler, who is booking a trip that is not very complex or is to a destination that is already known and, in the main, a user of LCCs. On the other hand, being male in the majority of cases, middle-aged (50–65), on a business or short trip (although, curiously, also being passengers who are unemployed or homemakers) and requiring the services of a travel agency are factors that are linked to an increase in the likelihood of passengers making their bookings by phone. Finally, passengers who are over 65, with a lower level of education, who are seeking the intermediation of a travel agency and are planning to go on a more complicated journey which therefore needs greater preparation (long-term journeys or holiday trips, with children or to an international destination outside the Eurozone) are more likely to make their purchases in-store.

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¹³ The airlines, especially the LCCs, are beginning to become aware of this threat, and so it comes as no surprise that Ryanair recently (June–July, 2009) began a press campaign to "inform" the public about the, in their opinion, "abusive" commissions charged by online travel agencies. However, unlike in earlier campaigns waged against traditional travel agencies, this time they did not make any threats to cancel or deny responsibility for any tickets booked through travel agents (see Footnote 7).

¹⁴ However, if the sample is divided into Spanish and foreign passengers, the dominance of traditional travel agencies rises to 42.5% for the former, compared to 26% for foreign passengers. This confirms the Spanish market's preference for the traditional model, and most especially the in-office model, commented on in part 4 of Section 4.

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