Face-to-face or cyberspace? Choosing the Internet as an intermediary in the Israeli travel market

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Existing studies of the trend towards electronic provision of travel services tend to be highly bifurcated. They focus either on the supply-side characteristics of this change (new technologies and mediation platforms) or on the demand-side attributes, such as the socio-economic profile of the Internet user and attitudes towards electronic purchasing in the travel market. The latter approach, however, can lead to sample selectivity bias and misleading parameter estimates. It fails to recognize that actual Internet travel purchases are observable only for individuals who have made the prior decision to use the Internet as a market intermediary. This paper addresses this drawback by modelling the decision to purchase travel products on the Internet in a bivariate probit framework. The choice of travel service intermediary, travel agent (face-to-face) or Internet (cyberspace), is determined by the joint probabilities of general Internet purchasing and specific Internet travel purchasing. Using unique survey evidence of actual Internet transactions, the discrepancies between preferences for Internet travel purchasing and actual travel purchases are highlighted. The results suggest that demand for the latter is more closely related to previous Internet purchasing experience than to the socio-economic attributes of the purchaser.

Keywords: Internet; travel agents; simultaneous bivariate probit

The electronic provision of travel services provides both a threat and a challenge to traditional modes of mediation in the tourism market. Ostensibly, the days of the high-street travel agent seem numbered. Various studies predict a

transformation in the role of the traditional travel service intermediary. Some see them as an 'endangered species' (Murphy and Tan, 2003). Others are more sanguine and point to a redefinition of their role in the travel market from processors of large batch products to providers of customized and personalized products (Wolff, 1997; Rayman-Bacchus and Molina, 2001). Whatever the perspective, electronic commerce is growing rapidly, and worldwide B to C e-commerce revenues are expected to more than double annually over the next five years (eMarketer, 2001). The share of the online tourism and travel markets in these revenues is expected to be significant. The US travel market alone is expected to grow from $14.8 billion in 2001 to $28.2 billion in 2005 (Jupiter Communications, 2003). The travel and tourism sector has been the engine behind the doubling of e-commerce activity in the European Union (EU) from 2002 (Q1) to 2003 (Q1). Over this time, tourism and entertainment-related activity grew by some 300%. Travel services in this sector registered the highest rates of growth, with airline sales growing by 666%, hotel bookings by 139% and car rentals by 586% (Visa, 2003). Concomitantly, the role of traditional travel intermediaries is expected to decline. Travel agents' share in the airline bookings market, for example, is predicted to drop from 75% of the leisure market in 1998 to 58% in 2003 (Jarach, 2002).

Internet procurement of travel services threatens existing intermediaries in the travel market by allowing for direct contact between customers and airlines, hotels and other travel and tourism organizations (Standing and Vasudavan, 1999). The literature on this issue presents a rather bifurcated approach to the role of new intermediaries in the travel market. On the one hand, much interest focuses on the supply-side characteristics of the change. This invariably converges on the introduction of new technologies such as computer reservation systems (CRS) and global distribution systems (GDS), new services (online auctions and bidding) and new platforms for mediation (interactive TV, cellular technology and the Internet) (Bloch and Segev, 1996; Buhalis and Licata, 2002; Jarach, 2002). On the other hand, demand-side studies often highlight the socio-economic profile of the Internet user and attitudes towards electronic purchasing in the travel service market (Bonn, Furr and Susskind, 1999; Lang, 2000; Weber and Roehl, 1999). Conclusions are then derived with respect to the prospects of Internet-based travel service choice.

Existing studies from both the supply and demand perspectives have limitations. The supply-side studies serve to stress the inevitability of the decline of the traditional travel agent mode of provision. In a technological twist on Say's law, this literature assumes that, with the increasing availability of new technologies, the virtues of face-to-face provision will give way to those of cyberspace.

On the demand side, the stereotypical picture of the Internet user that emerges (younger, wealthier, more educated) leads to the impression that socio-economic attributes condition travel service choice. For that reason the future of the traditional face-to-face service is limited. If, however, Internet purchasing is conditioned by other factors there may still be a role for the personalized provision of travel services. This is a factor that seems to have escaped attention, and this paper seeks to establish this contention.

In addition, the demand-side approach to choice of travel service intermediary is invariably grounded in surveys of attitudes towards Internet travel

purchasing. These can often suffer from sample selectivity bias and inaccurate parameter estimates. This is because actual Internet travel purchases are observable only for individuals who have made the prior decision to use the Internet as a market intermediary. Therefore, in predicting the likelihood of Internet travel purchasing, the parameter estimates for the former need to be jointly estimated along with the latter.

This paper addresses these limitations by modelling the decision to purchase travel products on the Internet in a bivariate probit framework. The explicit hypothesis is that the choice between travel agent (face-to-face) and Internet (cyberspace) will be conditioned by prior Internet purchasing behaviour more than the socio-economic attributes of the Internet user. Using data on actual Internet purchases (both general and travel-related), both stated preferences for the Internet provision of tourism services and actual Internet-based purchasing behaviour in the tourism market are modelled. The sections that follow discuss the rise of Internet-based tourism services, the profile of the Internet travel service purchaser (in contrast to the travel service surfer or information gatherer), the estimation procedure used in the paper and the empirical findings.

New intermediaries in the travel services market

The technological possibilities and opportunities afforded by e-commerce continue to excite the public imagination. More than just a communications system, the Internet increasingly commands attention because of the network externalities it generates and because it is much more than the sum of its constituent parts. Its largest commercial impact is arguably in those areas where customer service is a prime and time-consuming activity and for services in which the physical component is negligible. Nowhere is this more apparent than in the travel market. Hotel operators, tour operators, airline companies and travel agencies all find themselves both challenged and threatened by the Internet. In this state of flux, all operators in the travel market try to redefine their positions and forge new alliances and business practices in order to ensure survival (Langdale, 2001; Doolin, Burgess and Cooper, 2002). Perhaps the most vulnerable of all are the high-street travel agents. As intermediaries between the public and the travel service supplier, they can easily be side-stepped via the Internet, which provides the customer with direct access to the travel service or information. Active incentives to use the Internet over traditional forms of mediation, such as price reductions on online bookings, serve to enhance this trend.

As a result, the high-street travel agent has been eulogized on a number of counts. Some still see a place for off-line travel services and face-to-face contact, but with a monetary premium raised on this form of interaction resulting in a system that will not be economically sustainable over the long term (Kenney and Curry, 2001). A survey of expert opinion shows a general expectation that the high-street travel agent will increasingly be replaced by other technology-based platforms for delivering travel services, such as the Internet, interactive TV and portable communications devices, in the short term (Buhalis and Licata, 2002). However, the total demise of face-to-face provision is not anticipated even over the long term (15 years), as traditional travel agents increasingly

transact online to reduce costs and re-mould themselves as 'holiday shops' offering a total 'holiday experience' and personalized travel products. Others anticipate that 'bricks-and-mortar' travel agents and tour operators will continually be challenged by new technology and will lag in their response (Rayman-Bacchus and Molina, 2001). Those high-street businesses that diversify to Internet-based platforms will tend to use the Web as an advertising channel rather than as a medium for conducting travel transactions. These expectations suggest that the only factor likely to preserve the traditional travel agency is public wariness of Internet purchasing due to lack of sufficient safeguards and its reputation as an unmonitored arena for fraud. This, however, is likely to instil a false sense of security in traditional operators.

For all this speculation, there is scant concrete evidence of how much direct competition online commerce generates with traditional retailing. The data are hard to access. One study that has attempted to estimate the price sensitivity of the choice between face-to-face and cyberspace is that by Goolsbee (2001), who looked at PC purchasing in the USA. As the single most popular online good, the computer experienced a continual fall in retail sales over the course of the 1990s. By 1999, retail pc sales accounted for less than 60% of sales. Over the same period online sales continually increased, reaching about 18% of total sales by 1999. Using hedonic price regressions and probability models of the choice between online and retail modes, Goolsbee estimates significant competition between the two forms of commerce with a price cross-elasticity of close to 1.5 (that is, a 1% increase in retail price raises the probability of buying online by 1.5%). Aside from price, other significant factors that all exhibit the expected signs include previous Internet purchasing, age, income and education.

Finally, the impact of the Internet as an intermediary in the travel market is often addressed implicitly in the literature on profiling and segmentation. These studies generally involve large-scale surveys of Internet users and non-users, with specific questions about preferences for Internet usage in the travel market (Bonn, Furr and Susskind, 1999; Furr, Bonn and Hausman, 2002; Lang, 2000). Responses are segmented by social, demographic and geographical attributes and impacts on travel service intermediaries can be inferred from the preferences of the respondents. Profile-building exercises of this kind rarely include information on actual transactions or previous Internet purchasing history.

In some instances, the main instrument is a Web-based survey which results in a non-random sample biased towards experienced and frequent Web users (Weber and Roehl, 1999). Even when questions are directed to online purchasing, we still do not know the details of what was bought, the frequency and intensity of online purchasing and the behaviour of the respondent with respect to new technology adoption. It would therefore seem that profiling/segmentation studies which emphasize cross-classifying intentions with the characteristics of the user and Internet-searching rather than purchasing are of limited utility. Any conclusions as to the actual impacts on travel agents must be rather speculative.

Data

As stated above, not all Internet users actually use this medium for effecting purchases. The divide between Internet surfing and conducting actual monetary

transactions over the Internet is not easily bridged. The basis for any investigation of the tendency towards purchasing travel services over the Internet, therefore, needs to be grounded in the population of Internet users who engage in Internet-based purchasing.

This analysis uses a unique data set of Internet users who use the Web as a virtual marketplace. This group was identified in a two-stage process. First, a broad-sweep telephone survey was conducted, covering a representative national sample of 1,200 Israelis aged 14 and over. They were asked whether they used the Internet and from which locations (work, home, etc). The purpose was to establish the proportion of Internet users in the Israeli population. The second stage consisted of a more focused in-depth survey of about 900 Internet users drawn from a national sample of 3,000 households. These respondents were questioned about the ways they used the Internet in general and for travel and tourism purposes in particular.

Two main issues were addressed: the stated preferences of respondents for tourism services via the Internet versus the traditional alternative of the high-street travel agent, and the *actual* purchasing behaviour of the respondent with respect to his or her last vacation and whether any of the transactions involved were conducted via the Web. It is important to note that both these issues (preferences and actual behaviour) cannot be divorced from the more general tendency of Internet purchasing. Any modelling of Internet behaviour with respect to travel services needs to take this into account (see below).

Descriptive profile of the travel service purchaser

The first stage of the survey revealed that about one-third of the Israeli population, aged 14 and above, use the Internet, broadly defined (surfing, entertainment, information, news, etc). Of these, about 16% use it only from home, 10% only from work and the rest from both. As telephone surveys are often somewhat biased towards respondents with better access to the Internet, we assume that the actual proportion of users is probably somewhat less than one-third.

The results of the second stage related directly to travel service issues. Respondents reported more intensive Internet use for vacation planning abroad than for local vacations. Forty per cent of Internet users declared that they had used the medium for information seeking for their last vacation abroad, while the corresponding figure for local vacations was only 22% (Figure 1). Actual Internet transactions were even smaller, with only 16% of Internet users (5% of the total population) reporting purchases related to foreign vacations and 10% (3% of the total population) reporting purchases connected to their last vacation in Israel.

Dividing Internet usage for travel services between surfers and purchasers shows a series of differences with respect to place of vacation. For vacations both abroad and at home, hotel information or bookings were the most popular form of Internet use. For foreign vacations, the second most popular use was for flights (information and bookings) while for local holidays, where flights are less a feature of the travel package, Internet activity was directed at information seeking or booking of attractions (Table 1).
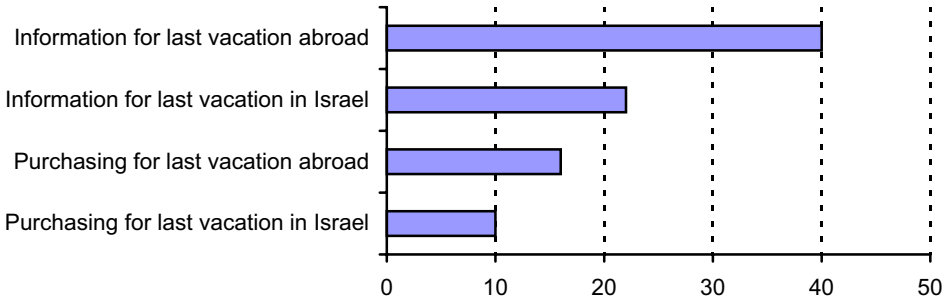
Figure 1. Distribution of Internet users according to their travel and tourism use (%).

Table 1. Internet usage by type of use and location of vacation (%).

| | Last vacation abroad | | Last vacation in Israel | |
	Information	Purchase	Information	Purchase
Hotels	53	60	65	68
Flights	44	56	10	12
Attractions	43	7	43	34
Maps	25	4	17	4
Weather	3			
Cars	3	4		
Other	3		4	
N	373	149	205	93

In the sample of Internet users reported here, the preferred mode of provision of travel services is still the travel agent. However, a large minority (44%) was either non-committal or expressed no particular preference (Table 2). The reasons for choice of mode are outlined in Table 3. In line with previous research (Lang, 2000; Wolff, 1997), the overriding reason for preferring travel agents related to the need for face-to-face contact. In descending order, other reasons related to the quality of information obtained using this mode and the perceived safety of this form of travel service provision. Preference for the Internet was justified in terms of price and time and the quality of information. The last two reasons feature prominently irrespective of preference for mode of travel service provision, indicating that they are subjectively interpreted.

However, simply using stated preferences to predict actual behaviour with respect to travel service intermediaries is problematic. Actual use of the Internet for purchasing travel services is observable only for those individuals who have made the prior decision to use the Internet as a market intermediary and who have made other (general) purchases using this medium. Ignoring this can lead to biased sampling and model estimates. Thus, preferring the Internet (over a travel agent) and the actual purchase of travel services via the Web (and not via an agent) are both related to the prior experience of general purchasing on the Internet. A potential correlation effect between these two systems exists and thus a suitable estimation technique needs to be employed.

Table 2.   Preference for mode of travel service provision.

Preference	%
Prefer travel agent to the Internet	39
Prefer the Internet to travel agent	17
Depends	4
Did not form an opinion	40
Total	100
N	886

Table 3.   Reasons for choice of mode of travel service provision.

	Mode of travel service provision (%)	
Reason	Travel agent	Internet
Human interface	30	–
Quality of information	23	30
Security	15	–
Service unavailable via the Internet	11	–
Cost savings	–	25
Time savings	11	38
Convenience	6	10
Accessibility	–	4
Other	5	6
N	345	150

Note: Multiple responses allowed.

Modelling travel service choice – a bivariate probit model

The descriptive results reported above illustrate that most Internet users still prefer to use travel agents for purchasing tourism and travel services. This raises a number of questions. First, is there any difference between this stated preference for travel agent and actual travel-purchasing behaviour? Are the factors that affect preference for Internet purchasing any different to those influencing actual Internet travel-related purchases? Ostensibly, the same factors should affect both decisions. A central hypothesis in this paper is that this may not be the case. Internet users are likely to state a preference for the Internet as a medium for conducting transactions as this seems like a natural decision for them. However, this decision will operationalized by a sub-group with prior purchasing experience using the Web.

As the decision either to prefer or actually use the Internet (instead of a travel agent) is related to prior Internet purchasing behaviour, a bivariate probit model is used to estimate the probability of choosing cyberspace over face-to-face in the travel services market. Two models are estimated, one relating to the probability of preferring the Internet over a travel agent and the other to the

probability of actually purchasing via the Web and not from a travel agent. Each model comprises two equations. The first model includes an equation for Internet preference and general Internet purchasing, while the second relates to Internet travel purchases and general Internet purchases. In each model the disturbance terms of the two equations are correlated and their joint estimation in a bivariate probit framework is more efficient than separate estimates using 2SLS. Furthermore, failure to recognize that Internet purchasing of travel services (stated or actual) is observed only for those who have decided to engage in general Internet purchasing can lead to a selectivity bias in the sample and inaccurate estimates.

Following Greene (2000), the general specification of the two-equation model is:

$$y_1^* = \beta_1' x_1 + \varepsilon_1, \; y_1 = 1 \text{ if } y_1^* > 0, \; 0 \text{ otherwise} \tag{1}$$

$$y_2^* = \beta_2' x_2 + \varepsilon_2, \; y_2 = 1 \text{ if } y_2^* > 0, \; 0 \text{ otherwise} \tag{2}$$

$E[\varepsilon_1] = E[\varepsilon_2] = 0,$
$Var[\varepsilon_1] = Var[\varepsilon_2] = 1,$
$Cov[\varepsilon_1, \varepsilon_2] = \rho$

where:

y_1^* = U(*Preferring the Internet*) – (*Preferring travel agent*) in the first model,
y_1^* = U(*Buying tourism-related services via the Internet*) – U(*Not buying via the Internet*) in the second model,
y_2^* = U(*Buying via the Internet* – U(*Not buying via the Internet*)
x_1, x_2 = vectors of explanatory variables
β_1, β_2 = vectors of coefficients
$\varepsilon_1, \varepsilon_2$ = vectors of error terms.

y_1^*, y_2^* are unobserved continuous variables showing the difference between the utility (*U*) from preferring or using the Internet for purchasing tourism-related services and that from conducting a general purchase via the Internet. The observed variables y_1, y_2 receive the value of 1 when y_1^*, y_2^* are positive, respectively.

For each model, the vectors of explanatory variables x_1, x_2 in each equation, while reflecting similar attributes and attitudes, are not necessarily the same. This paper assumes that the probability of general purchasing via the Internet depends on an individual's socio-economic characteristics, past experience with the Internet, aptitude for adopting new technology and tendency to purchase via catalogue. The probability of preferring the Internet or actually effecting Internet travel purchases is contingent on the same variables, except for catalogue purchasing since it is assumed that travel services are not usually sold this way.

Furthermore, it is assumed that the two decisions are not only related via the covariance of their disturbance terms, but that actual exposure to general Internet purchasing will strongly affect the decision either to prefer or actually to purchase travel via the Internet. A bivariate *recursive* simultaneous-equations model is therefore used, where y_2 appears as an explanatory variable in the first equation in each model. The probability that an individual will prefer the Internet or will actually purchase tourism-related services via the Internet is:

$$\Pr(y_1 = 1, \ y_2 = 1 | x_1, \ x_2) = \Phi_2(\beta_1' x_1 + \gamma y_2, \ \beta_2' x_2, \ \rho)$$

where Φ is the univariate standard normal cumulative distribution function and γ is the coefficient of y_2 in the first equation. A maximum likelihood estimator is used to determine model parameters β_1, β_2 and the correlation coefficient ρ is also a measure of the efficiency of the model. In this form of estimation, the coefficients are not biased and thus simultaneity can be ignored in the log-likelihood estimations (Greene, 2000).

The list of variables and their descriptions appear in Table 4. Gender, education and age are included in the analysis, as the literature shows them to have an effect on the use of the Internet for travel and tourism purposes. Income level, a popular indicator in other research, is not used here due to problems in collecting reliable data for this variable in Israel and especially for as specific a sample as that examined here. Generally, level of education is taken as a proxy for income level. Bonn, Furr and Susskind (1999) found that people who used the Internet to search for travel-related information were likely to be college-educated, less than 45 years old and engaged more intensively in tourism-related activities. Since seeking travel-related information precedes a travel-related purchase, similar results can be expected.

Number of years using the Internet was chosen as explanatory variable based on Sheldon's (1997) findings. She found that long-time users were more confident about using the technology and thus tended to make more online purchases than new users. Furthermore, this paper contends that not only experience with using the Internet but also intensity of use is likely to explain the likelihood of the Internet-based travel purchasing. Intensity reflects the level of confidence an individual feels with the technology. Another related variable in this context is technology adoption. Individuals who tend to adopt new technologies also tend to purchase more online (Lang, 2000). Ownership of a Palm Pilot Organizer is used as a proxy for technology adoption and the assumption is that Palm Pilot owners are more likely to use the Internet for travel goods and services.

Table 4.   Description of variables and summary statistics by alternative decision.

Variable	PRFI[h] =1	PRFI[h] = 0	TPI[i] = 1	TPI[i] = 0	GPI[j] = 1	GPI[10] = 0
Education[a]	3.69(1.34)	3.35(1.46)	3.55(1.26)	3.42(1.49)	3.76(1.43)	3.44(1.43)
Age[b]	2.7(1.13)	2.47(1.21)	2.94(1.10)	2.4(1.19)	2.51(1.11)	2.46(1.12)
Gender[c]	0.69(0.46)	0.61(0.48)	0.70(0.45)	0.61(0.48)	0.74(0.43)	0.65(0.47)
Experience[d]	2.51(1.59)	2.64(1.87)	2.46(1.75)	2.66(1.79)	3.24(1.96)	2.48(1.65)
Palm[e]	0.11(0.31)	0.12(0.33)	0.14(0.35)	0.11(0.3)	0.22(0.41)	0.10(0.30)
Intensity[f]	6.16(3.15)	5.06(2.21)	6.3(2.9)	5.0(2.3)	5.97(2.26)	5.33(2.47)
CP[g]					0.12(0.33)	0.11(0.32)
Observations	161	360	144	379	218	239

Notes: Standard deviations are in parentheses. [a]1 = elementary, 2 = partial high school, 3 = high school, 4 = vocational or partial college, 5 = university degree(s); [b]1 = 15–20, 2 = 21–30, 3 = 31–40, 4 = 41–50, 5 = 51+; [c]1 = male; [d]Number of years using the Internet; [e]1 = ownership of a Palm Pilot organizer; [f]Number of times per week usually uses the Internet; [g]1 = CP, catalogue purchase in the past; [h]1 = PRFI, preference for the Internet over travel agent; [i]1 = TPI, tourism-related service purchased via the Internet; [j]1 = GPI, general purchase (except for tourism-related) via the Internet.

Finally, the paper posits that previous exposure to general purchasing via the Internet will have a direct and positive effect on the probability of preferring the Internet or actually executing Internet purchases of tourism services. Having successfully charted the terrain of Internet purchasing, submitted credit card details, navigated the site, selected the basket of purchases and chosen the shipping mode, an individual will be prepared to repeat the exercise in the future.

Two models, each comprising two related equations, are estimated. In the first the equations relate to the probability of preferring the Internet for travel-related purchases over travel agents and the probability of general Internet purchasing. The two equations in the second model predict the probability of travel service purchases on the Internet and the probability of general Internet purchasing. The estimation of the two models is necessary to identify the factors influencing tourism-related purchasing via the Internet and to assess our above hypothesis that stated preferences and actual purchases do not reflect the same decision.

Empirical findings

Summary statistics of the explanatory variables appear in Table 4. Those who state a preference for Internet purchasing (PRFI) are generally older, more educated, more often male than female, and use the Internet more intensely than those who prefer travel agents. Similar differences are observed between those who actually make travel-related purchases (TPI) and those who do not. Those who executed general purchases on the Internet (GPI) exhibited all the above attributes and additionally had more Internet experience and were more adoptive of new technologies than those who did not buy general products on the Internet.

A priori Model 1 is expected to yield similar results to those observed in previous research explaining general Internet purchasing behaviour and prefer-ences for the Internet over travel agents. However, our bivariate probit estima-tion shows that, within the population of Internet users, those who engage in general purchasing differ from those who do not in terms of gender, Internet experience and intensity of use (Table 5, Model 1, Equation 2). With respect to preferences for Internet-based delivery of travel services, intensity of Internet use is the only feature differentiating those who stated a preference for this form of service delivery from those who did not (Table 5, Model 1, Equation 1). The reason we do not find any significant values for those variables that the literature often cites as important, such as education, age and tendency to use new technologies, may be that our sample contained Internet users only and not the general population. Thus those variables that generally reflect a ten-dency to use the Internet are not pertinent to our analysis.

Bivariate estimation also allows us to calculate marginal effects of the various independent variables and the feedback loops that arise due to the correlated error structures of the two equations in each model. For example, those explana-tory variables hypothesized to affect preference for travel agents (y_1=1) are also likely to influence the decision to make general Internet purchases (y_2=1). Since the GPI (general purchasing via Internet) variable is also an explanatory

Table 5.   Coefficients of the simultaneous bivariate probit models.

Variable	Model 1		Model 2	
	PRFI(1)	GPI(2)	TPI(3)	GPI(4)
Education	0.0005	−0.00008	0.0001	0.0001
	(0.0006)	(0.0006)	(0.0005)	(0.0005)
Age	−0.003	0.001	0.15*	0.001
	(0.03)	(0.04)	(0.04)	(0.04)
Gender	0.3	0.4*	−0.15*	0.5*
	(0.17)	(0.1)	(0.06)	(0.1)
Experience	0.02	0.1*	−0.12*	0.13*
	(0.1)	(0.03)	(0.03)	(0.03)
Palm	0.0002	−0.00009	0.0005	−0.0001
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Intensity	0.1*	0.04*	0.08*	0.04*
	(0.03)	(0.02)	(0.03)	(0.02)
CP		0.0003		0.0001
		(0.0005)		(0.0004)
GPI	−1.0		1.2*	
	(1.0)		(0.4)	
Constant	−0.9*	−1.6*	−1.3*	−1.6*
	(0.24)	(0.2)	(0.2)	(0.21)
ρ	0.7		−0.7*	
	(0.7)		(0.2)	
LogL	−578.0		−546.4	
Number of observations	523		523	

Note: Standard deviations are in parentheses. Significant at 5%.

for PRFI (preference for purchasing travel over the Internet) the independent variables in Equation 2 have an indirect effect on y_1 that is mediated by y_2. This is captured by estimating the marginal effects.

Rather than estimating these effects at the sample means, they are calculated here at the mean of the observations that executed a general purchase using the Internet and at the mean of the observations that did not (GPI =1,0 respectively, Table 6). When GPI =1, our results show that the marginal effect of Internet intensity and Internet experience are significant. For each year of using the Internet there is a 3% decrease in the probability that an individual will prefer the Internet over a travel agent. Conversely, increasing the intensity of Internet usage (the number of times used per week) will lead to an almost 4% increase in the probability of preferring the Internet for travel purchases. This underlines the importance of user confidence as a key factor in conducting Internet transactions. The more comfortable a user feels with the medium, the more likely it will be chosen as the preferred form of intermediary in the travel market.

The estimation of Model 2 gives similar results with respect to the decision to conduct general purchases via the Web (GPI). The coefficients for gender, Internet experience and intensity are all significant (Table 5, Model 2, Equation 4). The main difference, however, arises with the joint estimation of the probability to execute actual travel purchases via the Internet (TPI). Additional

Table 6. Marginal effects of variables in Model 1 (Equation 1), calculated at the mean of observations when GPI = 1 and 0.

Observations used for means when GPI = 1

	Direct	Indirect	Total	Variable mean
Education	0.0003	0.0	0.0003	3.69
Age	−0.0015	−0.0004	−0.0019	2.47
Gender	0.162	−0.1213	0.0407	0.76
Experience	0.0113	−0.0437	−0.0324*	3.25
Palm	0.0001	0.0	0.0001	0.20
Intensity	0.0512	−0.0139	0.0373*	5.92
CP	−0.5392	0.0	−0.5392	0.12
GPI	0.0	−0.0001	−0.0001	1.0

Observations used for means when GPI = 0

	Direct	Indirect	Total	Variable mean
Education	0.0002	0.0	0.0002	3.377
Age	−0.001	−0.0003	−0.0013	2.56
Gender	0.106	−0.0991	0.0069	0.59
Experience	0.0074	−0.0358	−0.0284	2.39
Palm	0.0001	0.0	0.0001	0.096
Intensity	0.0334	−0.0114	0.022	5.23
CP	0.0	−0.0001	−0.0001	0.11
GPI	−0.3523	0.0	−0.3523	0.0

*Significant at 5%.

variables, such as age and previous general Internet purchases (GPI), now have a significant effect.

An examination of the marginal effects (Table 7) shows that, when effects are calculated at the mean of the groups when GPI=1, the total effect of age is positive and significant (0.0628). This means that for each increase of ten years in age there is an increase of 6% in the probability of purchasing tourism-related services via the Internet. While this seems to suggest that age increases general Internet purchasing behaviour, it should be noted that the sample includes young users (aged 14 to 18) for whom Internet purchasing is not an option as they are too young to have credit cards. Intensity of use is also significant. For each increase in the number of times the Internet is used per week, the probability of purchasing tourism-related services increases by 4%. General Internet purchasing also increases the probability of purchasing tourism-related services by 50%. In Model 2 there is obviously a zero effect (direct and indirect) on Internet travel purchasing (TPI) for those observations where GPI=0, as actual Internet travel purchases are observable only for individuals who have made the prior decision to use the Internet as a market intermediary.

The marginal effects reported in Tables 6 and 7 subdivide into direct and indirect effects. The relative sizes of these effects are instructive. For Model 1 (preference for the Internet), the only significant effects relate to Internet experience and intensity of use (Table 6). With respect to experience, the indirect effect is negative and larger than the (positive) direct effect. Thus while experience using the Internet is positively related to general Internet purchasing,

Table 7. Marginal effects of variables in Model 2 (Equation 3), calculated at the mean of observations when GPI = 1 and 0.

Observations used for means when GPI = 1

	Direct	Indirect	Total	Variable mean
Education	0.0001	0.0	0.0001	3.69
Age	0.0624	0.0004	0.0628*	2.47
Gender	−0.0645	0.111	0.0465	0.76
Experience	−0.0514	0.0327	−0.0187	3.25
Palm	0.0002	0.0	0.0002	0.20
Intensity	0.0347	0.0097	0.0444*	5.92
CP	0.0	0.0	0.0	0.12
GPI	0.5298	0.0	0.5298**	1.0

Observations used for means when GPI = 0

	Direct	Indirect	Total	Variable mean
Education	0.0	0.0	0.0	3.377
Age	0.0	0.0	0.0	2.56
Gender	0.0	0.0	0.0	0.59
Experience	0.0	0.0	0.0	2.39
Palm	0.0	0.0	0.0	0.096
Intensity	0.0	0.0	0.0	5.23
CP	0.0	0.0	0.0	0.11
GPI	0.0	0.0	0.0	0.0

*Significant at 5%; **Significant at 10%.

this latter factor then enters the preference equation with a negative sign (Table 5). This accounts for the negative indirect effect attributed to experience. The larger indirect effect is due to the large coefficient size for GPI when it enters the preference equation (Equation 1) as an explanatory variable (−1.0), in stark contrast to the small value estimated for the effect of experience on Internet preference (0.02). In the case of Internet intensity in Model 1, indirect effects are again negative (the result of the negative coefficient for GPI when it enters the preference model), but this time the direct effect is, as expected, larger than the indirect effect.

The marginal effects for Internet experience and intensity in Model 2 (Internet purchasing) are much more straightforward. Age, intensity of use and general Internet purchasing are all significant (Table 7). In all cases, effects are positive, direct effects are larger than indirect effects and GPI enters the model predicting Internet travel purchasing with a large, significant and positive coefficient (1.2, Table 5).

Conclusions

Our results show, in contrast to the existing literature, that the decision to use the Internet as an intermediary in the travel market is not conditioned simply by the attributes of the Internet user. Rather, this paper suggests that a two-stage process is involved. The first stage, which is the focus of most of the

literature, relates to the basic decision to use the Internet for travel purposes. Here, collective wisdom suggests that demand-side characteristics are import-ant: younger, wealthier and more educated people will tend to use the Internet more than others. Not all Internet users, however, are comfortable enough with the medium to use it for monetary transactions. The second stage comprises two correlated but separate decisions: general purchasing via the Internet and the purchase of tourism-related services. The first of these decisions illustrates the existence of a learning curve. The longer an individual is exposed to the Internet, the more he or she is likely to feel comfortable with the technology and the greater the probability of conducting a purchase. In terms of general purchasing, computer-related goods are frequently bought via the Internet and are more likely to be bought by men (Goolsbee, 2001). On this basis, the preference for the Internet as a medium for tourism services is not influenced by experience but rather by intensity of use.

The second and more specific decision relates to the actual purchasing of travel and tourism services. This is a very different choice from that of pre-ferring the Internet for general purchasing. In this instance, the intensity of Internet use is an important influence while, in contrast, it does not have any significant effect on general purchasing via the Internet. Experience with the Internet affects both the tendency to execute general purchases and specific tourism-related purchases. The implication of this is that Internet sites may generate positive externalities for each other. Each Internet purchase increases the chances of a further purchase. From a marketing perspective, the signifi-cance of this finding seems clear. The use of sales gimmicks and free gifts to lure the Internet user into a first-time purchase is likely to show immediate and positive returns. This finding also has clear implications for targeting. The results presented above suggest that, in order to increase the cyberspace segment of the travel services market, the most productive route is via those already locked into this form of purchasing or via those new to the market (witness the positive effects of the 'age' variable). This latter group is open to new forms of market mediation and has not yet fully articulated its purchasing behaviour. Targeting the other sub-segments of the market would remain the domain of other forms of intermediaries offering the face-to-face option, such as the traditional travel agent, tour operator or specialized route planner.

These results may also indicate that expectations of the demise of the high-street travel agent may be inflated. If intensity of Internet usage and previous Internet purchasing are the main conditioning factors for Internet travel pur-chasing, then there does not seem to be any inexorable trend towards favouring cyberspace over face-to-face. Rather, both market segments are likely to con-tinue to exist into the future with the outer bounds of their expansion defined by socio-economic factors.

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