

# Modelling ICT's Effects on Tourism Business Performance

Carmen Berné<sup>a</sup>; Margarita García-González<sup>b</sup>; María Esperanza García-Uceda<sup>c</sup> and José Miguel Múgica<sup>d</sup>

<sup>a b</sup> University of Zaragoza, Business Department. Facultad de Ciencias Económicas. Gran Vía, 2, 50005 Zaragoza

[<sup>a</sup>cberne@unizar.es](mailto:cberne@unizar.es); [<sup>b</sup>margar@unizar.es](mailto:margar@unizar.es)

<sup>c</sup> University of Zaragoza, Business Department . Facultad de Ciencias Sociales y del Trabajo. Violante de Hungría, 23, 50009 Zaragoza

[<sup>c</sup>mariola@unizar.es](mailto:mariola@unizar.es)

<sup>d</sup> Public University of Navarra, Business Department. Campus de Arrosadía, 31006 Pamplona.

[<sup>d</sup>jmmugica@unavarra.es](mailto:jmmugica@unavarra.es)

## Abstract

ICT have provided new ways for relationships between the members of the tourism of distribution channels. The competitiveness and the efficiency in the sector have risen, improving the business performance. However, there are not empirical studies in the tourism literature confirming this regard. The objective of this investigation is to confirm the relationship between the growing use of the ICT among intermediaries of the tourism sector and the business performance, through the increase in relations between the members of the distribution channel. To this aim, a structural equations model is estimated with data from a survey to tourism intermediaries conducted in Spain. The estimation confirms two latent variables, one for the dynamics of relationships brought about by the ICT in the sector, and another for business performance. There is a cause-effect association between the two variables. As a managerial implication, the tourism intermediaries must intensify relationships with suppliers and tour operators as members of the channel whose strategies allow for improved effectiveness of the entire value chain.

**Keywords: Tourism, ICT, Intermediaries, Business Results**

## Introduction

The expansion of the use of information and communication technologies (ICT) as a working tool accessible to the firms has created a new competitive environment. Its use is becoming a priority as a platform for business development.

In the 1990s, the tourism sector was a pioneer harnessing the ICT (eBusiness W@tch, 2006) by adapting them successfully to the business processes (Poon, 1993; Reinders and Baker, 1998). The adaptation involved the inter-organization systems (IOS), the intra-firm operations systems, and the whole management of tourist businesses (Connell and Reynolds, 1999). This adoption of the ICT innovations had to be orientated towards an adequate adaptation of the offer to the needs of consumers (Bramwell and Lane, 1999).

Since then, the ICT have provided a new way for the marketing of the tourism products and for relationships between the members of their distribution channels (Buhalis and Law, 2008). The interdependence among a wide assortment of goods and services, all of them part of the final tourist product, the small size of many individual operators, and the spatial separation between the place of the enjoyment vacation and the habitual residence of tourists, have encourage the formation of cooperative relationships between the players in the sector (Fyall and Garrod, 2004; Wang and Fesenmaier, 2007). These movements have raised the competitiveness and generated greater efficiency to the distribution system of tourism products and services; improving in short, the business performance (Kim, Kim and Han, 2007).

Albeit this wide acknowledgement in the tourism literature about the importance of ICT in the development of the relationships networks in the sector and its influence on the business performance of the tourism companies, there is a lack of empirical studies in this regard. Thus, the objective of this investigation is to confirm the relationship between the growing use of the ICT among intermediaries of the tourism sector and the business performance, through the increase in relations between the members of the distribution channel. To this aim, a structural equations model is raised with two measurement models. The model is estimated with data from a survey to tourism intermediaries conducted in Spain.

### **Background and hypotheses**

The ICT contribute to the development of firms by means of a knowledge base that improves the management and performance of the marketing functions (Schertler and Berger-Koch, 1999), particularly distribution and trade marketing (Yu and Law, 2000; O'Connor and Frew, 2002). In addition, the published research suggests the existence of a direct impact of the development of technologies on the competitiveness of enterprises. On the one hand, ICT are determinants of cost advantages and product-service differentiation (Porter, 2001; De Pablo, 2004; Buhalis and O'Connor, 2005); its applications in the organization allow improvements in coordination and control of the activities and a more effective decision-making (Porter, 2001). On the other hand, ICT are key contributors to the globalization of the tourism sector (De Pablo, 2004).

The published research also provides empirical evidence that users of ICT win market share at the expense of non-users (Baldwin and Diverty, 1995) through the expansion of their operations (Baldwin and Sabourin, 2001). This is due to the fact that ICT play an increasingly important role in the management of customer relationships, because they allow a bidirectional interactive relationship and a continued customization of its offer to the expectations of each customer. These factors, combined with the availability of databases, are key determinants of the success of the tourist businesses (De Pablo, 2004).

At the moment, the possibilities of interconnection and interactivity with interest groups, from the use of the ICT, are still growing in the tourism industry (Buhalis and Law, 2008). This is the case of inter-firm relationships in the distribution channels which are mostly based on the level of interdependence. Interdependence strengthens the links between enterprises, favouring their relationships (Frazier, 1999). The interest in maintaining the position of each participant in the chain of value also favours this context. Confidence and commitment are built as the parties seek for interest, care and mutual support.

All the four major drivers of the interdependence and the strength of relationships in tourism stated earlier (the make-up of the tourism product as a combination of miscellaneous services, the lack of physical flows, the distance of customers to the destination spot, and the small size of tourism businesses), make-up a perfect ground for the effective use of ICT for the business purposes of tourism firms.

The question aimed to be solved in this research is: what relations, developed on the basis of the ICT, are involved in the dynamics of contacts that have a positive effect on the business performance of tourism intermediaries? For this, we differentiate three types of relationships between operators: relationships of the company with other conventional intermediaries and suppliers, relationships of the company with virtual intermediaries, and relationships in the industry as a whole.

1) Relationships with suppliers, and other conventional intermediaries. The interest of suppliers to reach directly to consumers has not diminished the intensity of their relationships with the intermediaries. On the one hand, there has been a large increase in the number of suppliers of different types (hotels, short stays accommodation, restaurants, transport companies, rental companies, ...) , and the strategies of suppliers to gain a foothold in a competitive market passes by using ICT to establish and develop relations with the sector intermediaries. On the other hand, ICT allow the implementation of the inter-organizational systems (technological platforms of information), which link very closely the large suppliers that develop the systems (hotel chains, airlines, large rental companies, ...) with conventional and virtual intermediaries.

Among conventional intermediaries, travel agencies (TTAA), are the most affected since the outbreak of ICT in tourist distribution (Falkenstein, 1997), and are compelled to seize the opportunities that ICT bring to business. Among them, the development of relationships with other agencies (Falkenstein, 1997; Esteban, Millán and Molina, 2000), the reduction of costs, and better access to the final consumer (Alcázar, 2002). Also, ICT provide the base to develop horizontal relationships of varied types capable of managing and developing better relations with suppliers to be more competitive (Alcázar, 2002).

Tour operators (TTOO), the other major type of conventional intermediaries, are now largely subsidiaries of multinational companies that control the direct investments in tourism. Thus, they are conditional upon the interests of these owners at the time to manage the flow of tourism toward different destinations and countries. The merger processes between the TTOO have been especially intense at the beginning of the new millennium, creating powerful giants of the leisure travel market that are vertically integrated with the airlines, with the hotel industry in the tourist destinations, with the retail agencies, and with the supporting agencies in destination. Accordingly, these large corporations have managed to control the package tours from the markets toward the receivers (Cavlek, 2005). The more intense the vertical relationship of the TTOO, especially with tourism businesses in the recipient countries, more success will have in their operations (Cavlek, 2002).

2) Relationships of the company with the virtual intermediaries of the tourism sector. The so-called Global Distribution System (GDS) are considered structures of a horizontal nature, while also establishing vertical relationships. The GDS try to maximize their market share through alliances and strategic agreements, which increase the concentration in the tourism industry. The management and distribution of reservations in the global frame provided by

the GDS to tourism suppliers, generate synergies with intermediaries that stimulate their development (De Pablo, 2004), so that a greater joint activity in this sense, facilitated by ICT, should have a positive influence on the market performance of the intermediaries.

Similarly, central reservation systems (CRS), another major virtual intermediary with a horizontal structure which appeared at the time that large hotel chains put into operation a new distribution formula, provide an ICT base that facilitates chances to generate better market performance to intermediaries.

3) Relationships in the sector, horizontal and vertical. Almost every initiative on the intensification of relationships between companies in tourism is driven by the search for improvements in production, cost reduction, increased competitiveness and, ultimately, the increase in profits (Alcázar, 2002). Also, the tourist organizations can better achieve its objectives when the relations of the participants are developed within a formal structure (Pearce 1989). It is unquestionable that ICT have allowed a massive increase in the number of horizontal and vertical relationships and have provided a base to support more formal links between tourism operators.

These considerations lead us to specify the following working hypotheses:

H1. "The dynamics of relationships in the tourism distribution system, provided by ICT, are made-up by the intensification of relationships of intermediaries with other conventional intermediaries and suppliers, relationships with virtual intermediaries, and relationships in the sector as a whole".

H2. "A higher level of relationship dynamics provided by ICT to tourism intermediaries will have a positive effect on their business performance".

### 3. Empirical Analysis

#### 3.1. Research Design

From the commercial data base Business Guide Internet, S.L., we identified the population of intermediary operators of the tourism distribution system in Spain. This population was made-up by the following intermediaries: 15 virtual intermediaries' type companies (GDS and CRS), 65 wholesale level conventional intermediaries' type companies (TTOO and TTAA with wholesale operation), and 3,774 retail level conventional intermediaries' type companies.

Out from this population, we selected a convenience target sample weighted by the type of intermediary, i.e., taking into account the shares of each type of intermediary. A structured questionnaire, administered via e-mail, was addressed to a responsible authorized by the company. Of 655 e-mailed questionnaires we had valid response from 132 intermediaries (Table 1).

**Table 1. Technical Profile of the Survey**

<b>GEOGRAPHICAL AREA</b>	Spain
<b>POPULATION</b>	3.854 Intermediaries in Tourism Sector
<b>RESPONDENT</b>	Authorized
<b>CONTACT METHOD</b>	e-mail questionnaire
<b>SAMPLING METHOD</b>	Convenience
<b>SAMPLE SIZE</b>	132 companies: GDS and CRS (10,6%); TTOO (10, 6%) and wholesale TTAA (14,4%); retailer TTAA (64,4%)

<b>PERCENTAGE OF RESPONSE</b>	20% (132 out of 655)
-------------------------------	----------------------

The questionnaire was designed based on the review of literature, the results obtained from previous qualitative interviews with experts, and a pilot pre-test. The questionnaire included the variables in blocks of items presented as statements to be rated by respondents with measurement scales of the Likert-type 11 points, from 0 (totally disagree) up to 10 (totally agree). As such, the responses are perceptions of the intermediaries about the issues covered in our research.

One block of items addresses the dynamics of the relations in the channel (RD). It includes 7 items relative to perceived changes in the relationships between the agents of the distribution system tourism (suppliers and intermediaries), derived from a greater use of ICT. Another block of 6 items captures the perceptions about the contribution of the effective use of ICT to the market performance of the company.

### **3.2. Measurement Models**

The structure of the two basic variables, RD and RR, is explored using the exploratory factorial analysis (EFA) (Table 2).

There are three main components that underlie in the structure of RD, which explain 80% of the total variance. The first one is the relationships with suppliers and conventional intermediaries (RD1), which is made-up by the three items that capture the influence of ICT in this dynamic. The first item reflects the growing interconnection and interactivity with suppliers provided by ICT. The second and third items show the positive role of ICT on the increase of relationships intensity with conventional intermediaries (TTAA and TTOO). The second factor (RD2) reflects the relationships with the virtual intermediaries as it is made up of two formative items: the intensification of relationships, facilitated by ICT, of tourism intermediaries with the GDS, and with the CRS companies through the implementation of ICT solutions as mechanisms of transaction. And the third factor (RD3), which captures the relationships in the sector, includes two formative items; one relative to the increase of vertical relationships (among companies operating in different distribution levels), and another relative to the increase of horizontal relationships (between companies in the same level of the channel). So we can observe that the relationships dynamics facilitated by ICT, as seen by the intermediary tourism companies, are clearly differentiated in the three types of relationships: those with suppliers and other conventional intermediaries, those with virtual intermediaries, and the general effect on the relationships of the sector.

For the business performance (RR) two main components, that explain a 84,67 % of the total variance, have been identified. The first one, market performance (RR1), includes four items as formative indicators: the impact of ICT on the competitive position of the company, on the acquisition new customers, on the increase in sales, and on market share. The second one, financial performance (RR2), is made up of two formative items: the increase in mark-ups, and the increase in the profitability of the business which are facilitated by ICT.

A Factorial Confirmatory Analysis (CFA) is used to evaluate the metric properties of the measurement scales of RD and RR, and to test the hypothesis H1 applying the Structural Equations Model (SEM) methodology<sup>1</sup>. The reliability analysis suggested the elimination of one item of the RD block and another of the RR block (see Annex)<sup>2</sup>.

**Table 2. Results of EFAs**

	Principal Components	Variance	Items*	$\alpha$
<b>ICT and Relationship Dynamics (RD)</b> Total Variance =79.4% Residual=42% Cronbach $\alpha$ = 0.73 KMO=0.72 $\chi^2$ Barlett (21)=286.071	<b>RD<sub>1</sub></b> : Relationships with conventional intermediaries	30.38%	<ul style="list-style-type: none"> <li>● V1 Relationships with suppliers</li> <li>● V2 Relationships with TTOO</li> <li>● V3 Relationships with TTAA</li> </ul>	0.76
	<b>RD<sub>2</sub></b> : Relationships with virtual intermediaries	26.20%	<ul style="list-style-type: none"> <li>● V4 Relationships with GDS</li> <li>● V5 Relationships with CRS</li> </ul>	0.89
	<b>RD<sub>3</sub></b> : Relationships of the sector	22.90%	<ul style="list-style-type: none"> <li>● V6 Vertical relationships</li> <li>● V7 Horizontal relationships</li> </ul>	0.76
<b>ICT and Business Performance (RR)</b> Total Variance =84.67 Residual =33% Cronbach $\alpha$ = 0.91 KMO= 0.75 $\chi^2$ Barlett (15)=610.276	<b>RR<sub>1</sub></b> : Market performance	48.39%	<ul style="list-style-type: none"> <li>● V8 Competitive position</li> <li>● V9 Number of customers</li> <li>● V10 Sales</li> <li>● V11 Market Share</li> </ul>	0.90
	<b>RR<sub>2</sub></b> : Financial performance	36.27%	<ul style="list-style-type: none"> <li>● V12 Profit Margin (mark-up)</li> <li>● V13 Profitability</li> </ul>	0.96

\* Complete sentences of items in the Annex.

The general goodness-of-fit indexes of the two measurement models indicate a good fit in both cases (Table 3). The values of the reliability coefficients of the latent variables (CF1; CF2) have convergent reliability and validity<sup>3</sup> (Table 4). Also, the values of the factorial loadings are greater than the observed correlations between the dimensions so that the discriminant validity is assured.

**Table 3. CFA-SO Goodness Fit-Index\***

Measurement Models	g-I	$\chi^2(S-B)^*$	p-value	RHO	RMSEA	GFI	AGFI	BBNFI	BBNNFI	CFI
<b>TI-SO</b>	7	3.95	0.79	0.88	0.00	0.98	0.95	1	1	1
<b>BE-SO</b>	4	4.20	0.38	0.94	0.02	0.92	0.78	0.98	0.99	0.99

\*SO: Second Order; S-B: Satorra-Bentler.

**Table 4. Standardized Factorial Loadings**

VARIABLES		RD1	RD2	RD3	t-value	CF1	CF2	R <sup>2</sup>
Relationships with suppliers	<b>V1</b>	<b>0.67</b>			*			0.45
Relationships with TTOO	<b>V2</b>	<b>0.99</b>			<b>6.94</b>			0.99
Relationships with GDS	<b>V4</b>		<b>0.85</b>		*			0.73
Relationships with CRS	<b>V5</b>		<b>0.79</b>		<b>3.76</b>			0.62
Increasing vertical relationships	<b>V6</b>			<b>0.99</b>	*			0.99
Increasing horizontal relationships	<b>V7</b>			<b>0.66</b>	<b>6.40</b>			0.44
			<b>BE1</b>	<b>BE2</b>				
Number of customers	<b>V9</b>			<b>0.60</b>	<b>4.45</b>			0.36
Sales	<b>V10</b>			<b>0.97</b>	*			0.93
Market share	<b>V11</b>			<b>0.87</b>	<b>9.57</b>			0.76
Profit Margin	<b>V12</b>			<b>0.91</b>	*			0.84
Profitability	<b>V13</b>			<b>0.98</b>	<b>10.34</b>			0.97
			<b>TI</b>	<b>BE</b>				
Relationships with conventional channel levels	<b>RD1</b>			<b>0.82</b>	<b>4.14</b>	<b>0.72</b>	<b>0.78</b>	0.67
Relationships with virtual intermediaries	<b>RD2</b>			<b>0.70</b>	<b>5.69</b>	<b>0.67</b>	<b>0.71</b>	0.49
Relationships of the sector	<b>RD3</b>			<b>0.34</b>	<b>2.50</b>	<b>0.72</b>	<b>0.78</b>	0.30
Market share	<b>RR1</b>			<b>0.97</b>	<b>6.50</b>	<b>0.69</b>	<b>0.80</b>	0.94
Profitability	<b>RR2</b>			<b>0.67</b>	<b>4.31</b>	<b>0.91</b>	<b>0.86</b>	0.45
Relationships dynamics	<b>RD</b>				<b>3.28</b>	<b>0.43</b>	<b>0.61</b>	

Business performance	RR			0.69	0.73	0.50
----------------------	----	--	--	------	------	------

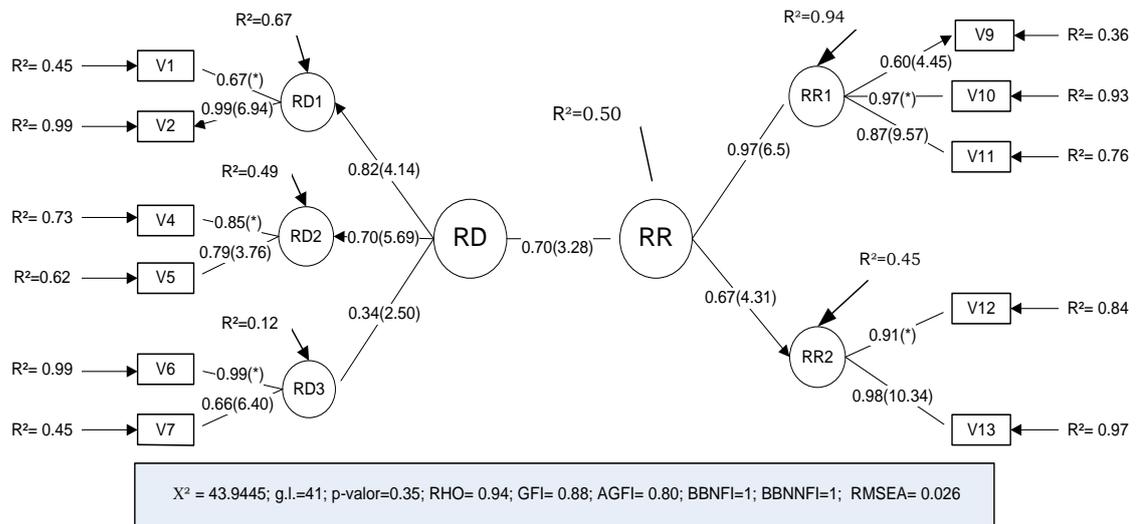
\*Value fixed to 1.

The tests confirm the two measurement models. One model relative to the dynamics of relationships between tourist operators due to the growing use of ICT (RD as a second order dimension or latent variable); it is made up of three first-order dimensions and six indicators. This result confirms the hypothesis H1. And, another model which reflects the business performance (RR) and is made up of two first-order dimensions and five indicators.

Finally, the model RD-RR is estimated with SEM. The goodness-of-fit indexes confirm the empirical validity, and all the reliability coefficients of the observed variables ( $R^2$ ) are above the critical value: 0.5 (see Figure 1). Thus, we can state that the relationships dynamics impelled by ICT in the tourism distribution channels explain 50% of the changes in the market and financial performances of tourism intermediaries.

The model shows the outstanding role of ICT in enhancing relationships of intermediaries with suppliers and the intermediaries at the wholesale level (TTOO). To a lesser extent with the GDS, and the CRS. The increase in relationships with TTAA has not a significant contribution. Regarding the role of ICT in improving business performance, the contribution of financial performance improvements achieved with ICT, is larger than the contribution of market performance. The confirmatory model excludes the improvements in the competitive position as a significant part of the market performance achieved by the use of ICT. In any case, the increased use of ICT by the tourism intermediaries fosters relationships in distribution channels, a positive impact on the business performance of intermediaries. This leads to accept the hypothesis H2.

**Figure 1. RD-RR MODEL RESULTS**



## Conclusions

The reviewed literature stresses the importance of technology in establishing more intense relationships between the members of the tourism distribution system, as well as in achieving better business performance.

This research analyzes the link between the increasing use of ICT among the tourism operators and the impact on their business performance, through the increase of relationships between the members of the distribution channel.

The results seem to confirm, on one hand, that companies realize the importance of adapting to changes and are currently attending a major transformation process that affects both the organizational and management models and the productive and strategic activities. On the other hand, the intensive use of ICT, of relationships, and of knowledge is acknowledged by the tourism intermediaries consulted as a managerial strategy aimed at maintaining the market position and to improve the business profitability.

The empirical study validates two measurement scales, one for the dynamics of relationships brought about by the ICT in the sector, and another for business performance. Both concepts are confirmed as second-order dimensions out from formative indicators of first-order dimensions. The association between the two latent variables is confirmed by a structural model that finds a high impact on the financial and market performance of tourism intermediaries and market of the dynamics of the relationships brought about by the ICT.

### **Managerial Implications**

Since the dynamics of relationships between channel members benefit the tourism intermediaries, they must ensure a sustained effort aimed at its development. It is particularly relevant to intensify relationships with suppliers and tour operators. Both levels are confirmed as members of the channel whose strategies support and enhance the tourist service and allow for improved effectiveness of the entire value chain. In these decisions, the intermediary puts at stake the automation of processes, the product differentiation, the formation of potential consumer preferences, and the influence that the offer may have on their decisions. In any case, the enhancement and development of agreements, both in intensity and in number, must be understood by the tourism intermediary as a strategic tool to improve its market position and profitability

### **References**

- Alcázar, B. del (2002): *Los canales de distribución en el sector turístico*. ESIC. 2002.
- Bagozzi, R.P. (1980): *A casual model in marketing*. Jonh Wiley, New York.
- Baldwin, J.R. and Diverty, B. (1995): Advanced technology use in canadian manufacturing establishments, Working Paper, 85, *Microeconomics Analysis Division*, Statistics. Canada, Ottawa.
- Baldwin, J.R. and Sabourin, D. (2001): Impact of the adoption of advanced information and communication technologies on firm performance in the canadian manufacturing Sector. *Research Paper Series*, N. 174, Ottawa: Analytical Studies Branch, Statistics Canada.
- Bramwell, B. and Lane, B (1999): *Tourism collaboration and partnerships: Politicism, practice and sustainability*. Clevedon: Channel View Publications.
- Buhalis, D. and O'Connor (2005): Information communications technology-revolutionising tourism. *Tourism Recreation Research*, 30 (3), 7-16.

- Buhalis, D. and Law, R. (2008): Progress in information technology and tourism management: 20 years on and 10 years after the Internet- The state of e-tourism research. *Tourism Management*, 29, pp. 609-623.
- Cavlek, N. (2002): Tour-operator and destination safety. *Annals of Tourism Research*. 29 (2): 478-496.
- Cavlek, N. (2005): El papel del los tour operadores en el desarrollo del turismo internacional: Una evaluación. *Política y Sociedad*, 2005, Vol.42.Nº1; 117-133.
- Connell, J. and Reynolds, P. (1999): The implications of technologies developments on tourism information centres. *Tourism Management*, 20, 4, pp. 501-509.
- De Pablo, R. (2004): *Las nuevas tecnologías aplicadas al sector turístico*. Editorial Universitaria Ramón Areces. Madrid. España.
- eBusiness W@tch (2006). ICT and e-business in the tourism industry, sector impact study, no. 08/2006, *European Commission*. [http://www.ebusiness-watch.org/resources/tourism/SR08-2006\\_Tourism.pdf](http://www.ebusiness-watch.org/resources/tourism/SR08-2006_Tourism.pdf)
- Esteban, A., Millán, A. and, Molina, A. (2000): La comercialización de productos turísticos en Internet: implicaciones para las agencias de viaje. *Cuadernos de CC.EE. y EE.*, nº 39, 2000, pp. 15-35.
- Falkenstein, H. (1997): Nuevos medios y tecnologías de distribución en el sector turístico, ¿amenazas u oportunidades para las agencias de viajes minoristas?. *Estudios Turísticos* (1997), nº 134, pp. 23-34.
- Fornell, C. and Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error, *Journal Marketing Research*, Vol. 18, pp. 39-50.
- Frazier, G. (1999): Organizing and managing channels of distribution. *Academy of Marketing Science Journal*, 27 (2), pp. 226-240.
- Fyall, A. and Garrod, B. (2004): *Tourism marketing: A collaborative approach*. Cleveland: Channel View Publications.
- Kim, D. J.; Kim, W.G. and, Han, J. S. (2007): A perceptual mapping of online travel agencies and preference attributes. *Tourism Management*, 28, pp. 591-603.
- McDonalds, R.P. (1985): *Factor analysis and related methods*. Hilldale N.J. Erlbaum.
- O'Connor, P. and Frew, A. (2002): The future of hotel electronic distribution: Expert and industry perspectives. *Cornell Hotel and Restaurant Administration Quarterly*, 43(3), 33-45.
- Pearce, D. (1989): *Tourist development*. New York: Wiley.
- Poon, A. (1993): *Tourism, technology and competitive strategies*. CAB International. 2003.
- Porter, M (2001): Strategy and the Internet. *Harvard Business Review*, March 2001, pp. 1-20.
- Reinders, J. and Baker, M. (1998): The future for direct retailing of travel and tourism products: The influence of information technologies. *Progress in Tourism and Hospitality Research* 4 (1), pp. 1-15.
- Schertler, W. and Berger-Koch, C. (1999): Tourism as an information business: The strategic consequences of e-commerce for business travel. In D. Buhalis and W. Schertler (eds.). *Information and Communications Technologies in Tourism* (pp.25-35). Spinger.
- Wang, Y. and Fesenmaier, D.R. (2007): Collaborative destination marketing: A case study of Elkhart country, Indiana. *Tourism Management*, 28 (2007) 863-875.
- Yu, A.K.L. and Law, R. (2000): The application of e-commerce to enhance the competitive advantages of hotels in Hong Kong. In D. Fesenmaier, S. Klein and D. Buhalis (eds.), *Information and Communications Technologies in Tourism* (pp. 335). Vienna: Springer.

---

## Foodnotes

<sup>1</sup> Measurement model with robust estimation, ML. EQS 6.1.

<sup>2</sup> Reliability of each group of variables is checked by Cronbach'  $\alpha$ , the item to total correlation and higher than 0,5 communalities.

<sup>3</sup>  $CF1 > 0,5$  (Fornell and Lacker, 1981);  $CF2 > 0,7$  (McDonald's, 1985).

## Acknowledgements

This research is supported by CREVALOR research group and by UZ2009-SOC-01 research project.

## ANNEX

### 1. RELATIONSHIPS DYNAMICS

#### Relationships with conventional channel levels

V1 The use of ICT improves substantially my relationship with suppliers.

V2 The use of ICT improves substantially my relationship with TTOO.

V3 The use of ICT improves substantially my relationship with TTAA.\*

#### Relationships with virtual channel levels

V4 The use of ICT improves substantially my relationship with GDS.

V5 The use of ICT improves substantially my relationship with CRS.

#### Relationships of the sector

V6 The use of ICT enhances vertical relationships with others intermediaries at tourism market.

V7 The use of ICT enhances horizontal relationships among members of the same channel.

### 2. BUSINESS PERFORMANCE

#### Market Performance

V8 The use of ICT has been determinant to improve the competitive position of my business.\*

V9 The use of ICT has been determinant to achieve a greater number of customers

V10 The use of ICT has been determinant to increase the sells

V11 The use of ICT has been determinant to increase the market share of my business.

#### Economic and Financial Performance

V12 The use of ICT has been determinant to improve the profit margin.

V13 The use of ICT has been determinant to improve the profitability.

\* Deleted items ( $R^2 < 0,5$ ).