Editorial

Investing in technology for tourism activities: Perspectives and challenges

This special issue of the International Journal of Technology Management covers a theme that has never been examined before in this journal. The papers bundled in this special issue were first presented at the Annual Conference of the Travel and Tourism Research Association (TTRA) Europe (Dimanche, 2007). The idea for this conference emerged in one of the rare places in the world where tourism and technology constitute the two main economic drivers of the area. The fact that the Sophia Antipolis high-tech Park is situated in the middle of the French Riviera has generated some interesting links between tourism and technology, such as, for example, the M-tourism project, that resulted from an Information and Communications Technologies and Sciences cluster in Sophia Antipolis (www.telecom-valley.fr). As a result, the impetus of this conference was to generate some positive synergies between these two, a priori, distinct domains. This conference was hosted in April 2007 by CERAM Business School—Nice Sophia Antipolis (France). Sixty-five papers were selected for presentation at the conference after a blind-review process. We then selected for inclusion in this special issue seven papers that were submitted to additional blind reviews. The content of these contributions will be discussed below.

The tourism industry has always been quick to adopt technological innovations to serve its demanding customers better. Examples abound from the first elevator on the French Riviera (that was installed in a hotel to satisfy English customers in the 19th century), the use of transportation innovations on oceans, in the air, and on the ground (e.g., the great ocean liners that crossed the North Atlantic in record times; the advent of jet planes that led the way to develop international mass tourism; the Train à Grande Vitesse —Very Fast Train) to more recent pioneering information technology developments (from the development of Global Distribution Systems, Internet sales, to the growing usage of smart phone applications for the mobile traveller). Technology has indeed been used for many purposes, from product development to tourism marketing. All these technological applications raise a wide range of generic issues.

First, questions that can be raised in relation to customers' reactions towards the introduction of new technologies:

- How do consumers value the benefits of technology? Does technology contribute to providing better services? Does it improve quality? Does technology increase customer satisfaction levels?
- How does technology change consumer behaviour and the consumer decision-making process?
- What are the drawbacks of technology? How can companies alleviate those limitations?
- How can technologies help better assess and understand customer behaviours?

Second, questions arise as well at the company strategy level:

- How is competition impacted by the introduction of technology? How can technology be a source of competitive advantage? Does it generate savings?
- How can technology be valued? Does technology-related investment foster revenues and generate additional income?
- How does technology change the value chain of tourism activities? Does technology call for the creation of new business models?
- How can tourism companies be motivated to invest in technology? Does technology help decision makers? How can management concepts such as knowledge management help address the challenges of technology investment in tourism activities?
- How are marketing activities impacted? Does the use of technology lead to corporate image changes?

Other questions can be raised about human resource management:

- How to prepare employees for developing technological capabilities? How can human resources facilitate technology implementation?
- How to cope with changes in productivity?

More specific, tourism-related questions emerge such as:

- Does the case of business tourism exhibit particularities regarding technology investment?
- Should policy makers favor technology investments and technology knowledge sharing? What should be the role of government agencies regarding this issue? Does the innovative use of technology contribute to destination competitiveness?
- In the context of globalization, are some world regions better equipped to face new tourism challenges because of faster technological adoption? What should economies in transition do to respond to those challenges?

The present paper is composed of three parts. We start with a general picture of the relationship between investing in technology and the development of tourism activities and the questions that can be raised around this relationship (Part 1). Then, we sketch the main thrust of each of the different contributions selected for this special issue (Part 2). Finally, the conclusion serves as a synthesis of the main ideas presented by the various authors in this special issue (Part 3).
1. Part 1—Tourism activities and technology investment

The selected papers depict the relationship between investment in technology and tourism at different levels and from multidisciplinary perspectives. The scaleable nature of this relationship is illustrated in Table 1.

As can be seen from Table 1, papers in this special issue encompass a broad range of disciplinary perspectives. These include social sciences and sociology, economics and public policy, history and management. Most of the research questions in these papers fall in areas that have been somewhat neglected by researchers in the tourism and hospitality management literature. The aim of this special issue is therefore to fill gaps in the literature and to present original perspectives as they relate to the study of technology management in the tourism sector.

Authors in this special issue have made use of various methodological tools to gather secondary as well as primary data. The range of methodologies is broad indeed: Case studies (Alford; Masson and Petiot), questionnaire survey (Daghfous and Barkhi), and secondary data analysis on a large sample of companies (Scaglione et al.). One author also used narratives chosen from different eras of tourism history (Hjalager). The range of studies also represents the cultural diversity of the authors who come from a variety of countries. Most of them are European—Denmark, France, Switzerland and the United Kingdom—while one research project was conducted in the United Arab Emirates.

2. Part 2—The contributions

Alford refers to a social sciences and sociology perspective to study Information Technology (IT) implementation projects involving multiple stakeholders. His article is based on three case studies of failed IT implementation. They were conducted in different areas of the British tourism sector. The first one is about a network of regional tourist information centres in England where the English Tourist Board failed to implement a destination management IT system. The second one covers three UK hotel chains that implemented a computerized yield management system in their multi-unit organizations. The final case deals with the development of a standardized electronic package holiday distribution for tour operators in Britain—an initiative taken by three founding companies: a Global Distribution System (GDS), a tour operator and an IT company.

Alford’s main argument is that an over-concentration on technical issues induces a failure to take human-centred issues into account. He contends that for effective technology implementation, a technology-based approach does not suffice, and that the question is not only the use of technology: A technological innovation should not be considered as an external, autonomous process. Alford argues that, to reduce the rate of failure, managers should pay much more attention to the interaction of technology with human actors. He suggests offering stakeholders a direct say in the implementation process. This means creating a climate of trust, implementing a consultation process, consensus-building through dialogue, etc.

Daghfous and Barkhi are interested in the current use of information technologies and implementation of information systems in luxury hotels. They surveyed 77 four-star and five-star hotels in the United Arab Emirates (UAE)—a fast growing tourism destination. This descriptive approach of professional practices shows that these hotels use popular software, implement standard equipments and train their own personnel. Three other managerial aspects were investigated which are: Total Quality Management (TQM), Customer Relationship Management (CRM) and Supply Chain Management (SCM). The survey shows that these systems are operationalized with application software available on the market. Interestingly, this creates a situation where hotels encounter major difficulties to differentiate as they gain access to similar resources. This means that differentiation has to be found through the effectiveness of the implementation and the proper alignment of technologies with the existing organization. Yet, the impact of these systems on customer satisfaction still needs to be demonstrated. The main challenge for hotel managers still lies ahead.

Hjalager distinguishes two areas in medical tourism. The first, health tourism, relates to travel destinations where service providers take care of the health and/or well-being of the traveller; this goes from spa resorts, aromatherapies and mud baths to comprehensive packages for aesthetic or medical surgery. The second area, travel medicine—which is at the core of her article, covers medical products and services that deal with health risks and diseases possibly incurred by the traveller when travelling. Travel medicine was in the past a necessary prerequisite for survival. Nowadays, it has increasingly become a means to enjoy as much as possible the holidays (in difficult situations such as warm and humid climates).

The author takes a historical perspective. Narratives chosen from three domains of tourism history are offered. First, she examines the challenge of malaria to travelling in tropical areas. Before the chemical synthesis of quinine, travellers were discouraged by the risks from going to places exposed to malaria (notably in tropical zones). The advent of quinine opened the door for the development of new forms of tourism and travel destinations—especially in Africa and Asia. The second case is that of the so-called ‘holiday tablets.’ These amphetamines were initially developed in the 1960s by the pharmaceutical industry to help travellers keep up energy levels and reduce sleeping time. Because of their negative side effects, these drugs were banned by most countries during the 1970s. However, there are around the world places open to a recreational use of these drugs because of liberal policies and modest law enforcement by public authorities which opened the door to an informal and clandestine...
market. The author stresses that the tourism sector finds itself in a very ambiguous situation regarding those destinations. The third case relates to wilderness medicine. The development of spectacular and potentially dangerous tourism in remote natural areas such as the arctic, jungles, deserts, etc. has fostered new forms of medical provisions. One example relates to solutions designed to handle health emergencies for these adventurous tourists.

Landré offers a practical example of how imaging and mapping technologies can be used to provide detailed analysis to public decision makers of a recreational park so as to develop zoning policies. The application was run for Biesbosch National Park in The Netherlands. Various rivers, streams and creeks constitute this park and offer leisure routes for boaters and yachtsmen. A ban on extending the number of berths was decided to preserve the natural features of the area. Questions were raised about traffic reduction in the heart of the core recreational cluster.

Based on an investigation of yachting patterns in the last decade, models were developed to estimate the impact of possible scenarios for restructuring the waterways (such as, for example, the construction of substructures of waterways). High-resolution aerial photographs and satellite images were used to show yachts moored in basins, sailing or moored in a temporary harbour. Leisure routes were inferred from yacht locations at different times. An analysis of spatial patterns was conducted with space syntax; that is, through breaking down space into components with different levels of relative connectivity.

Masson and Petiot adopt a public policy perspective to discuss the impact of transport infrastructure on tourism activities. These effects could be ambiguous according to the authors. They assume that inefficiencies in transportation systems might stimulate visitors to look for alternative destinations; on the other hand, even show a negative trend in revenues. Yet, the causal relationship is not proved; it may be, as the authors mention, that inefficiencies in transport infrastructure allow a reduction in the time needed to reach the place, and consequently, to spend more time at the destination. Another scenario could be the reinforcement of the most developed area due to an agglomeration process around the core.

The authors' empirical investigation is based on the experience of an innovation in transportation technology: the French high-speed train (TGV: Train à Grande Vitesse). Several lines have been implemented in France since the 1980s. The first historical link between Paris and Lyon showed an increase in business travel, but a reduction of the average length of the stay. The Atlantic line showed similar effects—and gave a more international scale to meetings and conventions. The Mediterranean line (between Paris and Marseille) might reproduce this model. They conclude that the implementation of a high-speed train is one of the components that can be used to create wealth—but, it is not enough in itself. The new Southern line between Perpignan (France) and Barcelona (Spain) was planned to open in 2009. It should decrease travel time from 2:45 to 0:50 h. Will new geographical patterns of activities emerge to changes in transportation opportunities? Will this new TGV attract new markets to Barcelona or to France? The authors argue that, due to differences related to territories, it is difficult to use experiences from the past to build some analogies. Yet, because Barcelona is a European metropolis with significant tourist attractions and infrastructure, it might reinforce its core position and put Perpignan, a small city, at its periphery.

Öztaysi et al. examine the use of Radio Frequency Identification (RFID) in tourism and hospitality. Diverse sectors have already adopted RFID to apply it in their business processes. Examples can be found in: automatic vehicle identification, animal identification, road toll payment, warehouse management and logistic, raw material and product tracking in supply chains, etc. The architecture of an RFID system is based on two parts: A tag reader and a transponder. The tag reader is a combination of transmitter and a receiver. It transmits through radio waves, that is, without any contact, data and energy to a microchip with a coiled antenna. This small tag or label, possibly with a unique identifier, is used to identify a specific object. The chip automatically processes and sends back information to the reader. The reader is then able to take action based on this information.

Relying on an extensive literature review, Öztaysi et al. suggest four ranges of RFID applications in tourism: human tracking and control systems, assets and valuables tracking systems, contactless payment systems, and RFID-based information. They forecast significant development in the tourism sector thanks to the benefits that can be gained: facilitator of operations by simplifying the way systems are operated, increased of service quality, offering of new services, etc. However, the authors stressed that future implementers in the tourism industry should pay attention to security concerns and ethical issues that RFID raise and that are not completely solved. Finally, they use a hypothetical case study to identify possible utilizations of RFID technologies in the management of a hotel chain.

In the final paper of this special issue, Scaglione et al.'s research question is about the relationship between business success and adoption/use of websites. Their research was conducted over a sample of 147 hospitality enterprises in the Valais region of Switzerland. Success is analysed with Revenue per Available Room before and after hotels adopted websites; data cover monthly revenues for a period of 12 years (from the beginning of 1992 to the end of 2003). Domain name registration is used as a proxy for when a website went online. (The authors applied Roger's model (1995) for diffusion of innovations. They estimated a bell-shape function of adopters' frequencies so as to distinguish different categories of adopters: early adopters, early majority, late majority, laggards).

Results show higher revenues after website adoption—especially for hotels with their own website (compared to hotels associated to a tourism portal). Hotels with no web presence even show a negative trend in revenues. Yet, the causal relationship is not proved; it may be, as the authors mention, that better and more competitive hotels were faster in adopting Internet technologies than their less performing colleagues.

3. Part 3—A synthesis of the main ideas developed

Our concluding remarks will attempt to synthesize the key overall findings that emerge from the diverse papers of this special issue. Three main lessons can be identified.

3.1. Investing in technology is not just about investing in information technologies

The fast growth of multimedia personal computers connected to the Internet into the houses of numerous people in developing countries has dramatically changed the way travel consumers define their destination, choose their itineraries, select their modes of transportation, accommodations; the activities they want to gain access to, etc. Many companies have already explored the diverse uses of information and communication technologies, mostly with web-based services offering.

Information Technology (IT) is used in the back-office for handling routine operational problems and to facilitate multi-stakeholders interactions as well as in yield management. IT is used as well, for example, in the front office for customer relationship management (CRM). However, the IT revolution is still on its way. Uses of the Internet are numerous and keep
evolving, particularly with web 2.0 applications and hand-held smart phones applications. For example, the application of web 2.0 tools, digitally based guides, geo-localization technologies (by phone or GPS), or mobile Internet and its large span of possible applications are just emerging and might have considerable impacts in the future. Are companies prepared to face these future challenges? What are the proper business models?

There is a popular view according to which IT investments are the technology driving force in tourism activities. IT developments in tourism are, for sure, an important area to study, and there is, indeed, an academic journal dedicated to this. It should be stressed, however, that although technology is not only about IT, several papers in this special issue offer interesting perspectives in this area: Alford’s analysis of failures in multi-stakeholders IT implementation projects; Daghfous and Barkhi’s research on IT investment in hotels; Öztay’s et al.’s examination of the use of Radio Frequency Identification (RFID) in tourism businesses; Scaglione et al.’s study of hotel website adoption and its relationship with business success.

However, three other papers demonstrate that the scope of technology investments in tourism is much broader. This is exemplified by Landré’s demonstration of the use of imaging and mapping technologies in site development and management; Hjalager’s examination of the links between medicine and the tourism industry; and Masson and Petiot’s analysis of the regional impacts of the French high-speed train on travel and tourism. Similar developments might probably also be made about other new modes that permit faster and more efficient means of transportation such as the NGV (Navire à Grande Vitesse or high-speed boats), or the Airbus A380 (the latest Airbus wide-body jet plane).

Other examples of technological developments, although not addressed in this special issue, can be mentioned to illustrate the point: Artificial snowmaking in ski resorts, the use of new technologies to design and build environmentally efficient hotels and means of transportation, or the development of space travel.

3.2. Investment in technology for tourism activities can lead to several benefits

The contributions in this special issue illustrate some of the benefits to be gained with technology: Help to analyse user behaviours (e.g., study of yachting patterns); expand business (e.g., increasing sales, broadening market reach especially foreign markets; improving service quality; providing one-to-one interaction; enabling last minute change); improve productivity and efficiency (e.g., reducing transaction costs, reducing communication costs, reducing distribution costs).

3.3. Implications due to the nature of tourism activities

Some specific features of tourism activities tend to act as a barrier for investing in technology in tourism: Tourism is not a technology-intensive industry.

- By tradition, the industry is not used to invest in technology: R&D budgets in the tourism industry are close to zero. There are very few engineers working in tourism businesses and most of the time when an engineer is hired, this is not to work as an engineer. This means that people in tourism do not create technologies, but buy technologies from suppliers.
- Two main consequences have to be stressed: (1) Innovation in the tourism industry is fostered by external driving forces—the first being the external supplies of technology, and the second

the legal regulations at national or local levels; and (2) When the tourism industry invests in technology, the challenge is to internalize some innovation which was developed outside of its boundaries.

On the other hand, some other features make tourism activities open to technology investment:

- Because tourism activities are information-intensive industries, they are particularly receptive to IT investments.
- Because tourism offer is a set of products and services that need to be properly bundled, technology can be useful to realize integration between a large set of different suppliers (see, for example the progress made in dynamic packaging).

In conclusion, tourism represents one of the largest economic sectors in the world, and it is often one of the top three foreign exchange earners for many developed as well as developing countries. Because it is a service sector that is labour intensive, tourism’s contribution to employment is very significant. Finally, despite the current world economic situation, it is widely accepted that travel and tourism will continue to grow in a globalized economy. Despite its economic and social significance, tourism has probably been under-studied in the management literature. It does provide, however, a fertile ground for innovation and technology research. The 2007 TTRA Europe conference and this special issue will contribute, we hope, to a better understanding of the issues and challenges that the management of technology represents in the tourism sector, and will encourage researchers to use the tourism industry as a study context for their investigations.

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