ICT EFFECT ON RELATIONSHIPS' ENHANCEMENT AND PERFORMANCE IN TOURISM CHANNELS

Abstract

ICT have provided new paths for relationships across tourism distribution channels. It is accepted that both competitiveness and efficiency in the sector have increased, improving business performance. Since there are no validated models in the tourism literature covering this, our objective with this research is to confirm a positive relationship between the growing use of ICT by tourism intermediaries and their business performance. To this end, a structural equations model (RE-BP Model) is estimated, using data from a survey of tourism intermediaries conducted in Spain. The estimation confirms two latent variables, one for the relationship enhancement brought about by ICT in the sector, and the other for business performance. There is a cause-effect association between the two variables. Our conclusion is that tourism intermediaries should intensify their relationships with suppliers and tour operators whose strategies allow for improved effectiveness of the entire value chain.

Key words: Business Performance, Distribution Channels, ICT, Intermediaries, Relationship Intensity, Relationship Enhancement.

1. INTRODUCTION

The expansion of the use of information and communication technologies (ICT) as a working tool accessible to firms has created a newly competitive environment, and ICT has become a priority platform for business development. In the 1990s, the tourism sector was a pioneer in harnessing ICT (eBusiness W@tch, 2006) by adapting them successfully to the business processes (Poon, 1993; Reinders and Baker, 1998). This adaptation involved inter-organization systems, intra-firm operations systems, and the entire management of tourism businesses (Connell and Reynolds, 1999), with these innovations being oriented towards an adequate adaptation of the offer to the needs of consumers (Bramwell and Lane, 1999).

Since then, ICT have provided a new mode of marketing tourism products, and for relationships between the members of the various distribution channels (Buhalis and Law, 2008; Law et al., 2011). The interdependence among a wide range of goods and services (all part of the final tourist product), the small size of many individual operators, and the spatial separation between the vacation and the home, have encouraged the formation of cooperative relationships between the players in the sector (Fyall and Garrod, 2004; Wang and Fesenmaier, 2007). In the new competitive environment created by ICT, tourism companies at all levels of the distribution system make up a complex global network, with intense relationship dynamics (Kracht and Youcheng, 2010). These movements have increased competitiveness and generated greater efficiency in the distribution system of tourism products and services.

But how ICT have affected the business performance of individual tourism firms is not so clear. Beyond the fact that there is an uneven effect on the different firms within the distribution channel of tourism services, there are still significant gaps in the published research. For example, we still know very little about how the widespread use of ICT in inter-firm relationships in the tourism distribution system is leading to higher or lower levels of business performance.

Most of the research effort concerning the issue of ICT-based relationships affecting business performance has addressed the distribution channels themselves, and the supply chains of goods. In this research strand, the major contributor to gains in business performance is the ability - via ICT - to engage in high levels of information exchange. The intensity of information exchange among companies operating in the same distribution channel makes for greater efficiency, because increased information exchange highlights shared

interests and common goals, which in turn facilitate collaborative performance (Spralls et al., 2011).

The key element in the tourism distribution system is information, so it is somewhat surprising that the effect of ICT on the business performance of interrelated service firms has been neglected. For retail intermediaries, this lack of empirical research on the impact of the internet on business performance extends to all areas (Weltevredena and Boschma, 2008). In the tourism industry, there is a singular lack of empirical research on this issue. There is some research focusing on the effects of the adoption of new technologies on the performance of hotels and other tourism service providers (Ham et al, 2005; Claver-Cortes et al., 2007), but this research is focused on technologies applied within the firm. Also, some research focuses on the adoption process of ICT by travel agencies (TA) and tour operators (TO), characterised by a basic assumption that ICT have potential benefits for intermediaries, but without putting that assumption to the test of measuring actual impacts on business performance (Margherita and Petti,2009).

To our knowledge, only one study, by Bigné et al. (2008) has explored the impact of ICT-based external relationships on the results of a firm in the tourism sector, but that work is confined to just one dyadic relationship.

Thus, the objective of this investigation is to confirm the relationship between the growing use of ICT among intermediaries of the tourism sector, and business performance, through the increase in the intensity and number of relationships between the members of the distribution channel.

2. BACKGROUND ON THE ASSOCIATION BETWEEN INTER-FIRM RELATIONSHIPS AND BUSINESS PERFORMANCE

In the tourism sector, there is a large number of published papers describing how ICT have changed the industry, and how firms and consumers can benefit from their application (Buhalis and Law, 2008). ICT have been seen as a major contributor to the development of firms via 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 points to 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; Buhalis and O'Connor, 2005); their application in an

organization allows improvements in coordination and control of activities and more effective decision-making (Porter, 2001). On the other hand, ICT are key contributors to the globalization of the tourism sector, as they allow for vast possibilities of interconnection and interactivity with interest groups (Buhalis and Law, 2008).

These factors, combined with the availability of databases, are key determinants of the success of tourist businesses. A qualitative study of successful TA (Weaver and Lawton, 2008), suggest that customer service excellence, employee enrichment, and effective networking are the core perceived strengths that comprise a theme of "relationship building". This is supported by a theme of "facilitation", entailing diligent client selection, a culture of learning, high adaptability (related to technology and product realignment), scale, adherence to business basics, and owner optimism.

Other research works have explored the e-metrics that are important in the measurement of the effect of e-commerce on the company's on/line performance (see Michopoulou and Buhalis, 2008), but most of the tourism-specific literature does not provide empirical analyses and lacks a formalized, reliable research framework. To find empirical evidence of the varied ways in which relationships and ICT can enhance the business performance of firms, we must widen the scope beyond the tourism sector. In general, the published research 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, allowing a bi-directional interactive relationship and a continued customization of the offer to the expectations of each customer.

The most active research strand on this issue has been the study of supply chain arrangements. Firms engage in inter-firm distribution networks supported by ICT to achieve supra-organizational competitive advantages, rendering better effectiveness, efficiency and performance to the participating firms. Recently, these groups of organizations that are electronically and socially interconnected in one or more relationships have been referred to as extranets (Spralls et al., 2011). In this setting, the supply chain literature offers a wide array of empirical studies providing pieces of evidence about the effects that electronically supported relationships have on the performance of extranets and the member firms (Stock et al., 2010). But some of the results in the supply chain setting could be biased by the fact that they are required to operate with very high levels of ICT resources and interdependence. In other settings, like the tourism sector, ICT can be used with more

discretional criteria in terms of the intensity of the relationship and the number of inter-firm relationships available with ICT.

The levels of these two criteria of the inter-firm relationships, intensity and number, associated with ICT, are decided by firms and are therefore profit-oriented. For a better understanding of the purpose of this research, we display the frame of the intensity and number of relationships in the tourism channels in Figure 1. For the sake of simplicity, consider just one example, a wholesaler (W1). Concerning horizontal relationships, W1, has weak links with a varied number of wholesalers (W2,….,Wn), medium intensity levels with W4 and W8, and intense relationships with W5 and W6.

In the upstream direction, W1 maintains low and medium intensity relationships with certain individual suppliers (accommodation, travel, and services at destination companies), medium intensity relationships with a group of suppliers, and high intensity relationships with another group of suppliers. In the downstream direction, W1 maintains low, medium, and intense relationships following the same pattern. Extending this example to all the intermediaries participating in the tourism sector, we would have a picture of the thread of relationships in terms of intensity and number (see Figure 1).

INSERT FIGURE 1 ABOUT HERE

2.1. Intensity of Relationships in the distribution channel

In general, relationships in the channel are designed and managed to provide mutual benefit for participant firms. This need for mutual benefit gives rise to the most important feature of distribution channels, the interdependence of participants (Pearce, 2008). This interdependence generates cooperative activities in the vertical relationships, driven by the need to compete effectively in the final consumer market and leading to a view of the tourism channels as a supply chain (Romero and Tejada, 2011; Zhang et al. 2009). Then, relationships become an intrinsic part of the channel to the point that, in the marketing literature, channel structure refers to the patterned or regularized aspects of relationships between channel participants (Geyskens et al., 1999). Medlin et al. (2005) found a strong influence of future-oriented coordination, relationship experience, commitment, trust and a firm's economic goals on the performance of business relationships. Hence, independently of the media, or the technological base used to support them, relationships are designed and managed to bring benefit to the firms. Then, it becomes necessary to distinguish the general performance enhancement implicit in the relationship from the specific contribution of ICT.

ICT alone do not improve business performance or relationship performance in the supply chain networks. In the distribution channel research, it has been shown that two dimensions of the relationship, communication frequency, and intensity, have a positive influence on channel results (e.g., coordination, satisfaction, commitment) and enhance channel performance in terms of effectiveness and efficiency (Mohr and Nevin, 1990; Mohr and Ravipreet, 1995). ICT have the potential to manage efficiently higher levels of intensity and frequency, and therefore to improve the business performance of firms. In fact, recent studies show that the use of ICT driven by the intensity and quality of relationships does have a positive impact on both the performance of firms and on the performance of the partnership relationships (Richey et al., 2010).

The intensity of relationships is positively associated with the adoption of ICT in the channel, and the use of ICT in channel relationships has a positive impact on the business performance of firms. In the tourist distribution channels, it has been found that the use of Internet in the travel agency relationship with its key supplier results in perceived increased sales, as well as a decrease in transactional and communication costs (Bigné et al., 2008).

2.2. Number of relationships in the general distribution system

The actual relationships of a firm within the channel, i.e., with suppliers and customers, are not the only inter-firm relationships which can enhance business performance. Other relationships with networks or individual organizations may provide access to market changes, new technologies, best practices, and other valuable resources. On this general ground, firms seek relationships with other firms operating at upstream or downstream levels of their channels (vertical) or at the same level (horizontal). This gives rise to the idea that openness to a wider array of relationships has the potential to enhance the competitive position and business performance of the firm (Eisingerich and Bell, 2008). To reach higher levels of openness in the inter-firm relationship network, the key factor is not the intensity but, rather, the number of relationships, although this must be balanced with certain adverse effects of dispersed and non-focused relationships in the long term (Eisingerich et al., 2009).

3. THE MODEL AND THE HYPOTHESES

The theoretical model from which we develop our empirical analysis is depicted in Figure 2. The relationship criteria, which are relevant to the business performance of firms operating in the tourism sector, described in the previous section, can be grouped into intensity of relationships with other members of the distribution channel, and the number of relationships

available in the distribution system. The former can be classified in two major types: relationships with conventional intermediaries and suppliers, and relationships with virtual intermediaries. These relationships are expected to be associated with improvements in the two major factors of business performance: market, and financial.

INSERT FIGURE 2 ABOUT HERE

3.1. The enhancement of relationships via ICT

The first question to be answered by the model is: which relationships, developed on the basis of ICT, are involved in the dynamics of contacts with a positive effect on the business performance of tourism intermediaries? For this, we distinguish three types of relationships between tourism operators: channel relationships with conventional intermediaries (RE1), channel relationships with virtual intermediaries (RE2), and industry relationships (RE3). The relevant variable for the first two is intensity, and for the third, the number.

First is the intensity of 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 intermediaries. On the one hand, there has been a large increase in the number of suppliers of different types (hotels, short-stay accommodations, restaurants, transport companies, rental companies…), and the strategies of suppliers to gain a foothold in a competitive market succeed via ICT in establishing and developing relations with sector intermediaries. On the other hand, ICT allow the implementation of 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, TA are the most affected since the rise of ICT in tourist distribution (Falkenstein, 1997), and are compelled to seize the opportunities that ICT bring to business. Among these are: the development of relationships with other agencies (Falkenstein, 1997; Esteban et al., 2000), the reduction of costs and better access to the final consumer (Alcázar, 2002). Further, ICT provide the base to develop horizontal relationships of various types capable of managing and developing better relations with suppliers, in order to be more competitive (Alcázar, 2002).

The TO, the other major type of conventional intermediaries, are now largely subsidiaries of multinational companies that control the direct investments in tourism. Mergers among TO

have been especially intense in the last two decades, creating powerful companies that are vertically integrated with airlines, with the hotel industry, with retail agencies, and with the supporting agencies at destinations. Accordingly, these large corporations have managed to control the package tour sector (Cavlek, 2005), the more intense the vertical relationship of the TO, especially with tourism businesses in the recipient countries, the more successful will they be in their operations (Cavlek, 2002).

The so-called global distribution systems (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, so that a greater joint activity, 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 emerged at the time that large hotel chains put into operation a new distribution formula, provide an ICT base that facilitates opportunities to generate better market performance with intermediaries.

Tourist organizations can better achieve their 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.

ICT provide a base for a larger volume and control of vertical information flows among firms in the channel. Sellers have more information about their customers and keep track of their transactions; they can also attach complementary services, and can develop more complex relationships at lower costs and risks. On the whole, ICT reduce transaction costs, and therefore increase the vertical relationships (Nooteboom, 1992).

Also, ICT lead to increases in horizontal relationships because they add more incentives for cooperation between competitors and provide coordination mechanisms with lower costs; for example, associations of small suppliers of tourist services (small hotels, transport companies, rental businesses...), which develop common ICT resources, such as web-pages. Also in the field of intermediaries, we can see increases in horizontal relationships motivated by the incorporation of ICT, and some studies have assessed the motivations and benefits of these

relationships (Huang, 2006; Ma, 2008).

Then, the changes in intensity and number brought by ICT to these three types of relationships are expected to be associated with improvements in the business performance. That is, they jointly comprise the basis for understanding the contribution of ICT to business performance. In this context, our first hypothesis is formulated as follows:

H1. *"The enhancement of relationships due to ICT in the tourism distribution system is comprised of the intensity of relationships of intermediaries with other conventional intermediaries and suppliers, the intensity of relationships with virtual intermediaries, and the number of relationships in the distribution system as a whole".*

3.2. Business performance improvements due to ICT

The components of business performance are varied and their selection for measurement purposes is dependent on the context and scope of the analysis. In a marketing context, common measurements include market objectives, such as increase in sales and market share, combined with financial objectives, such as cash flow, gross margin, and profits (Morgan and Rego, 2006).

For our study, the selection of performance indicators should be driven by the contribution of relationships and ICT to business performance. In their analysis of relational behavior in distribution channels, Lusch and Brown (1996) use a compound indicator made up of sales growth, market share, and market development. These three components have been used later, separately, in analyzing the effect of alliances on market performance (Kandemir et al., 2006). In the context of the impact of ICT on supply-chain networks and on firm performance, Wu et al., (2006) use two major dimensions: market performance and financial performance. For market performance, they include sales growth, market share, market development, and product development. For financial performance, they use profitability, return on investment, and cash flow from operations.

In general, it is apparent that the business performance affected by the relational behavior of the company with other firms or organizations has two dimensions, market performance and financial performance, which need to be distinguished.

Based on this antecedents our second hypothesis is:

H2. *"The enhancement of relationship dynamics provided by ICT to tourism intermediaries will have a positive effect on their business performance".*

4. EMPIRICAL ANALYSIS: SURVEY, VARIABLES MEASUREMENT AND QUANTITATIVE INSTRUMENTS

The focus of our research is on intermediaries in the tourism channels. The target population excludes consumers (individuals, families, businesses, institutions,…), and suppliers (transport, accommodations, food and drink, culture, sports, entertainment and support services). The types of intermediaries addressed are conventional and virtual wholesalers and retailers. In these, the operating formats are: retail, wholesale-retail, and retail travel agencies, Central Reservation Systems, and Global Distribution Systems (see Sellers and Azorín, 2001).

There is no available official data for the total population of these intermediaries, although the national bureau of statistics (INE) provides aggregated figures for these businesses, together with some varied tourism services. The total figure was 8,619 in 2008 and has remained stable since, with a mean value of 8,550 (DIRCE, INE).

The accessible population of intermediaries is those businesses that are registered and included in directories with the most relevant characteristics and their contact details (postal address, telephone numbers, e-mail). The directory used to select the sample was the commercial database Business Guide Internet, which includes 3,854 intermediary businesses (15 GDS & CRS, 65 wholesalers, and 3,774 retailers). Our sampling followed a stratified probabilistic procedure leading to 132 valid observations out of 670 questionnaires mailed. Thus, we can estimate the confidence intervals and the margin errors with the standard method used for probabilistic sampling. A structured questionnaire, administered via e-mail, was addressed to an individual authorized by the company. Of 655 e-mailed questionnaires, we had valid responses from 132 intermediaries (Table 1) - an effective response rate of 20%, in line with other studies in the industrial tourism market, such as Spanos et al. (2002) (18.2%) and Huang (2006) (20.39%). (Generally, web surveys have lower response rates than postal surveys: 17.1% versus 22%, respectively (Sax et al., 2003).

INSERT TABLE 1 ABOUT HERE

The questionnaire was designed based on a review of the literature, the results obtained from prior qualitative interviews with experts, and a pre-test. That is, in designing the questionnaire, 6 in-depth interviews were conducted with senior executives of large tourism firms. Also, a pre-test of the questionnaire was carried out at the "Travel Distribution Summit-Europe" in London, among executives of worldwide tourism distribution firms.

The discussion in section 3 is the basis of the selection of the variables and measurements to be used in the model (see Table 2). The questionnaire included our 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 with the statement) to 10 (totally agree with the statement). The 0-10 interval provides more flexibility for the use of statistical tools than the scales 1-5 or 1-7 (Fornell et al., 1996). 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 relationships in the channel, and it includes 7 items relating to perceived relationship enhancements between the agents of the tourism distribution system (suppliers and intermediaries), derived from a greater use of ICT (RE). Another block of 6 items captures perceptions about the contribution of the effective use of ICT to business performance (BP).

INSERT TABLE 2 ABOUT HERE

4.1. Quantitative instruments

The quantitative methodology used in the empirical analysis is presented briefly, in order to provide a better understanding of how the model is estimated from the survey data, and of the results obtained.

The estimation procedure is based on two quantitative tools used sequentially - the Factor Analysis (Principal Components), and the Structural Equations Model (SEM). This sequence allows for the validation of measurement scales of constructs (abstract concepts or latent variables) and the evaluation of the estimation results of the structural models, with cause and effect variables, and with goodness-of-fit indices.

The first step in the process is the Exploratory Factorial Analysis done for each variable susceptible to being composed of other variables (criteria to be confirmed as latent variables). This first analysis allows for the identification of the main components of a criterion; that is, to obtain the underlying structure from a list. The next step consists of a Confirmatory Factorial Analysis, used to evaluate the metric properties of the structure previously obtained. This procedure lets us confirm the final number of formative indicators belonging to a measurement scale of a latent variable or construct. The procedure includes the evaluation of the level of reliability (Reliability analysis) and the Goodness of Fit indices.

The model suggested by the CFA can be of a first and, then, of a second order. The difference

between them is related to the level of abstraction. A second order implies the existence of a latent variable with a superior level of abstraction, which is formed by first order variables. With this structure, if a second order latent variable is disclosed, there are two ways to measure it: with the indicator of each of its first order formative dimensions, or with the complete list of items belonging to each one. Whatever the order, the latent variable (first or second order) may be introduced in a structural model that is ready to be estimated. For that, we use SEM, with EQS 6.1 software. This software provides us with the option of providing a robust estimation, with more confidence than other types because it uses more exigent criteria.

5. RESULTS

The structure of the two criteria variables, Relationship Enhancement (RE) and Business Performance (BP), is explored using the exploratory factorial analysis (EFA). In Table 3, we can see that there are three main components underlying the structure of RE, explaining 79.4% of the total variance.

The first is the relationship with suppliers and conventional intermediaries (RE1), which is comprised of 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 relationship intensity with conventional intermediaries (TA and TO). The second factor (RE2) reflects the relationships with the virtual intermediaries, made up of two formative items: the intensification of relationships, enhanced 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 (RE3), which captures the relationships in the distribution system, 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).

Thus, we can observe that the enhancement of relationships by means of ICT, as perceived by the intermediaries, is 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.

INSERT TABLE 3 ABOUT HERE

For the business performance (BP), two main components have been identified, explaining 84.67% of the total variance. The first, market performance (BP1), includes four items as formative indicators: the impact of ICT on the competitive position of the company, on the acquisition of new customers, on the increase in sales, and on market share. The second, financial performance (BP2), 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 Confirmatory Factor Analysis (CFA) is used to evaluate the metric properties of the measurement scales of RE and BP, and to test hypothesis H1. We use the Structural Equations Model (SEM) methodology (measurement model with robust estimation, ML EQS 6.1.). The reliability analysis suggested the elimination of one item of the RE block (V3: The use of ICT has intensified substantially my relationship with TA) and another of the BP block (V8: The use of ICT has been determinant to improve the competitive position of my business). The Wald and Lagrange Multiplier tests (Bentler, 1995), allowing us to identify possible sources of error in the model specification, suggested no further change was necessary in the model.

The general goodness-of-fit indices of the two measurement models indicate a good fit in both cases. GFI and AGFI show values above the recommended critical value of 0.8 (Jöreskog and Sörbom, 1993; Mueller, 1996) (Table 4), and the tests corroborate the convergent and discriminant validity. Moreover, the observable variables have an adequate reliability (see Tables A.1-A.3 and comments in the Annex). Then, these tests confirm two measurement models, one for RE and the other for BP.

INSERT TABLE 4 ABOUT HERE

The first model giving the dynamics of relationships between tourist operators due to the growing use of ICT (RE as a second order dimension or latent variable) is made up of three first-order dimensions and six indicators. This result confirms the hypothesis H1 (Figure 3), except for one type of intermediary, that is, TA. An explanation for this exclusion could be that the majority of the sample is made up of retail TA (64%). The intensification of horizontal relationships among retailers is not as relevant as the intensification of relationships between channel members operating at different levels. The enhancement of relationships with suppliers and conventional intermediaries is the component with the

greatest influence on the RE construct (RE1; 0.82), followed by the enhancement of relationships with virtual intermediaries (RE2; 0.70). The increase of relationships in the distribution system has a lesser impact (RE3; 0.34). A more detailed analysis reveals that the use of ICT in the vertical relationships of the chain value is the major source of influence on the business performance of tourism intermediaries. First, the exclusion of the relationships with travel agencies is very likely due to the fact that travel agencies are the majority of the sample (horizontal relationships). Second, the vertical relationships variable (V5; 0.99) has a 50% greater effect than that of the horizontal relationships (V6; 0.67) on RE3.

INSERT FIGURE 3 ABOUT HERE

The second model, reflecting business performance (BP), is made up of two first-order dimensions and five indicators (Figure 4). Only one of the initial six indicators is dropped out: ICT improves the competitive position of the firm. This indicator is probably a higher dimension concept, since it includes partial considerations of the rest of the indicators used in the model. The greatest influence on BP is the market performance construct (BP1; 0.97), which is almost 50% larger than the effect of financial performance (BP2; 0.67).

Finally, the RE-BP model is estimated. The sample size, 132 observations, is within the size range of 100-200, which is recommended for analysis by SEM, and it is above the range of 5-10 respondents per estimated parameter (minimum - more appropriate), that is, 65-130 (there are 13 parameters in the final model) (Hair et al., 1999). Also, we estimate the model with maximum likelihood (ML) following the more adequate estimation method for small samples (Bentler, 1989; 1992; Bollen, 1989; Jöreskog and Sörbom, 1993).

The goodness-of-fit indices confirm the empirical validity (see Figure 5) of the model. The GFI and AGFI show values above the recommended critical value of 0.8 (Jöreskog and Sörbom, 1993; Mueller 1996), and the reliability coefficients of the observed variables (R^2) are above the critical value (0.5), except in the case of RE3 (0.12), which is not associated with a bad specification of the model because less than 5% of the Standardized Errors of the correlation matrix are significant ($>\pm 2.58$ $p<0.01$; Hair et al., 1999). Thus, an almost exact reproduction of the input matrix was achieved, indicating that the model did not require re-specification (Luque, 2000) (see Figure 5). Also, the discrimination validity analysis (see Table A.4) indicates that the scales of the measurement model represent substantially different abstract concepts, (i.e. it guarantees that the different abstract concepts

refer to different theoretical meanings and it is possible to reject the hypothesis that they only form one). This is verified, for each dimension (see Table A.3), by calculating all the possible correlations between constructs (Anderson and Gerbing, 1988).

From the R^2 value of BP (0.5), we can state that, in our model, the relationship dynamics impelled by ICT in the tourism distribution channels explain 50% of the changes in our business performance construct, comprised of 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 (TO), to a lesser extent with GDS and CRS. The increase in relationships with TA has no 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 enhancement of relationships with the use of ICT by the tourism intermediaries in distribution channels has a positive impact on business performance. This leads us to accept hypothesis H2.

INSERT FIGURE 4 ABOUT HERE

INSERT FIGURE 5 ABOUT HERE

6. CONCLUSIONS

In the tourism sector, it is widely acknowledged that ICT have opened new pathways for relationships between the members of the distribution channels, and new management solutions that enhance these relationships. These movements have increased competitiveness and generated greater efficiency within the distribution system. But how ICT have affected the business performance of individual tourism firms has not been defined, and remains a very under-researched issue. In particular, there is a lack of knowledge about how the use of ICT in inter-firm relationships in the tourism distribution system is leading to changes in the levels of business performance. The answer is very important to gain understanding of the utilities derived from the application of ICT for each business, and to facilitate management decision-making. Since information is the key element in the tourism distribution system, it is surprising that the effect of ICT on the business performance of interrelated service firms

has been largely overlooked.

Thus, this work has confirmed the linkage between the growing use of ICT among intermediaries of the tourism sector, and business performance. Moreover, this linkage occurs through the increase in the intensity and number of relationships among the members of the distribution channel.

This paper contributes to the literature, first, by providing a structure for the concepts of relationship enhancement and business performance, through the validation of one-measurement scales for each of the two concepts. Moreover, they are confirmed as second-order dimensions arising from formative indicators of first-order dimensions. Second, we have empirically confirmed the existence of a strong positive association between relationship enhancement and business performance. And, third, but no less important, we have found that vertical relationships based on ICT have a greater effect on business performance than other elements of relationship enhancement. That is, relationships creating value for consumers throughout the distribution process are more effective in generating positive returns to firms.

Since the dynamics of relationships among channel members benefit tourism intermediaries, a sustained effort must be maintained, aimed at this expansion and development. It is particularly important to intensify relationships with suppliers and TO. 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 automation of processes, 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 market position and profitability.

Our findings require caution in terms of extrapolation. In our research, the statistical inference resulting from our sample size, is acceptable for a survey of businesses in which the respondents are high-level staff. However, as in any empirical study in the social sciences, the context and the sample characteristics impose severe constraints to any extrapolation beyond the sample itself. In fact, our hypotheses are proposals, which need to be validated - or refuted - by more empirical research conducted in other contexts. Nevertheless, our research question is not focused on any particular ICT-based relationship. With this in mind, we are reasonably confident that very similar results can be found in other contexts with different samples.

Moreover, our work adopts the focus of distribution channels theory, but it would also be interesting to validate these results and to investigate the deeper considerations with a value-chain approach in future research.

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