What Matters to The Industry?
An Evaluation Framework for the *Adoptability* of Online Tourism Distribution Platforms

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Abstract

Research identifying determinants of the adoption for Online Tourism Distribution Platforms by small operators is lacking. A number of solutions have been developed without addressing their needs. In an attempt to address this gap of research, this paper undertakes a series of interviews and focus groups of the European tourism industry. The findings provide the baseline for developing a framework to evaluate the *adoptability* of Online Tourism Distribution Platforms by SMEs. The framework is applied to evaluate a number of extant technological solutions. Theoretical, methodological and industry implications are outlined in the paper.

Keywords: B2B, B2C, Online Distribution, ICT Adoption, Standardisation.

1 Introduction

In the last five decades the distribution of the tourism industry has been transformed through the development of ICT. This transformation first started through the use of in-house computers in the 50s, it was then followed through the GDS developments in the 60s and 70s, which connected companies worldwide (Sheldon, 1997); and it evolved to the Internet and web service developments in the 90s and 2000s which enabled the direct interaction of consumers with the supply chain (Buhalis, 2003). With regards to the web services, a specific aspect which has been extensively researched and developed has been that one of B2B2C distribution. The literature outlines examples of solutions, which in the last 15 years have helped overcoming technical issues related to Online Distribution. This includes reference to DMSs (Rita, 2000); standardisation in tourism (Missikoff et al., 2003); and B2B2C applications (Liu, 2005). Nevertheless, statistics suggest that overall the adoption of B2B and B2C technology remains at surprisingly low levels. For example, only 67.9% of the Spanish hotels (Fundetec, 2009) and 74% of the Italian establishments (ISTAT, 2012) have online booking facilities. Although higher levels of adoption may be found in other European countries, these figures are even lower if we extend the search to the

entire tourism industry. According to PhocusWright (2011) the European online travel market has a penetration of only 36%.

The literature suggests some barriers of adoption of information technologies by SMEs and SMTEs (Small and Medium Tourism Enterprises). However, according to Reino et al. (2011) business characteristics may influence the adoption of systems differently. Limited work has focused on understanding the issues affecting B2B2C distribution among SMTEs. Additionally, the existing technological solutions show little consideration of the needs presented by SMTEs. This suggests a gap in research, which will be addressed through this paper. Based on the results from a series of interview and focus groups with European tourism operators, this paper develops and applies an evaluation framework for the *adoptability* of online distribution platforms. This is a framework to assess whether online distribution solutions fulfil the requirements of SMTEs for their adoption. Findings will be especially valuable for those involved in developing adoptable online distribution technology for the tourism industry. The research was generated through the EU-funded project TOURISMlink, financed through the DG Enterprise and Industry. The objective of the overall project is of facilitating and accelerating the digital connections between small local service providers in the broader tourism industry (hospitality, tourism, culture and leisure), and larger intermediaries (GDSs, OTAs and travel agencies), in order to increase their competitiveness.

2   Literature Review

Today the tools for exploring the available information in order to make a decision, as well as those enabling bookings, are mainly provided through the Internet (Poon, 1993; Buhalis, 2003). These play an important role in alleviating the historical and almost natural information asymmetry. Furthermore, they can give quite a large contribution to making destinations more attractive for the tourists (e.g. Pan and Fesenmaier, 2006). A quick confirmation comes, for example, from the World Economic Forum (WEF, 2011). As Fig. 1 shows, there is a clear positive and significant relationship between the overall tourism competitiveness index, and the quality of the ICT infrastructure (left) or the level of business usage of ICTs by tourism companies (right) in the countries examined.

The way in which the main tourism actors interact determining the structure of the tourism value chain has been also strongly influenced by the advent of Internet and e-commerce and is likely to be continuously reshaped further to the progress and innovation in Information and Communication Technologies. Recent studies on the behaviour of tourists while decide on a goal for their travels highlight that a destination is chosen as a whole, well before deciding which specific structure (hotel, attraction, etc.) to visit. Moreover, tourists seem to be more attracted by the richness and the variety of the offer rather than being driven only by economic considerations (price) and spend some time before deciding. In this time they make a number of comparisons on all the aspects they (individually) deem important. Decisions and changes can be very fast if tools are available to perform the choice and their final preference goes to destinations that are able to provide them with a full choice and personalization of all (or most) of the elements of their stay. Single operators, unless

having high level of capacities and resources to deliver, can be less attractive and competitive than well organized groups.
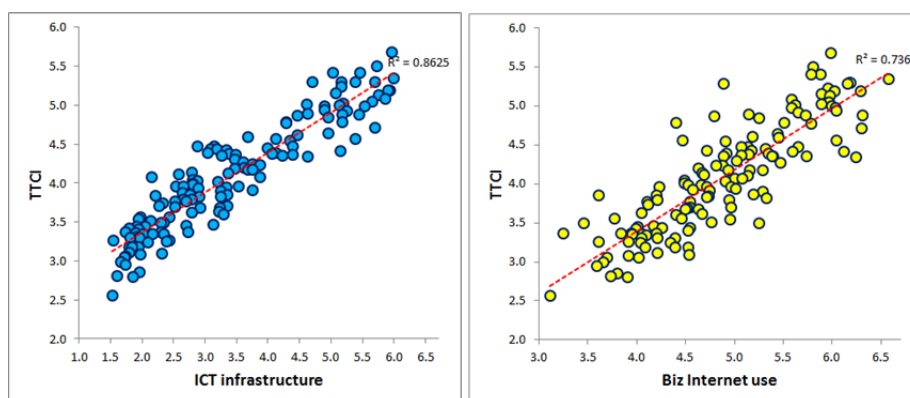

Fig. 1. Relationship between ICT infrastructure (left), level of business Internet usage (right) and the Tourism Competitiveness Index (TTCI). Source: WEF, 2011

ICTs have been crucial in bringing together the key players of the industry, namely the demand, consisting of very heterogeneous consumers; the supply, typically located in a particular tourist destination; and in between, intermediaries, which put together and sell the different tourism services to the customer. If the number of employees per enterprise is considered, the European tourism industry seems to be characterized by the high prevalence of SMEs. If the food and beverage sub-sectors are also considered, large enterprises (employing more than 250 persons) account for only 0.2% of the total number of active companies making the rest 99.8% belonging to the so-called SMTEs (micro, small and medium tourism enterprises: respectively 1-9 employees, 10-49 and 50-249). Even though with a very limited presence (especially in new member states), it should be acknowledged that large companies are responsible for 20% of the European tourist labour force and for 30% of the turnover yielded in the industry. This shows that overall the tourism industry is composed of very small operators, which entail their limited adoption of ICT.

2.1 Barriers and Drivers of ICT Adoption by SMTEs

Rogers (1969) is a key reference in research about adoption of innovations, which also includes the adoption of ICT. His work "The diffusion of innovations theory" refers to a collection of models, explaining the process by which innovation, including ICT, is embraced by users. According to his model, diffusion refers to the process by which an innovation is transferred through the communication channel to the members of a social system. The adoption of an innovation is initiated with the identification of a problem which is considered solvable through this adoption, and originated from a small number of centralized legitimising individuals and diffused to the other individuals of the system through the available communication channels. Therefore, four different elements determine the process: the characteristics of the innovation, the social system, the communication channels and the time factor.

In relation to the characteristics of the innovation, these include relative advantage, compatibility with potential user, its complexity, degree to which this can be experimented before its full adoption and visibility of its results. The social system will influence the adoption in terms of whether this provides a framework for optional, collective or authority-based decisions to adopt innovations. The communication channels may favour or interfere in the diffusion of information from the small number of centralized legitimising individuals who initiate the adoption to the other individuals of the system. Finally, the time factor is defined by five different stages of adoption, the rate of adoption and the type of adopters.

The barriers and drivers of ICT adoption have been studied in many diverse sectors. Some of the studies here presented are tourism specific while others are not. Most of the research takes into consideration the work by Rogers (1969), and builds upon his framework or at least takes his views into careful consideration. Therefore, the work examining the barriers and drivers of adoption can be classified following Rogers' (1969) framework, i.e. (i) based upon the characteristics of the innovation, (ii) the social system in which the individual organisations operate, (iii) the communication channels through which the innovation is diffused and (iv) the time factor (this refers to the stages of adoption, the rate of adoption and the type of adopters).

(i) With regards to the characteristics of the innovation, Rehman et al. (2006), who applied the Theory of Reason Action (TORA) to study technology adoption among farmers. Their work identified drivers related to the perceived characteristics of the innovation, these are cost effectiveness and expectation of improved results. On the other hand, lacking any of these two factors would become important barriers to adoption. Also highlighting the influence of the characteristics of the innovation are the suggestions made by Boffa and Sucurro (2012). According to these authors, to be effective, ICT tools must be flexible, widely distributed and used in a coordinated way in order to avoid unwanted consequences such as those discussed by that state that "simple" travel portals and other possibilities offered online (e.g. specialized search engines or large OTAs favoured by fragmentation of offerings) greatly reduce the search costs incurred by the users, but that this big reduction in search costs and efforts may worsen seasonality factors and push customers towards "price only" considerations (Boffa and Sucurro, 2012). Furthermore, if the technology is easy to use its adoption is most likely to take place (Davis, 1989; Venkatesh et al, 2003; Wang and Qualls, 2007).

(ii) In terms of the influence of the social system in which the individual organisations operate, the pressure made by partners, costumers, the media, or competitors has been identified as a key driver of adoption among SMEs (Iacovau et al, 1995; Kirby and Turner, 1993; Julien and Raymond 1994; Poon and Swatman, 1996; Griffin, 2004). Furthermore, issues related to security concerns have also been highlighted as a potential barrier to adoption by SMTEs (Duffy, 2010).

(iii) The availability of the required technology, and the proximity to the channel of diffusion of the innovations have been regarded by Windrum and de Berranger (2002) as key drivers or barriers of adoption, which are related to the channels through which the innovation is diffused. These authors make special reference to the influence that

the lack and cost of communication infrastructures, e.g.: broadband, both fixed and mobile, have on the adoption of the technology.

(iv) In relation to the time factor's barriers and drivers of adoption, these are mainly related to the type of adopters. Within this category, the work by McGregor (1996) looks into the endogenous barriers of technology adoption among small and medium-sized enterprises. According to this author, small businesses tend to avoid ICT into their business if it is seen as complex to use. As suggested by Reynolds et al. (1994), Cragg and King (1993), Allison (1999), small businesses generally lack of training, and technical knowledge, and lack the ability to integrate technology into the business strategy (Griffin, 2004). Also related to the characteristics of adopters Duffy (2010) suggests that issues specifically related to SMTEs, such as for example seasonality, lack of ICT applications for micro and small tourism enterprises, as well as design, maintenance and integration of old/new systems can be an important barrier to adoption.

2.2 Previous B2B2C Solutions

Different approaches have been taken to facilitate a comprehensive distribution of tourism services online. These have been generated both through purpose-built applications, such as DMSs, B2B and B2C platforms, as well as through some initiatives for standardising already existing technologies. These technological initiatives take very different approaches to solve the intercommunication among organisations. Details of these initiatives are outlined in Table 1.

OTA and Caval Project´s approach is that one of generating a set of standards to be embraced by the industry. Hence, through their adoption, interoperability among all industry members will be enabled. However, the reality is that this option does not suit small operators, whose technical skills are limited. Furthermore, changing internal standards implies internal re-organisation that is not always feasible. Harmonise enables the interaction of the supply chain through mapping own data format into a set of pre-established standards. Thus, the organisations participating in this initiative may keep their in-house data format, but also interact automatically with other members. The positive aspects of this solution is that it enables organisations of any size to interact with other members, without the need to change their own systems, to acquire expensive technology (e.g. Switches such as Pegasus), or to pay expensive fees to large intermediaries. On the other hand, it also presents some limitations for the complexity of the essential task of mapping own data onto pre-established standards, which can be cumbersome for those operators lacking sufficient technical skills. Furthermore, the benefit of adopting this technology is only limited to the interaction with other members of the initiative. Thus, its success heavily relies on the development of an extended network of participants.

Rezgo, Venere, Visit Technology Group and Travel Open Apps take a very different approach to address the issue. The approach taken by these initiatives consists of the provision of digital platforms instead of tools for standardisation. Nevertheless, each of them presents their own singularities. REZGO, for example is exclusively focused on the provision of tours and activities, while Venere is only operating with the accommodation sector. Furthermore, Venere is mainly for B2C and REZGO for B2B, but none of them cover the entire supply chain (i.e. B2B2C).

Table 1 Main Technological Solutions for Online B2B2C Distribution

Solutions	Protocols	Data formats	Resources considered
Harmonise	SOAP	RDFS/ XML	Accommodation, activities, food and drink.
Visit Technology Group	SOAP, REST	XML	Accommodation (cabins, apartments, hotels, camping, hostels etc.), activities, transport (flight, ferry, cruise, train, rental car, bus).
OTA (Open Travel Alliance)	SOAP	XML	Flights, cruises, packages, golf, hotels, ground transportation, insurance, railways, car rentals, tour activities…
Caval Project	REST	XML	Accommodation, transport, travel agencies, tour operators, activities.
Travel Open Apps	SOAP	XML	Accommodation, transport, travel agencies, tour operators, activities.
REZGO	REST	XML	Tours and activities.
Venere	SOAP	XML	Accommodation.

However, both Visit Technology Group and Travel Open Apps provide a comprehensive tool to facilitate B2B2C distribution of key tourism providers. Both applications are currently available at regional level mainly (Visit Technology Group in Norway and Sweden; and Travel Open Apps in the Valencia region, Spain). A fundamental difference between these two is that Visit Technology Group takes a destination-focus approach, while Travel Open Apps adopts a broader approach which facilitates its geographical expansion.

3   Methods

The research adopted a two-stages approach. This was specifically developed to suit the aims of the project, focused on developing a framework for evaluating the *adoptability likelihood* of Online Tourism Distribution Platforms and Solutions.

In order to support the development of this evaluation framework, the identification of suitable criteria for analysis is required. Therefore, the first step of the methods consisted of a tourism industry survey, which provided an insight into the barriers and drivers of adoption of online distribution technology. A series of focus groups and interviews were undertaken. Direct and email semi-structured interviews were administered to almost 100 practitioners and managers from twelve European countries. A number of open questions were asked on the major problems faced in using ICTs, mainly for what concerns online B2B operations (for full details see TOURISMlink, 2012). The qualitative answers (comments, observations etc.) and the notes and reports taken during the focus groups meetings underwent narrative and content analysis (Mainil et al., 2010) in order to identify key concepts expressed by the interviewees; from these we derived the items described hereafter. It was also noticed that a "saturation" (i.e. the point at which no new information or themes are observed in the data) occurred at a very early stage in the analysis (Bowen, 2008). All

these considerations allow us to be quite confident in the validity of the outcomes of this investigation.

The second step consisted of the evaluation of major initiatives which have been developed to solve issues related to the online distribution of tourism products.

4 Results

4.1 Survey and Evaluation Criteria

The qualitative analysis of the results has confirmed the drivers and barriers to adoption suggested by previous studies on ICT adoption but it also highlighted additional ones. The drivers which aligned with the literature relates to the pressure made by partners, costumers, the media, or competitors (Thong and Yap, 1995; Iacovau et al, 1995; Kirby and Turner, 1993; Julien and Raymond 1994; Parker, 1997; Poon and Swatman, 1996; and Griffin, 2004); cost effectiveness and expectation of improved results (Rehman et al. (2006); the flexibility of ICT tools and their wide distributed and coordinated used (Boffa and Sucurro (2012);); easy to use (Davis, 1989; Venkatesh et al, 2003; Wang and Qualls, 2007). The additional drivers which were identified relate to:

- Technology specifically designed for SMTEs;
- With limited invasiveness in the procedures of suppliers;
- Including capabilities for using efficiently ICTs in B2B operations;
- Interoperable with large intermediaries and aggregators (e.g. GDSs and OTAs);
- Providing standardisation of data representation and communication protocols for interoperability with other companies.
- With seamless integration features for in-house systems;

With regards to the barriers, these also extended those suggested by the literature. Aligning with extant research mention was made to issues related to security concerns (Duffy, 2010); the availability and cost of the required technology, and the proximity of the organisation to the channel of diffusion (Windrum and de Berranger, 2002); lack of training, and technical knowledge (Cragg and King, 1993; Allison, 1999); lack the ability to integrate technology into the business strategy (Griffin, 2004); seasonality (Duffy, 2010); lack of ICT applications for micro and small tourism enterprises Duffy, 2010); design, maintenance and integration of old/new systems (Duffy, 2010). However, it also highlighted a number of barriers no previously mentioned by extant literature. These are:

- the scarcity of ICT applications specifically designed for mini and micro enterprises;
- the very limited capabilities available for using efficiently ICTs in B2B operations; and
- the difficulty in collaborating with other companies due to the number of different platforms used in the industry, especially when dealing with large aggregators (GDSs or large OTAs) and lack of standardization for data.

4.2 Evaluation of Extant B2B and B2C Online Distribution Solutions

This section undertakes an evaluation of the different solutions which were presented through section 2.2 of the literature review. This evaluation is based upon the criteria identified through the previous section (4.1), with regards to the characteristics of the system, the innovation and the channel of diffusion. The time factor features (lack of technical knowledge, lack of ability to integrate in business strategy and seasonality) will not be applied to this evaluation, because they affect equally to all the systems.

With regards to the characteristics of *the social system*, the external pressure the systems which account with the highest level of external pressure relate to Venere and OTA. The former´s pressure relates to the high penetration of the system in the market. Although it´s worth mentioning that this pressure is only taking place with regards to hotel bookings. The latter´s pressure relates to the expansion of OTA´s standards throughout the industry. However, it is also worth considering that the penetration of this latter does not imply a barrier of entry. Systems may adapt OTA standards. Also related to the characteristics of *the social system* is the level of distribution. OTA, Venere and REZGO count with distribution worldwide. However, both Venere and REZGO focus on a limited group of operators (Venere in Hotels and REZGO in Tours and activities.

The following evaluation is based upon the criteria related to the *characteristics of the innovation*:

- *cost effectiveness:* adopting a new set of standards such as OTA, Caval Project can be highly pricy. Furthermore, online intermediaries like Venere charge costly commissions. However, Harmonise, Visit Technology Group, Travel Open Apps and REZGO provide more affordable solutions;
- *flexibility*: both Harmonise, OTA and Caval Project rate low with regards to this characteristic. Their intrinsic nature (standardisation) makes them relatively inflexible. On the other hand, Visit Technology Group and Travel Open Apps offer high levels of flexibility with tools for B2B and B2C commerce and applications for both dynamic and static packaging;
- *coordinated use*: by their nature the use of these systems is highly coordinated, involving different tourism stakeholders (e.g. consumers and providers of different types, intermediaries, etc.);
- *SMEs specificity*: both REZGO and Travel Open Apps have been designed with the small operator in mind;
- *limited invasiveness in procedures with suppliers*: all.
- *efficiency in the use of ICTs for B2B operations*: REZGO, Visit Technology Group and Travel Open Apps include specific applications to facilitate B2B operations. Harmonise, OTA and Caval Project support B2B communications but they do not have specific applications to support these procedures. Venere does not include them because it does not support B2B operations;
- *interoperability with large intermediaries and aggregators*: Venere does not count with this type of interoperability because it does not enable B2B operations. With regards to Harmonise, Caval Project and REZGO, their scope and coverage by main intermediaries and aggregators is limited. OTA, on the other hand accounts with high levels of adoptability by main aggregators and suppliers. Finally, both

the Visit Technology Group and Travel Open Apps are interoperable with intermediaries and aggregators, both online travel agencies and GDSs. Additionally, Travel Open Apps is undertaking negotiations for interoperability with Expedia, Venere, HRS and Booking;

- *ease of use*: Visit Technology Group, Travel Open App, REZGO and Venere are easy to use. On the other hand, solutions for standardisation require technical knowledge;
- *seamless integration with in-house system*s: Harmonise, OTA and Caval project can be adopted for connectivity with the in-house system. Furthermore, Venere, Visit Technology Group and Travel Open Apps provide this type of connectivity with some PMS. On the other hand, this is not the case of REZGO, which does not provide connectivity to in-house systems;
- *security concerns*: none of them has been reported to present security issues.

With regards to the *channel of diffusion*, the following evaluation has been undertaken:

- *limited availability of required infrastructure*: this characteristic is applicable to those solutions which focus on standardisation (i.e. Harmonise, OTA and Caval Project). This is because they imply that in-house solutions have been placed;
- *high cost of required infrastructure*: in relation to the required infrastructure of the solutions which focus on standardisation, these will imply higher cost of required infrastructure.

This analysis is summarised in Table 2. It should be noted that barriers, which imply negative characteristics, have been re-worded into positive characteristics, to facilitate their integration in the evaluation framework. This applies to "limited availability of required infrastructure" and "high cost of required infrastructure", which were re-named to "availability of required infrastructure" and "limited cost of required infrastructure" respectively. Based on this evaluation, Travel Open Apps is the application which most closely fulfils the criteria of adoptability by SMETs, whose unfulfilled conditions both relate to elements extrinsic to the innovation (i.e. external pressure and wide distribution). Travel Open Apps is closely followed by the Visit Technology Group. In addition to the two elements lacked by Travel Open Apps, this one has not been developed taking into consideration the requirements of SMEs.

Table 2 Evaluation Framework for Online B2B and B2C Solutions

		Harmonise	VTG	OTA	Caval Project	TOA	REZGO	Venere
System	External pressure			x				x
	Wide distribution			x			x	x
s of the	Cost effectiveness	x	x			x	x	
	Flexibility of ICT		x			x		

	Coordinated use	x	x	x	x	x	x	x
	Specifically designed for SMTEs					x	x	
	Limited invasiveness in procedures with suppliers	x	x	x	x	x	x	x
	Capabilities for using efficiently ICTs in B2B operations		**x**			x	x	
	Interoperable with large intermediaries and aggregators		x	x		x		
	Easy to use		x			x		x
	Seamless integration with in-house system	x	x	x	x	x		x
	Security	x	x	x	x	x	x	x
Channel	Availability of required infrastructure		x			x	x	x
	Limited cost of required infrastructure		x			x	x	x

5 Conclusions

This paper presents the results from a piece of research which set ups the baseline for the generation of an evaluation framework of online distribution solutions for the tourism industry. It does this on the basis of *adoptability* criteria, obtained through a survey of European tourism operators. The results have important implications for academia, managers of the industry, as well as those involved in the development of software for the tourism industry. With regards to the theoretical implications, these regard to the development of understanding regarding those issues affecting technology adoption by SMTEs. Although the findings partly aligned with the suggestion made by previous research, they also highlighted some specific issues which had not been mentioned before and which are equally relevant. These related to the scarcity of ICT applications specifically designed for mini and micro enterprises; the very limited capabilities available for using efficiently ICTs in B2B operations; and the difficulty in collaborating with other companies due to the number of different platforms used in the industry, especially when dealing with large aggregators (GDSs or large OTAs) and lack of standardization for data. Furthermore, it provides a method of evaluation for tourism online distribution solutions. In relation to the managerial implications, the evaluation method provides a framework for those involved in making decisions about the adoption of online distribution solutions, both at the supplier and destination level. Existing solutions for tourism online distribution have been very proactive in overcoming technical issues (i.e. standardisation). However, their focus on the needs of the industry, and specifically on the requirements of SMEs have been largely neglected, which, due to the structure of the industry, are essential to their success.

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Acknowledgements