ICT AND THE CHANGING LANDSCAPE OF TOURISM DISTRIBUTION- A NEW DIMENSION OF TOURISM IN THE GLOBAL CONDITIONS

Associate Professor Ph.D. **Kozeta SEVRANI,**
Head of Informatics and Mathematics Department, University of Tirana, Faculty of Economics, Albania

Associate Professor, Ph.D. **Liljana ELMAZI,**
Head of Marketing Department, University of Tirana, Faculty of Economics, Albania

Abstract

The travel and tourism sector has emerged as one of the most important sectors for developing as well as developed countries. Tourism incorporates many of the features of the information society such as globalization, mobility and information richness. People from all nations, social rank, and professions are potential tourists. Tourism links a worldwide supplier community with consumers, equally distributed worldwide. Its physical and virtual networks enable worldwide travelling, bringing together very distant cultures and habits.

The industry is diverse; the size of tourism principals varies from micro to global enterprises. While some are fragmented, other parts, like the airlines, are concentrated into an oligopoly of global alliances.

Information systems (IS) in tourism have been among the pioneers of leading edge technology applications: Computer Reservation Systems (CRS) or Global Distribution Systems (GDS) have been among the first international inter-organizational systems. Yield management systems are among the most advanced data mining applications.

Tourism marketing systems typically represent the forefront of multimedia and virtual-reality applications. The World Wide Web is profoundly changing the production, distribution and consumption of touristic products. Information and communication technology (ICT) is probably the strongest driving force for changes within the tourism industry. Both industries are not only growing above average, they will also be among the most important industries in this century. Being closely interrelated and intertwined.

The first part of the paper presents a structural view, identifying the different types of players, the nature of the tourism business and tourism product.

The second part gives a general introduction to the relationship between ICT and tourism and provides some empirical evidence of importance of tourism in the e-commerce sector.

Part three gives a detailed account of the current transformation in the travel and tourism market.

We can conclude that future competition in the (electronic) tourism market place will be characterized by the efforts of the players to exploit technology in order to facilitate organizational responsiveness and learning as well as customer relationship management by:

- *using the infrastructure for enforced marketing efforts, generating user interest by specific services;*
- *being able to move in the quickly changing industry network, finding the balance between cooperation and competition;*
- *developing a strategy for knowledge management and permanent learning;*
- *permanently adopting to and using technological developments;*
- *maintaining customer relationships, based on sophisticated user and interface tools and*
- *monitoring ongoing trends and relying on advanced AI tools for product development and innovation.*

Key words: tourism, distribution systems, e-commerce.

JEL classification: M15, M20, L83.

1. THE TRAVEL & TOURISM INDUSTRY AND ITS STRUCTURE

Tourism has a significant economic impact, on a global as well as on a local level, which is underlined by statistical evidence from several official international organizations. We do not, however, discuss the quality of these numbers and the precision of the methods used. Travel and tourism constitute a higher portion of the value of exports than any other sector excluding petroleum, petroleum products and motor vehicles, parts and accessories.

Travel and tourism is a hybrid industry. More than other services, tourism services are increasingly dominated by information, however the core product is in almost every case a physical service. These services are produced and consumed in a physical world and embedded in a rich, locally coloured context. The challenge for the industry is to provide a seamless integration of information and physical service, with flexible configurations of the physical and the informational parts. The informational support of a journey – composed of a potentially complex set of interrelated elements – can vary considerably. ICT facilitates mass customization of tourism products: complex and flexible bundles of tourism offerings can

be configured and knowledge management tools enable individualized marketing to customers.

The functional and structural view of the tourism and travel market differentiates between the supply and demand side and the respective intermediaries. Links mark the relationships as well as the flow of information. It only depicts the most relevant links. The relevant types of players in the field are as following: on the supply side we denote with *primary suppliers* enterprises like hotels, restaurants, etc, which are mostly SMEs. About 95.5% of the enterprises are very small (one to nine employees). Half of the employees in this segment work in very small businesses (one to nine employees); a further 15% are one-man enterprises. Only about 10% of the employees work in large enterprises of more than 250 employees. (Werthner *et al.* 2004).

Primary suppliers also contain other enterprises such as cultural or sport event organizers, which demonstrate the integrative role of tourism. This group normally acts in the local context of a destination, either regionally or nationally defined. With respect to a functional differentiation these locally acting companies are on the same level as the international big players like airlines or railway companies.

Tour operators can be seen as product aggregators, i.e., they produce a new product by combining basic products or components. *Travel agents* can be viewed as information brokers, providing the consumer with relevant information and booking facilities.

Computerized Reservation Systems/Global Distribution Systems (CRS/GDS) cover airline offerings as well as other tourism relevant products such as packaged holidays, and other means of transport. They provide the main links to tour operator systems and to travel agents.

Dotted lines between other transport operators indicate that, for example, railway companies are not as well organized as airlines and normally not linked to CRS/ GDS, whereas on the other hand car-rental companies are well represented. Whereas the intermediaries on the right side can be seen as the professional and commercial link between supplier and consumer – the link also denotes financial flows – the left side is relevant for destination management, planning, administration, marketing and branding of a destination. In most cases, these entities have to act on behalf of all suppliers within a destination and are not involved in the booking process. The links to governmental bodies are dotted lines in order to indicate that these Destination Marketing and Management Organizations (DMO) are also often governmental organizations.

1.1 Tourism as Information Product

Due to structural reasons, tourism is an information business (Schertler 1995). It is constituted by a difference: leisure activities presuppose the existence of their opposite, namely the existence of regulated and organized work. For tourists, the visited places are free of work; services are supplied that liberate the consumer from their daily burdens. Tourism destinations are places, where tourism attractions are assumed to be unique, different from the everyday environment. The differences of time and space imply that tourists have to travel to the place of consumption, they are normally not able to test the product in advance; and they have to agree upon the contract before consuming the product. Like services in general, tourism services are consumed at the very time they are produced.

The tourism product is based on social interaction between the supplier and the consumer, where the quality of the product is mainly defined by this interaction. *A priori*, the specific qualities of the product are not clear. At the moment of decision making and the related contractual agreement, only an abstract model of the product, e.g., its description, is available. Thus, decision making and consumption are separated in time and space. These distances can only be overcome by the information about the product, which can travel, which is available in advance and which can be gathered by the consumer. Thus, the tourism product is a confidence good; a comprehensive assessment of its qualities *a priori* is impossible. This characteristic requires information on both, the consumers' and suppliers' sides, entailing high information search costs and causing informational market imperfections (Williamson 1985). These, in turn, lead to the establishment of specific product distribution and – comparably long – information and value-adding chains.

1.2 Information Intensity of Production Processes

While the output of business processes is communicated to the market in terms of product information flowing to the potential customer, the underlying operations and decision-making processes themselves are also based on market information. This information is mostly represented in statistical aggregates in the form of summaries, trends, or forecasts about market behaviour and competitors' performance. Both, downstream and upstream information flows create a tourist information network tying together all market participants and, apparently, reflecting the economic relationships between them. Thus, along the links shown in Figure 2, information flows between the different participants of the tourism market. The figure represents a value chain with respect to information; each player in the chain adds specific information, i.e. value, which eases the

decision for the consumer. An improved flow of information along the links as well as an improved information generation reduces the risks, on both sides of the network, for the consumer and the suppliers. In addition, the product aggregation and consolidation process is information intensive. Products have to have well defined interfaces so that they fit together, with respect to the consumer needs, prices and distribution channels. The bundling process is complicated by the fact that the tourism product is a variable and versatile product, basic products can be embedded in different aggregated products, i.e., a hotel may be combined with different travel arrangements or additional arrangements such as sport or cultural events. It can be sold to different consumer groups, if the product attributes and the consumers' interests can be mapped onto each other. This process is also based on information and, which is an equally important, different representation may result into different products, e.g., the same hotel may be sold as one well suited for elderly persons or as golf hotel, given that it is adjacent to a golf course. Both, the variability and the aggregated character qualify tourism products as complex and explanation intensive; i.e., consumers typically need information, explanations and advice.

1.3 Trends in Consumer Behaviour

At the same time consumer behaviour is changing, in tourism as in other industries. As part of a general trend, tourists:
* Seek more individual offers; self-enrichment; better immediate information about the product and the destination; better service;
* want more specific offers, both with regard to content as well as to the entire arrangements;
* are becoming more mobile and critical; more brand aware but less loyal;
* are more price sensitive, comparing more and more offers;
* tend to take more but shorter vacations; and decide later leading to decreased time span between booking and consumption;
* are more knowledgeable about international travel;
* make decisions later, reducing the lead time;
* have access to the Internet to obtain instant, in – depth information and booking;
* have access to low cost international air travel.

As a consequence, the market becomes more segmented, with each potential consumer belonging to different segments at the same time.

However, ICT plays an important role in coping with these challenges in tourism. By facilitating the nearly unrestricted dissemination of tourist information (worldwide networks, multimedia, etc.), market participants and especially consumers get better access to product information, giving rise both to, global visibility of destinations and a global merging of market segments. This increase in distribution competition accelerates business processes and spurs the dynamics of innovation, calling for improved utilization of ICT at the management level.

2. TOURISM AND ICT

The focus of e-business engagement in tourism is on customer-facing activities, i.e. primarily e-marketing and e-sales. Online booking and reservation services have been widely accepted among consumers and business travellers. Yet, in all other e-business areas the tourism sector is below the weighted average for 10 sectors (such as food and beverages, textile industry, publishing and printing, pharmaceutical industry, machinery and equipment, automotive industry, aerospace, construction IT services and tourism).

The diffusion of basic ICT infrastructure lags behind other sectors. Most IT-laggards can be found among micro and small enterprises, which are much more important than in other sectors, given that SMEs clearly dominate the tourism sector. The availability of e-skills on the labour market for tourism is still a problem. Small and micro enterprises searching for personnel with e-skills face significant difficulties in hiring qualified staff.

The automation of internal business processes is less crucial for a service sector such as tourism in comparison to the manufacturing sectors. The application of ICT solutions such as enterprise resource planning systems (ERP) is significantly lower than in other economic sectors. This indicates that most of these expensive and complex applications are tailored to large enterprises and the majority of SMEs in tourism still consider a manual handling of such tasks sufficient.

Online purchasing is a relatively well-used application in the tourism sector. Tourism companies buy online more often and purchase more of their supplies online than firms from other economic sectors. Yet, they are less likely to use specific ICT solutions for their e-procurement activities within their companies. Instead, they are more likely to use services offered via sales solutions of suppliers or offered on e-market places or trading networks. In general, e-market places seem to be much more important than in other economic sectors. They are heavily used for e-procurement as well as for e-sales.

Overall, ICT remains important in the competitive advantage argument. There is enormous customer-driven demand for e-business products and services, and the trend is that demand will continue to rise. Therefore investment in e-business applications needs to be encouraged and supported.

E-business has fundamentally changed the

daily operations of Destination Management Organisations (DMOs). Due to their internal structure, destinations may be considered as some kind of virtual enterprises, which are predestined for the use of collaborative e-business applications. ICT may support the internal coordination and e-marketing and online sales of services provided within the destination. DMOs may operate destination portals on the internet enabling them to provide direct contacts between tourists and service providers, thereby superseding traditional intermediaries such as travel agencies. In fact, DMOs may evolve into e-intermediaries themselves.

As the European tourism market has emerged into a buyers' market, a more customer-centric approach by tourism companies would be highly beneficial. The application of CRM is emerging as a promising measure. Currently, mainly large companies such as airlines and hotel chains are using sophisticated CRM systems, while most SMEs in the tourism sector work without CRM. Thus, destination cards may prove to be an enabling solution for CRM systems; however the conceptual design and strategic arrangement will determine the success of such card solutions.

Mobile e-services may serve tourists conveniently while travelling and at the destination during their stay. While most established e-commerce applications deal with customer needs in the pre-trip phase, there is a lack of applications serving the tourist on-the-spot. Some e-commerce applications are already available, but the quality of their contents, the technological implementation and the usability of such services varies considerably. The market for mobile services is still immature and sustainable business models need to be developed. Yet, especially location-based systems may provide suppliers of such services with a unique selling proposition, and destinations promoting such innovative services may gain a competitive advantage.

Policy implications of ICT

There are still a number of tourism enterprises completely refusing to engage in e-business. Often, these IT-laggards lack the basic ICT infrastructure. Initiatives to raise the awareness of the potential benefits of ICT and e-business may help to overcome such barriers. Policies supporting the roll-out of broadband infrastructure may also prove highly beneficial. The same is true for education policies which should try to include e-skills in vocational curricula and foster respective training activities for tourism staff, as well.

Another field for policy action is the support of standardised internet-based systems. In contrast to existing Computer Reservation Systems (CRS) and Global Distribution Systems (GDS) tailored for large enterprises, new systems may open up opportunities for applications in an open network like the internet, which may be more adequate for SMEs. Yet, many e-market places set up barriers due to different standards used. Thus, projects targeting the standardisation and enhancing the interoperability of all sorts of web services for the tourism sector should be supported.

Furthermore, policies should encourage initiatives for networking and cooperation in e-business. It is fundamental for SMEs to form networks with other players in the market to satisfy the needs of customers, which have become more demanding and empowered by the internet. Policy measures should stimulate the participation of SMEs in business networks targeted at cooperation in daily business, training activities and the transfer of know-how.

ICT has played an important role in previous phases of the development of modern tourism. Computerized Reservation Systems (CRS), developed and operated by airlines in order to cope with the increasing volume of passengers and the related logistic and operational problems, were among the first worldwide applications of information technology, leading to systems with several ten-thousand participating companies. At that time, comparable applications could only be found in the financial sector. The diversity of the tourism sector places high demands on IS support and the performance of IS systems. These demands reflect:

- global markets and the salience of destinations;
- high volume of transactions and customized products;
- structured, standardized data as well as multimedia representations;
- importance of intra- and inter-organizational systems;
- all different types of customers (consumers, SME, large companies);
- fragmented and concentrated markets.

Today, tourism is among the most important application domains in the World Wide Web. Estimates state that approx. 33% of Internet transactions are tourism-based (based on a Delphi study with 50 participants from the three Albanian speaking countries, estimates that within the next 10 years 30% of the tourism business will be Internet based. Growth estimates show a steady growth over the next years. So hotel and rental car bookings will grow accordingly.

The reasons for the prominent position of travel revenues on the Internet are:

- the sheer volume of overall revenues;
- the salience of rich and topical information for customers;
- tourism suppliers address a global audience and almost every Internet user is a potential customer;
- intense competition on the Web among incumbents and new players has led to the emergence of numerous leading Web sites, which offer a wealth of multimedia information and efficient transaction support.

On balance, we see a combination of structural properties of the tourism industry and its product, intense competition and a swift adaptation of attractive customer segments to electronic transactions. The basic infrastructure will contain: the physical layer based on the Internet protocol; and common services such as user authorization, information coding (cryptography) and billing procedures.

Specific services and applications will cover a wide range of support functions for customers:

• generic e-commerce procedures like electronic payment and clearing;

• specific procedures like product search and negotiation;

• mediation and facilitation services, providing transparent access to information sources and applications like reservation or aggregation servers, and to personalized tools for planning means.

3. THE NEW MARKET PLACE

Tourism players from all segments of the market pursue online market strategies, and try to enter this already crowded and competitive market: especially airlines, CRS/ GDS and hotel chains. The technology not only enables direct access to the consumer (Internet) but also improves the internal information flow and cooperation processes (Extranet). Internet applications become their electronic interface to the world, where services are defined from a supplier and a consumer perspective. The new structure shows intermediation and disintermediation processes at the same time, giving birth to new, exclusively Internet service providers.

3.1 Trend Towards Stronger Networking

The tourism industry is largely dominated by small and medium-sized enterprises (SMEs). To survive in an increasingly competitive and global environment, tourism enterprises have to achieve economies of scale and scope in order to reduce transaction costs, increase productivity and gain market power. There has been a general trend towards network relations among various service providers, in order to offer new products and services that increase the profitability and further develop the attractiveness and competitiveness of the destination and/or enterprise, by better responding to changing tourism demand. As more and more guest interaction is handled over the internet, enterprises are dependent on each other to cooperate in networks for realising the maximum benefits of e-business.

3.2 Disintermediation and Re-Intermediation in the Travel and Tourism Industry

Faced with increasing competition and price pressure, all major airlines have set up Web sites through which they also pursue direct sales strategies. While some of them have been cautious not to alienate their established distribution partners, e.g. Lufthansa, which is running monthly ticket auctions as a marketing event and promotion for the Web-site which also features direct booking, others, e.g. Delta Airlines, are aggressively pushing the direct sales channel. Up to the point that Delta has attempted to impose a penalty fee for all non-online bookings.

Traditionally, travel agencies and tour operators have been playing a key role in the tourism sector; however, the wide adoption of ICT in the tourism industry is transforming the role played by these enterprises. It seems that their physical importance is being diminished by direct-to-customer business models based on the internet. To work against this development, more and more travel agencies extend their services by online booking portals and act again as an intermediary between the final producer and the tourist. Some players have changed their business model completely by focusing exclusively on the internet, e.g. Travel24.com which saves costs by distributing information and sales on the internet without the need to run sales offices. Furthermore, there is a noticeable trend towards a change in the booking behaviour of tourists due to different expectations of experienced tourists and the request for individualisation. Today, experienced tourists are increasingly planning and creating their own vacation packages on a modular basis through direct bookings on platforms or directly on the companies' websites.

3.3 New Intermediaries: Online Booking Servers

More important and potentially more dangerous for travel agents is the emergence of so called online booking servers. They act as a kind of virtual travel agent or even travel supermarket providing booking facilities for air, hotel, car rentals, or holiday packages, as well as many additional information retrieval services. With respect to the tourism value chain they can be regarded as new intermediaries, setting up an additional distribution link from the CRS/GDS to the consumer, bypassing travel agents. The cooperation agreements with CRS/GDS follow from the fact that the latter are the only electronic systems available which supply both a worldwide product set as well as the necessary reliable functionality.

Traditional tourism players like Sabre with Travelocity or THISCO with Travel Web run some of these booking servers while others have been set-up by new entrants like Microsoft with Expedia. The

sheer size and attractiveness of the travel and tourism market combined with lowered entry barriers has attracted new entrants from outside the traditional tourism market, especially from companies from the media and ICT field such as Bertelsmann or Microsoft.

These companies appreciate the huge interest from the consumer's side in tourism applications in the Internet and want to exploit the possibility of linking users to other Internet services offered. They provide multimedia content and Internet mediating transactions to earn money. Since tourism is an information business, it fits well with their know how and business processes. These companies perceive tourism as one of the most important application fields for emerging electronic markets. While, for many years, the tourism market has been characterized by a high level of regulation and little external competition, this situation has changed fundamentally and we have seen new entrants rise to major players during the past four years.

The list of the top travel sites, i.e., Expedia ITN, Preview Travel and Travelocity, demonstrates the dominant US position. These servers have enormous annual growth rates, for example as a major way to increase Web traffic nearly all these servers follow a strategy of distribution deals with portal sites. The strategic goal of these companies is to be among those that will occupy a strategic position in this future market. This strategy, however, requires ongoing major investment. This competition and comparability implies a permanent innovation in the field of technology, tourism products and business processes. Moreover, since tourism is one of the main application fields of the WWW, it is often a test field for new technological developments. This will further increase the competition. In consequence, further financial linkages with economical powerful companies, either from the tourism field or from outside, can be expected.

3.4 New Infomediaries – Agents of the Customers

In addition to direct sales (disintermediation) and virtual travel agents or supermarkets, innovative business models have emerged on the Web that combines the notions of flexible pricing and customer advocacy (Hagel and Singer 1999). Travel Bids e.g., runs reverse auctions, in which customers specify their travel plans and travel agents bid to fulfil them. Priceline portrays itself as a demand collection system. Customers can specify their preferences including the price. Priceline then advertises these binding offers to airlines who can decide whether they want to fulfil this additional demand at the customer's price.

Systems like Priceline are focusing on specific product characteristics of tourism products in general and schedule flights in particular: The products are perishable and the marginal cost for an additional traveller is very low. The infomediaries have strategically positioned their applications in order to generate benefits for customers and suppliers which are not feasible in a direct sales model.

They:
- reduce coordination and communication cost for buyers and sellers;
- generate volume for the suppliers;
- pool homogeneous demand in order to give individual customers access to suppliers' volume discounts;
- improve the likelihood for order fulfilment for the customers;
- separate or even isolate the coordination mechanism from other sales and distribution channels and by this way limit spill-over effects of price discounts and
- operate with varying levels of transparency.

3.5 The Role of Destinations the Electronic Tourism Market

Destinations still have major problems in closing the loop, beginning with the planning process and ending with the booking for private consumers. This is on one side due to the specific political and organizational constraints, but is also due to a widely missing agreement upon a business as well as a cooperation model for an entire destination (Fröschl and Werthner 1997). Most of the destination sites are purely information servers, booking is mostly not supported. Interestingly, those destination systems supporting booking could avoid conflicts with private companies by applying various cooperation strategies. However, these systems are confronted with a further problem: they do not cover the entire product range, most importantly the flight segment. In order to create real competitive tools for marketing and selling, destinations will have to tackle these issues. Destinations could take advantage of this development, assuming that they are able to deliver. Further concentration can be foreseen, due to this complex marketing situation as well as the speed of technological change. Players will cooperate and compete at the same time.

Destination Management and Marketing functions including:
- Branding and image;
- Marketing campaigns to drive business, particularly to SMEs;
- Unbiased information services;
- Operation / facilitation of bookings;
- Destination coordination & management for visitor's quality of experience + involvement in the daily operation;
- Visitor information and reservations;
- Strategy, research and development;
- Training and education;

- Business advice;
- Product "start- ups";
- Events development and management;
- Attractions development and management.

E - business for destination managements is as in the following table:

Function		E-Business supported activity
Destination management for visitor 'quality of experience'	➔	• Visitor needs/ satisfaction research • Project planning/ management • Communication network for destination partnership • Problem alert system
Visitor information and reservations	➔	• Product data search and presentation • Reservations • Digital audio/video guides • Information centre management
Strategy, research and development	➔	• Strategic research, including impact assessment • Evaluation • Online surveys
Training and education	➔	• Distance learning • Networking between institutions to share resources • Practitioner input
Business advice / support	➔	• E-newsletters • Knowledge bank – research, plans, case studies, advisory handbooks/ videos, etc • Business management tools • Online support
Product "start-ups"	➔	• Business planning tools, case studies, knowledge bank (as above) • Start-up online advisory support, including financial advice
Events development and management	➔	• Market analysis • Project planning and management • e-Marketing • Business management tools • Online support
Attractions development and management	➔	• Market analysis • e-Marketing • Business management tools • Online support

There are three drivers of change in DMO marketing:

1. The central role of technology for everyone:

- Consumers;
- Intermediaries;
- Businesses.

2. Demanding consumers

3. Commercial players:

- Operating in your space, where once only you operated;
- They need income so they are customer focused;
- They have effective distribution;
- And they don't stand still – always refining and improving.

Also, there are nine keys to future success in e-business destination

1. Reach as many potential customers as possible;

2. Maximise the lifetime value of customers, by maintaining the relationship

3. Create a compelling website experience

4. Maintain high quality content;

5. Deliver sales, directly or indirectly;

6. Offer customises packaging;

7. Engage tourism business, to deliver the inventory;

8. Demonstrate return on investment-performance evaluation and benchmarking;

9. Ensure effective electronic distribution of information to travellers and visitors, including location based services.

4. CONCLUSIONS

While deregulation, technical innovation and globalization structure in the telecommunications industry have led to a process of multiple new entrants, followed by concentration and differentiation, we hypothesize a similar development in the travel and tourism industry. Foreseen can be a further specialization, focusing on different services, but also an integration of the various players and products by a common technological infrastructure. This development is similar to that which has already occurred in the industry with the appearance of the CRS/GDS. They provided a common platform to reach the market, i.e., at that time only the travel agents. There are, however, two crucial differences to that historical situation:

1. Whereas the CRS/GDS had and partly still have the power to put through common standards, these are missing in the new market place;

2. The Internet provides a comparatively cheap technology for all players to participate in the electronic market place and to access directly private households, leading to the described complex market situation without standards. This makes the harmonization issue an important task. New intermediaries might fill this void and provide these services.

Future competition in the (electronic) tourism market place will be characterized by the efforts of the players to exploit technology to facilitate organizational responsiveness and learning as well as customer relationship management by:

- using the infrastructure for enforced marketing efforts, generating user interest by specific services;
- being able to move in the quickly changing industry network, finding the balance between cooperation and competition;
- developing a strategy for knowledge management and permanent learning;
- permanently adopting to and using technological developments;
- maintaining customer relationships, based on sophisticated user and interface tools and
- monitoring ongoing trends and relying on advanced AI tools for product development and innovation.

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