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Tourism Distribution System and Information and Communication Technologies (ICT) Development: Comparing Data of 2008 and 2012

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Abstract

Information and Communication Technologies (ICTs) and the development of the online channel have transformed the competitive environment of the tourism industry within a brief span of time. However, our knowledge about the details of the evolving trend of the distribution system is scarce. Considering the prior literature, this research analyzes the evolution of the sector's structure, the power of tourism operators, the production processes and products of the tourism sector. The work uses primary information which is taken from surveys to experts in the sector, within a European context. The results of the work, based on a comparison between two samples in 2008 and in 2012, underscore the development of the distribution system and the significant changes happened in opinions regarding the relationship between the use of ICTs and value creation, regarding ICTs and product quality, and regarding how ICTs facilitate the adoption of the best practices in the industry. Multiple and exclusively online channel strategies are the most involved.

Keywords

ICT, Tourism Distribution System, Tourism Online Channel

1. Introduction

In recent decades, Information and Communication Technologies (ICTs) have transformed the competitive environment surrounding the tourism industry. Thus, from the demand-side, the development of the online channel

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has consolidated its position as an important purchasing channel. In fact, 25% of the European tourism market used online channels in 2009, in which total sales exceeded 68 billion euros [1]. From the supply-side, the tourism has experienced a continuous expansion, becoming one of the sectors of major economic growth and importance in the world. Even in an economic crisis, the development of the tourism sector has been a constant. In 2012, it generated one of every eleven jobs worldwide: 6% of the total of world exports and the number of international tourists reached 1035 million. Among the main tourist destinations in 2012 are found France, the United States and Spain [2]. In the case of Spain, the number of tourists increased by 2.7% between 2011 and 2012, going from 56.2 million to nearly 58 million, respectively [2]. This means that the visitor levels that were present before the crisis are once again being reached. Moreover, 65% of the tourists who visited Spain in 2012 used the online channel to consult reservations or pay for their trip, an increase of 8% with respect to previous years [3]. Moreover, the tourism GDP of 2013 increased by 0.6%, providing more than 10% of the Spanish GDP[1].

For today's economies, these data are encouraging because they show that the role of the tourism sector is a driver of recovery through sustainable economic growth. In this sense, we know that the introduction of ICTs in the sector has represented both an important challenge and an opportunity for tourism companies. Thus, the development of ICTs has modified the foundations of the industry [4] and of the tourism distribution system through changes in the industry's structure, in the power of the operators and in tourism production processes and products [5]. Considering these results, it is expected that, within the elapsed time, the tourism sector has learned how to take greater advantage of ICTs and that the growing online offer continues to challenge structure, power and production causing changes in the sector. But, it would be interesting to examine these advances in detail in order to discover possible differences and to decide ways of differentiation in a tourism sector, which is a determinant economic industry.

In view of this situation, the main objective of this work is to analyze and delve into the changes in the tourism sector resulting from the development of ICTs and of the online channel by comparing data from 2008 and from 2012. The opinions of participants in the distribution system, managers from organisations in the sector, obtained in 2008 and 2012 through surveys, were analyzed. 2008 is recognized as the first crisis year and we find it interesting to compare the situation observed then with the situation in 2012. The outlook of the respondents may be influenced by the difficult economic situation, which has endured and created much uncertainty.

The work is structured as follows. First, a review of the literature that explains the approach of the research's proposal is presented. Then the design of the empirical research and the results are offered. Finally, the conclusions of the research and its implications are discussed.

2. Evolution of Changes in the Tourism Distribution System Resulting from the Intensive Application of Information and Communication Technologies (ICTs)

Specialised literature acknowledges that ICTs are modifying the tourism distribution system. Specifically, this literature identifies three main aspects of change: 1) the structure of distribution in the sector; 2) the power of tourism operators; and 3) the tourism production process and products-services [5].

Regarding the distribution structure of the sector, the development of ICTs has caused a major transformation in the operating method and in the strategies of the tourism industry [6] [7]. In fact, this development has generated changes in the way that companies in the sector plan, control, operate and integrate technologies into their activities (Kasavana and Cahill, 1992) [8] [9]. The result is that changes are occurring to the sector's structure, and opportunities and threats are developing for all the participants.

In addition, changes are occurring to relationships and movements, which are tending towards integration [10]-[12] and towards the interconnection of and interactivity among agents in the sector [13]. In fact, the rapid incorporation of ICTs in management of the tourism distribution channel has meant changes in power positions [5], in the contribution by suppliers and intermediaries to the different phases of the distribution channel [13] [14] and in the share of the various participants in the value chain [5].

On the other hand, the changes that have occurred in tourism production processes and products and that are derived from the intensive application of ICTs have allowed the following: improving the quality of the service, improving the satisfaction of consumers and intermediaries [15] and reducing and eliminating costs, thereby improving the effectiveness of the tourism production process [5] [9].

[1]Information offered by Exceltur.

All these changes have occurred in a relatively brief span of time. The latest data from the sector could be added to these changes. Moreover, in recent years communication media that intrinsically include the experiential context in how they operate have emerged. The Report of the World Travel Market of London [16] states how 80% of the companies in the tourism sector who participated in the study use social media for communicating with their customers, and more than a fifth (22%) use social networks as a tool to generate earnings. This data show that in the travel sector not only are ICTs highly integrated in the process of making purchases through a specific web page, but there is also evolution towards other technologies, such as search engines, social networks, etc., where sales, communications and advertising strategies are targeted.

Based on these considerations, we pose the following research proposal.

Proposition: "*The tourism distribution system follows an evolving trend marked by the progressive growth of the online channel, which is revealed in a dual distribution system* (*offline and online*) *through structural changes, changes in the power of the participants in the channels and changes in the production processes*".

3. Empirical Methodology

The empirical research was conducted using primary information obtained from surveys. Two surveys were taken, both of which were ad-hoc and self-administered. One of them was conducted during the months from June to September 2008, targeted at intermediaries with stores located in Spain, and the other was conducted during the month of April 2012 (see the data sheets in **Table 1**), which was targeted at all agents involved in the channel, except for the consumer. The content of questionnaires is a result of the review of the literature and qualitative research resulting from in-depth interviews done with experts in the sector (top managers).

The questionnaires of both studies are comparable. The second one was based on the first and included additional items pertaining to the specific activity of the online channel. The questionnaire was structured into two blocks. The first block includes questions directed at characterising the company, and the second block includes variables about the effects of the intensive application of ICTs in the tourism sector. Specifically, it asked about the structure, about the power of agents and about production processes and products. The questionnaires were posed as affirmations using an 11-point Likert scale, from 0 for completely disagree to 10 for completely agree. This is a type of measurement scale amply used in the literature (e.g. in the tourism sector) [5] [17]. It has the advantage of providing a better approach to the normal distribution and allowing the respondent to choose an answer from a greater range of possibilities. This may give more variability to the distribution of the variable measured [18]. **Table 2** includes the indicators corresponding to each criterion, as well as the references on which they were based.

3.1. Description of the Samples

A descriptive analysis of the samples allows characterising the respondents in both cases, while considering their similarities and differences.

The characteristics of the samples are presented in **Table 3**. Most of the respondents are traditional travel

Table 1. Data sheet of the surveys.

	Survey 1	Survey 2
Geographic scope	Spain	International (European-wide context)
Population	1909 groups of companies (database of companies in the tourism sector in Spain)	575 attendees at Travel Distribution Summit Europe (London)
Sample element	Company representative (tourism intermediaries)	Company representative (tourism operators)
Information gathering method	Questionnaire administered via e-mail, with telephone support	Questionnaire administered personally
Type of sampling	Convenience sampling by shares according to type of intermediary	Convenience sampling
Sample size	132 (response rate of 6.91% with respect to the total population)	87 (response rate of 15% with respect to the total population)
Date conducted	June-September 2008	April 2012

Table 2. Criteria, indicators and base references.

Decision criteria	Indicators
Structure of the sector Emmer *et al.* (1993); Pearce (1989); Fyall and Garrod (2004); Berné *et al*. (2012)	ICTs are notably changing the structure of the tourism distribution system. ICTs facilitate access by intermediaries to current and potential customers. ICTs increase vertical relationships. ICTs increase horizontal relationships.
Power of tourism operators Werthner and Klein (1999); Buhalis (2008); Berné *et al.* (2012)	ICTs are substantially altering both the power position of the various participants in the industry and their share in the value chain. ICTs allow greater participation by the end consumer in the different production-marketing phases of the tourism product, which alters the role of the different participants in the value chain. In a scenario of extensive use of ICTs, the most important factor for improving the power position of any participant in the channel is the control and handling of information. ICTs favour strategic alliances between companies. ICTs allow a supplier to jump to traditional intermediaries (travel agencies and tour operators).
Production process and products Buhalis (1998); Berné *et al.* (2012)	ICTs are changing the production processes and the products of the tourism sector. Information is the most important component for creating value. ICTs make it possible to integrate services with the end consumer. With the same service quality, ICTs have decreased production and distribution costs (efficiency). ICTs provide a higher-quality tourism product. ICTs facilitate the creation of more flexible products, which can be adapted to segments and individualised. ICTs emphasise innovation in the sector. ICTs facilitate the adoption of the best and good practices in the industry. ICTs facilitate the production of global tourism products.

Source: [5].

Table 3. Description of the samples.

Variable	Survey 1 2008 (%)	Survey 2 2012 (%)
Type of business*		
Suppliers	---	48
Retail TAs	69.8	1.3
GDS and CRS	10.6	13
Retail TO and TA	19.6	6.5
OTA	---	16.9
ADS	---	9.1
ODD	---	5.2
Experience using ICTs		
Less than 3 years	6.7	22.6
From 3 to 5 years	24	16.1
From 6 to 10 years	36.5	22.6
Over 10 years	32.7	38.7

*TA: travel agencies (could be a mixture of offline and online); GDS: global distribution systems; CRS: central reservation systems; TO: tour operators; OTA: online travel agencies; ADS: alternative distribution systems; ODD: online distribution database.

agencies in both sample 1 (69.8%) and sample 2 (49.4%). 10.6% and 13% are GDSs and CRSs in samples 1 and 2, respectively. 6.9% are tour operators in sample 1, in comparison with 13% in survey 2. Moreover, 16.9% are online travel agencies (OTA), 9.1% are ADSs and the remaining 5.2% are ODDs in survey 2. Note that there are no tourism agents who work exclusively online in survey 1. Furthermore, in both samples, over 60% of the respondents (representatives of companies in the sector) have been using ICTs for more than six years.

3.2. Evolution of Changes in the Tourism Distribution Structure: 2008 and 2012

In order to cover our objective, an analysis of the comparison of means between the perceptions of the attendees

at Travel Distribution Summit in 2012 and those surveyed in 2008 is done and shown in **Table 4**. As we have two independent samples, this is the empirical methodology selected as more appropriate. The samples represent, approximately, the share of each type of operator in each time period, although the first one does not include suppliers. The fact that the first sample is marked by the opinions of retailers and that the second is marked by the opinions of suppliers is deemed to be positive for the purposes of the comparative study to be carried out.

The samples also have different sizes (132 in 2008 and 87 in 2012). Therefore, in order to apply Student's t-test for the comparison of means of each variable, first Levene's test for equality of variances is conducted[2]. The comparisons are made using 18 indicators. The first 4 relate to the criterion of a structure change in the distribution system, the next 5 are included in the criterion of a power change among tour operators in the channels and the remainder form a part of the criterion of a change regarding tourism production processes and products.

Table 4. Analysis of the difference of means between the independent samples (2008-2012).

Comparison variable	Object of study	2008 Group mean	2012 Group mean	T-value**	P-value
V.1. ICTs are notably changing the structure of the tourism distribution system.	*Changes in the structure of the tourism sector* α (2008) = 0.689 α (2012) = 0.588	8.83 (1.70)	8.77 (1.86)	0.253**	0.801
V.2. ICTs facilitate access by intermediaries to current and potential customers.		8.71 (1.92)	8.50 (1.91)	0.742**	0.459
V.3. ICTs increase vertical relationships.		8.52 (2.02)	8.32 (1.65)	0.721**	0.472
V.4. ICTs increase horizontal relationships.		8.11 (2.21)	7.87 (2.08)	0.759**	0.452
V.5. ICTs are substantially altering the power position of the various participants in the industry and their share in the value chain.	*Changes in the power of operators* α (2008) = 0.553 α (2012) = 0.618	8.73 (1.71)	8.45 (1.86)	1.168**	0.244
V.6. ICTs allow greater participation by the end consumer in the different production-marketing phases of the tourism product, which alters the role of the different participants in the value chain.		8.83 (1.63)	8.53 (1.78)	1.255**	0.211
V.7. In a scenario of extensive use of ICTs, the most important factor for improving the power position of any participant in the channel is the control and handling of information.		8.84 (2.09)	8.31 (1.53)	1.937**	0.054
V.8. ICTs favour strategic alliances between companies.		8.51 (1.75)	8.12 (2.11)	1.399**	0.164
V.9. ICTs allow a supplier to jump to traditional intermediaries (TA, TO).		8.63 (2.21)	8.54 (1.83)	0.298**	0.766
V.10. ICTs are changing the production processes and the products of the tourism sector.	*Changes in tourism production processes and products* α (2008) = 0.789 α (2012) = 0.791	8.24 (2.17)	8.21 (1.88)	0.125**	0.901
V.11. Information is the most important component for creating value.		9.45 (1.71)	8.43 (1.86)	3.958	0.000
V.12. ICTs make it possible to integrate services with the end consumer.		8.48 (2.22)	8.13 (1.89)	1.143**	0.254
V.13. With the same service quality, ICTs have decreased production and distribution costs (efficiency).		6.82 (2.75)	8.43 (1.53)	−4.791	0.000
V.14. ICTs provide a higher-quality tourism product.		5.63 (2.63)	7.86 (2.15)	−6.255	0.000
V.15. ICTs facilitate the creation of more flexible products, which can be adapted to segments and individualised.		7.94 (2.41)	8.57 (2.02)	−1.907**	0.058
V.16. ICTs emphasise innovation in the sector.		7.92 (2.21)	9.23 (1.59)	−4.504	0.000
V.17. ICTs facilitate the adoption of the best and good practices in the industry.		6.41 (2.56)	8.14 (1.79)	−5.099	0.000
V.18. ICTs facilitate the production of global tourism products.		8.57 (2.18)	8.68 (1.65)	−0.366**	0.715

( ) Standard deviation; **t < [1.96], for a 95% confidence level, there are no significant differences.

[2]The results obtained in Levene's test allow accepting the equality of variances between the groups, wherefore they can be compared.

Considering the results obtained in previously developed studies [5] [17], the research premise consists in expecting, within the elapsed time, that the tourism sector has learned how to take greater advantage of ICTs and that the growing online has caused structure, power and production changes. This is a research premise because the opinion in 2008 of the respondents had no knowledge of the future crisis period and its consequences.

Taking into account the two main contextual differences, meaning the non-presence of either suppliers or agents who work exclusively online in survey 1 (the initial composition included GDS, CRS, TO and TA, to which OTA, ADS and ODD were added in survey 2) and the lapse of time (given that opinions from 2008 and 2012 are being compared), in order to meet the stated premise, the difference of means analysis for the independent samples should not result in significant differences. This would verify that there is an increased opinion of the influence by the analyzed changes on the sector's distribution system over time, and this is precisely what happens in the first two blocks of considered changes.

However, statistically significant differences are observed between the mean values offered for variables V.11, V.13, V.14, V.16 and V.17; in other words, for the indicators included in the third change criterion.

Thus, in the first block of comparisons pertaining to structural changes, the opinion of the respondents shows a notable influence by the intensive application of ICTs by those respondents, thereby increasing relationships and facilitating access between operators.

Something similar happens regarding changes in the power position of operators. Those surveyed in 2008 and those surveyed in 2012 coincide in their valuations insofar as they note: 1) the existence of alterations in the role played by the participants in the value chain; 2) that information management is a key element for improving positions; 3) that traditional operators have fewer opportunities with respect to suppliers; and 4) that strategic alliances are favoured within the current context of the intensive application of ICTs in the sector. The values that are assigned to these valuations are also notable (higher than 8 points in all cases).

Regarding changes in production processes and products, the comparison reveals that there is no statistically different valuation regarding the overall assessment of these ICT-derived changes or regarding opinions about the greater ease of offering integrated more personalised and global services.

So, on the one hand, the initial sample gives greater importance to information for creating added value, while the latter sample decreases this importance by half of a percentage point (V.11; from 9.4 to 8.4). It could thus be that the sector is recognising certain saturation in the use of information through technological means as an element of differentiation. In other words, it is necessary to know how to create value in the tourism service using other resources and through new politics, strategies and operational resources implemented.

On the other hand, there are some items rated more positively four years later. The opinion of the second sample reveals higher consideration for the ability of communication technologies to reduce costs (V.13; from 6.8 to 8.4). It thus seems that the expectations initially generated by said technology were right, with respect to the possibility that it would provide greater management efficiency. This fact is complemented by the valuation of the influence by ICTs on product quality (V.14). The positive opinion in this regard increased by two percentage points (from 5.6 to 7.7). This difference is noteworthy due to the fact that in the initial sample (2008), the mean value didn't even reach 6 percentage points; it was the least valued variable of the eighteen considered.

The same thing happens with the ability to innovate in the sector (V.16). It confirms that information and communication technologies promote the development of innovations, with an increase of nearly one and a half percentage points (from 7.9 to 9.2). Finally, the valuation is also a positively differentiated in the comparison of opinions about the extent to which ICTs facilitate the best practices in the industry (V.17; from 6.4 to 8.1).

The greater number of suppliers in the second sample could bias these considerations about the differences noted between the two samples. In other words, it is possible that the observed differences are attributable not only to the passage of time and a certain derived evolution, but also to the fact that suppliers could be stating that intermediary resources (not just the transmission of information) are being used better and that suppliers are more affected by cost reductions, by the possibilities of increasing the services they offer and by the innovations that are applicable to the sector. The differential opinion that betters practices than before are being applied is positive, independently of the greater number of one type of operator or another in the samples.

With these results, we can accept the research proposal, given that after the fieldwork conducted in 2012, we have observed the increasing presence of online operators in the sector. Moreover, we verified that changes in the tourism distribution system continue to occur and that, according to the opinion of those who are involved, the influence thereof continues to be notable in the system's structusre, in the power position of the channel's participants and in production processes.

4. Conclusions, Implications for Management and Future Research

The development of the online channel in the tourism distribution system has involved a modification of its distribution system's structure and of the production processes as well as a change in the behaviour of the agents. Given the challenges and possibilities derived from this fact, this work, through an analysis of the opinions, examines differences between those changes in the tourism sector resulting from the intensive application of ICTs. Changes in the sector's structure, changes in the power of tourism operators and changes in tourism production processes and products are researched.

These questions are included in a research proposal, and they are analyzed through a comparison of data of 2008 and 2012.

The results obtained verify the importance of the continuing development of ICTs in the tourism distribution system, as well as the influence by structural changes, by power position changes and by changes in tourism production processes and products on the system (in 2004 data, the values of the variables considered are higher of 7.8 as a mean). In this regard, the work concludes by verifying the increasing importance of ICTs for the agents in fomenting innovation, in decreasing production and distribution costs, in achieving a higher quality tourism product (although that is the lowest average value) and, in the ease of creating more flexible and adaptable products. Moreover, the adoption of good practices in the industry is favoured when companies in the sector adopt ICTs.

However, information seems to have ceased to be the main advantage for companies for differentiating themselves in the sector by creating value through the online channel. This seems to be accepted as a given and differentiation must be achieved through other means. The tourism operators have to note this novelty and go working in other ways to maintain their positions. In this sense, opportunities may come from the use of online managerial tools as e-wom and a more operational management.

These conclusions have implications for tourism company managers, given that they demonstrate the need to be present in the online channel in any event. The evolution of the channel in recent years indicates that this presence is necessary for survival purposes in the sector. Those who seek something more than survival must know how to obtain, select, process and present their offers better, while differentiating those offers from the rest by making good use of ICTs.

Finally, it must be kept in mind that this study is exploratory and requires greater development, in which future research should be engaged. Moreover, it is a study that is focused on obtaining conclusions from the opinions of organisations, and it does not include the consumer's perspective.

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