Dynamics of Innovation in Services: How ICTs affect the Travel and Tourism Industry in Brazil and South Africa?

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1- Introduction

This article intends to show some of the outcomes of my Ph.D. thesis which is still on progress. Among the thematic areas covered by the ACDC conference, the focus of my analysis will be the sectoral development and innovation.

Two main arguments are addressed in the paper. Some analysts point out the important role played by Information and Communication Technologies - ICTs as being the strongest and main driving force for innovation in the Travel and Tourism Industry - TTI. My argument, however, is that although ICTs do play a relevant role, they are only one part of innovative strategies. In fact, I intend to verify the hypothesis that the outcome of innovation in the TTI largely depend on the combination of technological (ICTs) and non-technological innovations.

Secondly, it is known that the TTI of emergent and developing countries has a great potential for development. However, countries such as Brazil and South Africa, despite having established competitive advantages over the last years, face many challenges. When taking innovations in the TTI into account, my argument is that, developing and emergent countries are facing more challenges than opportunities, especially considering the marketing of their destinations at the internet. Aiming to evaluate the performance of both countries concerning their accumulated capability to innovate, my question is: would these countries be able to take advantage of internet and other organizational innovations as for development of their TTI?

These two arguments will be addressed moving a step forward in the theoretical framework on the dynamics of innovation in the travel and tourism industry. In focusing on the innovation peculiarities of an industry of the service sector, I intend to highlight the special features innovation presents in the travel and tourism marketplace of emergent countries such as Brazil and South Africa. In order to do that, I will compare their national official homepages.

Section 2 will address the issue on dynamics of innovation in services, trying to point out the specific characteristics of this sector. In order to do so, I will present the theoretical framework which considers that the nature of innovation of the industrial sector is different from that of the service sector. I intend to analyse the effects of ICTs and other related organizational innovations over the TTI. I bring to the fore concepts such as innovation, technological and organizational innovations at the same time I discuss the inter-industry differences in the patterns of innovation of industrial and service sector by approaching especially the theory about innovation in services.

Section 3 describes the dynamic structure of the industry, while in section 4 I briefly present the nature of tourist products, by emphasizing how information-intensive are the products of this the travel and tourism industry (TTI) in section 5, with especial attention to the role of information and communication technologies (ICTs). Section 6 introduces e-tourism concept as well as the effects of the internet on the TTI, while section 7 presents the importance of e-tourism for emergent and developing countries. The aim of these sections is to

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show how the adoption of internet by many players are influencing the travel and tourism value chain and opening possibilities for developing countries on the web.

The concept of Destination Management Systems (DMSs), with especial emphasis on the innovations induced by the internet will be the focus of section 8. Section 9 aims to demonstrate the empirical findings, starting with some international data available about travel and tourism in developing countries. The methodology and specific approach in which my analysis is base is presented in section 9.2. Section 9.3 evaluates how Brazil and South Africa are making use of the internet in marketing and selling their tourism products through the web. This section also brings up how governments and the private sector of the tourism industry of both countries have dealt with internet and allied innovations, as well as their opportunities and challenges to foster development.

Finally, section 10 discuss, on one hand, implications for policies to support innovation in the service sector, and, on the other hand, which kinds of strategies should be addressed to strengthen the competitive insertion of the TTI of developing countries in the tourism world market by using, specifically, the internet.

2- Theoretical Framework

2.1- Innovation, organizational and technological innovations

Schumpeter is considered the prime intellectual source of innovation theories as we discussed nowadays in an evolutionary approach. For neo-Schumpeterian literature, innovation is a dynamic, complex and uncertain process and can be defined as[2]: (a) introduction of a new product or service, (b) introduction of new method of production, (c) new organizational arrangements or new techniques, (d) new distribution methods and (e) new knowledge required in the production of a product or service.

In the last decades, much of the theoretical and empirical literature on innovation has focused on the manufacturing sector, traditionally seen as the major producer of innovation and user of technology. By studying innovation in manufacturing sector, we have learned considerably about how innovation activities take place, what factors induce firms to innovate and how technological patterns vary across industries and firms (Evangelista, 2000:183).

When analysing the service sector, innovation has to be understood in a broader and unbiased manner in order to capture all features of the diverse industries of the service sector. Innovation in services, I argue, is a dynamic process that surpasses the notion of "technology-embodied" and aggregates other organizational elements – sometimes ignored in the literature that considers them a passive adopter of external developed technologies.

The idea of technology and innovation as being identified with machinery and huge investments in R&D is almost implicit in the evolutionary literature. This understanding of innovation being limited to a machine-related would highlight a narrow understanding of what innovation means[3]. In fact, Kline and Rosenberg (1986:282) pointed out that "there is a tendency to identify technological innovation with major innovations of a highly visible sort – electric power, automobiles, airplanes, television, antibiotics, computers, and so on. There is no reason to complain about an interest in highly visible innovation – unless this leads to a neglect of other important aspects of the innovation process that happen to be less visible".

[2] See Schumpeter (1949:66), Dosi (1988:123-279) and Kline and Rosenberg (1986:275).
[3] Bell and Albu (1999:1722).

For instance, ICTs are frequently and largely mentioned in the literature as the main source of innovation for many industries of the sector. My point of view, however, is that this largely diffused and biased vision tends to reduce the importance of all other important organizational innovations, equally important for the success of the ICTs themselves.

The concept of innovation I use to analyse innovation in services encompasses technological and organizational strategies. Either, it is worth mentioning the interrelation and interdependency of technological and organizational innovations. Technological innovations could be defined in this study as the internet and other ICT-related innovations, while organizational innovations could be defined as follows for the purpose of this study:

(a) Introduction of a new product or service[4]: e.g., e-ticket and websites.
(b) New organizational arrangements: new products/services require new strategies within the firms, as well as interaction among the firm and other important players of the system (e.g., co-operation to market thousands of products through a website, customer-oriented strategies, effective integration of all departments of the firm etc.).
(c) New distribution methods: the internet is an important example of that.
(d) New knowledge required to make a product or a service available: for example, the traditional travel agencies are threatened by e-travel agencies whose main products are available though the internet. Both players need new knowledge to maintain their competitiveness.

Furthermore, innovation goes beyond the frontiers of a firm, industry or sector, encompassing changes in the external environment where they are located. Freeman (1987:110) asserted that most of the economic and technical advances depend upon changes in management, structural change, institutional change and social innovations (both legislation and policies that considerably affect the private sector could be mentioned as good examples).

2.2-Inter-industry differences in the patterns of innovation

Empirical studies on different sectors and industries have shown differences in knowledge, learning and innovation among them[5]. For the understanding of the innovative process of a certain industry, it is necessary to understand the patterns of innovation each sector or industry entails. Based on Scherer´s[6] (1982) and Pavit´s[7] (1984) contributions, Dosi (1988:132) suggests that the evidence on these studies bring forward one question: "why sectors differ in their rates and modes of innovation"? Dosi (1988:132) asserted that

> "(…) Inter-sectoral differences in technological opportunities, appropriability regimes and demand patterns jointly account for the observed inter-sectoral differences in the rates of innovations, these same variables, together with the sector-specific nature of the knowledge on which innovations are based, explain also the sectoral differences in the typical organizational forms of innovative search."

If sectors and industries differ in the scope of technological advances, the varying technological opportunities depend on the nature of technological paradigm. For example, innovation of a specific industry may mainly rely on "informal" processes of learning-by-doing and design improvements while others rely heavily on formal search activities undertaken in

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[4] Many new products and services of the TTI comercialize nowadays were not available 5 or 10 years ago.
[5] See Dosi (1988), Malerba (1999) and Breschi (1997).
[6] Scherer has developed an inter-sectoral matrix of the origin and use of R&D in the US based on the inter-sectoral generation and use of a large sample of patents.
[7] He worked on building a systematic body of knowledge related to the nature of technology presenting sectoral patterns of technical change based on his empirical studies. Data were collected on about 2000 significant innovations of innovating firms, in Britain, from 1945 to 1979.

R&D laboratories. Or in some industries innovations are primarily generate by big firms while in others by relatively smaller firms (Dosi, 1988:132).

In this sense, Pavitt´s taxonomy emerges as an important starting point to understand the sectoral patterns of innovation in which analysts will rely on. His purpose was to explain similarities and differences amongst industries in the sources of technology used (the degree to which it is generated within the industry or it comes from outside through the purchase of equipment and materials), institutional sources (intramural and extramural knowledge sources), nature of technology produced in the sector (product or process innovation), as well as the characteristics of the innovating firms (size and main activity).

According to Pavit´s taxonomy, major industries of the service sector are supplier-dominated, which mean that they depend on the adoption of externally developed technologies. Based on this statement, I should say that this taxonomy, if apply to the service sector, require adaptations. It is worth emphasizing the importance to know the factors that influence the patterns of innovation in services. In so doing, it is necessary to understand the specific characteristics of services, as shown below.

2.3- Innovation in Services

I argue that the specific characteristics of services urge an appropriate – though similar to the manufacturing - approach to their analysis. The great heterogeneity of industries within the service sector is widely known, as well as the difficulties in defining and measuring them. Therefore, some authors have suggested different ways to classify services when trying to identify common characteristics to their industries. In fact, it is widely recognized the need for an accurate view of the distinctive features of services in order to allow the understanding of the dynamics of innovation within the varied industries of the service sector.

Even though a general consensus on the basic features of services is lacking, some aspects - which are supposed to bear important implications for the conceptualization and measurement of innovation - are commonly recalled in the literature. Two distinct views about the characteristics of service activities will follow. Evangelista (2000:187-189) and Sirilli and Evangelista (1998:4) introduce some of the general characteristics of services:

- In some industries of the sector, production and consumption phases come out at the same time and it is difficult to clearly distinguish between “concept” and “product”. However, in the case of tourism products, one buys firstly an “information or image” about the product that will be only consumed afterwards.
- Intangible nature and information-based characteristics of service activities.
- Limited appropriability of innovative results, sometimes difficult to be recognized as such.
- The predominant role played by human resources in the firm.
- The importance of organizational factors/changes, which can either be linked to, or be independent from the introduction of technological innovations.

According to Coombs and Miles (2000:88-92), some common features to most industries in the service sector are:

- Client intensity or user-producer interactivity.
- Physical transformations (e.g., to relocate through space, physical storage and movement of products etc.).
- Human or person-centred services (education, health, catering, tourism etc.).
- Information services (production of data, share of information and knowledge, etc).

It should be underscored that the features described above will vary according to each industry within the service sector. The high heterogeneity of service activities can explained why there is no general consensus about their characteristics.

By analysing innovation in services, a brief understanding about the concept of services is necessary. Gadrey et al. (1995) stated that

> "(…) to produce a service (…) is to organize a solution to a problem (a treatment, an operation) which does not principally involve supplying a good. It is to place a bundle of capabilities and competences (human, technological, organizational) at the disposal of a client and to organize a solution, which may be given to varying degrees of precision"[8].

According to den Hertog (2000:493), this definition distinguishes that, apart from technological capabilities, human and organizational capabilities are also important when providing services.

Another view on services definition is given by Metcalfe and Miles (2000:2):

> "(…) services are activities directed at creating changes, transformations in some entities. These transformations may be of form, place or time of availability, and the entities involved may be material objects, goods, people, the natural environment or symbolic representations, data, text etc."

In fact, the review of the literature to look for the best definition on service is far from complete. I am currently working on the peculiar features of the products/services of the TTI, specifically.

After having introduced two different concepts of what service mean and two different views about the characteristics of service sector activities, the next step would be to present the existing approaches to innovation in services.

On account of service´s peculiarities, in recent years, innovation surveys have increasingly recognized that the traditional technological indicators such as R&D and patents are not enough criteria to assess innovation in services. In fact, taking the theoretical framework constructed based on manufacturing and transferring, without adaptation, to analyse the industries of the service sector, one may conclude that the service sector is constituted by laggards and non-innovative firms. There can be no doubt that the advances in the literature of innovation in manufacturing are very useful to understand innovation in services. However, do they suit to the analysis of what innovation really mean to the service sector?

The truth is that the service sector tends to be neglected as much of the theory and statistical instruments remain based on approaches developed to deal with a world in which manufacturing occupied a predominant role (Coombs and Miles, 2000:86). It is more and more evident the need to re-think in terms of how research should proceed in defining and measuring innovation in services. Undoubtedly, the literature on the subject is limited, despite the existence of some papers and studies carried out in the last ten or fifteen years.

It seems reasonable to argue that an analysis concerning the dynamics of innovation within the service sector should consider that the concepts and methodologies used to analyse the innovation in the industrial sector need to be adapted. In fact, if only immediately transferred, some misunderstandings may occur in the analysis of the dynamics of innovation in the service sector.

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[8] In den Hertog (2000:492).

Despite the growing importance of the service sector worldwide, it is usual to find services described as non-innovative or as being adopters of technologies generated by other sectors (Coombs and Miles, 2000:87). In this sense, I completely agree with Metcalfe and Miles (2000:1) who stated that "service firms can be innovative in their own right, even though the process of innovation and the kinds of innovation may be different from those traditionally associated with manufacturing and other primary activities".

In light of the above, it is blatantly clear that more research should be carried out to try to further unravel the dynamics of innovation in services. There are three different alternatives of analysis of innovation in services, according to Coombs and Miles (2000:85-86): assimilation approach, demarcation approach and synthesis approach. The assimilation approach considers that services innovation is fundamentally similar to manufacturing innovation. Demarcation approach means that innovation in services is highly distinctive from manufacturing innovation, requiring different tools, theories and instruments compared to the manufacturing and, finally, the synthesis approach which suggest that innovation brings to the fore neglected aspects of the innovation processes that are relevant as for services, as for manufacturing.

It could be said that the majority of the researches and empirical studies on services innovation try to "assimilate" characteristics of manufacturing and services[9], small amount of studies with a demarcation approach[10] and almost none yet with a synthesis approach.

In what follows I intend to present briefly the evolution of seven different approaches on patterns of innovation in the service sector.

Pavitt´s taxonomy (1984) classified the service industries as mainly supplier-dominated. Pavitt has developed a sectoral taxonomy of industries in the production and use of innovation. The trajectory/taxonomy of the groups of sectors can be grouped into four categories: (a) supplier-dominated sectors; (b) scale-intensive sectors; (c) specialized suppliers; and (d) science-based sectors. Pavitt had classified services as a supplier-dominated sector, which means that innovation in services is largely dependent upon the adoption of externally developed technologies. The idea behind this vision is that the service sector, in general, is essentially a passive adopter of externally developed technologies.

Soete and Miozzo (1989), revisiting Pavitt´s taxonomy, advocated for a differentiated view of production and use of innovation within services, by suggesting that the range of innovative practices in services is as wide as that in manufacturing. They distinguish four categories of sectoral use of innovation within services: (a) Supplier-dominated sectors, (b) scale-intensive sectors, (c) physical/information networks, (d) specialized technology suppliers and science-based sectors.

Based on the results of an Italian survey, Evangelista (2000) highlighted the major similarities and differences between technological change in services and in manufacturing. He identified four main types of service industries, each one with specific patterns of innovation, as follows: (a) technology users, (b) S&T based sectors, (c) Interactive and IT based, (d) Technical consultancy.

The following views on service innovation take from granted that the service sector is not merely passive recipient of others´ innovative sectors.

[9] Such as "European Community Innovation Surveys" (CIS) and an Italian innovation survey carried out in 1997, which consisted of 6,005 firms drawn from a universe of 19,300 service companies with more than 20 employees. Both are base in a revised version of Oslo Manual.

[10] Such as the SI4S project (the acronym stands for Services in Innovation, Innovation in Services), carried out by research teams from 9 countries of the European Commission. They have developed surveys dealing with 18 different service industries, from 1996 to 1998. The aim of the project was to develop concepts, empirical evidence and proposals for practical action concerning, specifically, the role of services in European innovation systems.

It is worth mentioning that the paper presented by Barras[11] (1986) represents, in my opinion, a step forward in treating the matter. He set out some foundations for a theory of innovation in service industries. Barras is always mentioned as a reference since his studies relies upon the understanding of the active role of services on innovation, contrary to the widespread opinion that services are merely passive users of innovations generated elsewhere.

Barras´ argument is that the discussion about the nature of innovation in services should be analysed according to the specific characteristics of the sector and that it is possible to find innovations generated within the service sector. He suggested some ideas especially about how innovations emerge in services and, based on that, he proposed a reverse product cycle that explains how innovations are generated and diffused in services – especially those based on ICT[12].

Shortly, the three phases of the reverse product cycle consist of a first stage in which the applications of the new technology are designed to increase the efficiency of delivery of existing services; a second stage in which the technology is applied to improving the quality of services; and a third stage in which the technology assists in generating new services or wholly transforms them. It is interesting to point out a remark on the issue. As asserted by Barras (1986:12), there is "some confusion surrounding the concept of product innovation in services, and in particular, on what constitutes a "new service". Because of the intangibility of services, the economic literature often assumes that they are by definition, processes – yet this confuses the "product" which is the service consumed by a firm or household and the "process" which is the mode of delivery of the service".

Gallouj and Weinstein (1997) outlined six innovation models that could be used for describing service innovation. They distinguish among: (a) radical innovation, (b) improvement innovation, (c) incremental innovation, (d) ad hoc innovation, (e) recombinative innovation and (f) formalization innovation.

Another contribution comes from Sundbo and Gallouj (2000) that presented a combination of external and internal driving forces determining the process of innovation in services. Therefore, the combination of these internal and external driving forces is the determining elements in the innovation process, and based on this combination, one can identify some patterns of innovation within services. The internal driving forces are divided into three types: (i) management and strategies of the firm, (ii) training and attitude of employees and (iii) research and development taking place in innovation or R&D department.

The external driving forces can be divided into five trajectories[13] and four different actors[14]. Sundbo and Gallouj (2000:49-51) identify five types of trajectories: (i) service professional, (ii) technological, (iii) institutional, (iv) social and (v) managerial. The actors also play an important role as a driving force and they are divided into four, as follows: (i) competitors, (ii) customers, (iii) public sector and (iv) suppliers.

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[11] See "Towards a theory of innovation in services" (1986).

[12] The impact of ICTs on services is critical. And, due to this, a necessary but not sufficient condition for a major wave of IT-based product innovation in services is the installation of a suitable digital communication infrastructure linking users and producers on a network. He adds that "Such a network will provide the means of production and delivery for a range of new interactive, electronic services opening up whole new markets for such services in the same manner that the construction of the railways opened up new markets for manufactured goods in the mid-nineteenth century" (Barras, 1986:13).

[13] By trajectories they mean ideas and logics that are diffused through the social system (being a nation, an international network, professional networks etc.) that are diffused through many and difficult identifiable actors (Sundbo and Gallouj, 2000:50).

[14] By actors they mean "persons, firms and organizations whose behaviour has importance for the service firms´ possibilities for selling services and, therefore, for their innovation activities. The actors define the market possibilities and sometimes they are involved in the development of the innovations" (Sundbo and Gallouj, 2000:51).

Den Hertog and Bilderbeek (1999) describe two dimensions to better understand the dynamics of innovation in services. They propose a multi-dimensional innovation model that is supposed to be a tool to map the dynamics of innovation in the service sector[15], as well as a typology of five service innovation patterns.

The multi-dimensional innovation model can be divided into: (i) one technological dimension and three non-technological dimensions, which are (ii) the introduction of a new service concept, (iii) a new client interface and (iv) a new service delivery system. The technological dimension is mostly related to investments in ICTs. However, they asserted that the successful implementation of ICTs is highly dependent on innovation in any or all of the three non-technological dimensions. As stated by Hertog *et al.* (2003), "A particular service innovation may be characterized by one dominant feature related to one of the above-mentioned dimensions, which will often prompt a set of changes in other dimensions, in order to bring about a successful innovation". It is worth mentioning that "apart from the importance of these four dimensions of innovation, the linkages between them are of crucial importance (…)"[16], representing (i) marketing and distribution activities, (ii) the implementation of organizational reforms, as well as (iii) training of human resources.

In order to focus specifically on the role of innovation in services, they identified five patterns of service innovation, which are: (i) supplier-dominated innovation, (ii) innovation in services, (iii) client-led innovation and (iv) innovation through services. From pattern 1 to 4, the influence of the client firm or final consumer on the innovation process gradually increases. The fifth is called "paradigmatic innovations, involving complex and pervasive innovations affecting profoundly all actors in the value-chain" (Hertog *et al*. 2003).

The above brief explanations about seven different approaches to explain innovation in services hide complex ideas that is not the aim of this paper to detailed. However, they are fundamental basis of my analysis throughout the paper when evaluating innovation in the TTI. The following conclusions can be drawn[17]:

- Non-technological or organizational innovations in services are important.
- Need of a multidimensional approach, trying to connect different aspects such as technologies, organizational aspects, the players involved and the external environment.
- Although the role of ICT in facilitating service innovation is paramount, ICT is neither a sufficient nor a necessary condition.
- The rise of specialized service functions fosters service innovation.
- Innovation in service firms goes across firm and industry boundaries.
- Importance of external aspects, such as de-regulation can trigger innovation in service industries.

3- THE STRUCTURE OF THE TRAVEL AND TOURISM INDUSTRY WORLDWIDE

Despite the existence of many definitions of travel, tourism and the travel and tourism industry from a wide range of perspectives, I will introduce the ones I consider more appropriate to the aims of my analysis.

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[15] This conceptual approach had been used, in 2002, to analyse five industries under the Structural Information Provision on Innovation in Services - SIID project: retailing, transport and logistics services, financial services, IT services and technical engineering.

[16] Hertog *et al*. (2003); Hertog (2000); Hertog and Bilderbeek (1999).

[17] My findings in the analysis of the TTI are similar to the ones pointed out by Hertog and Bilderbeek (1999), Hertog (2000) and Hertog *et al*. (2003), since they developed studies on other industries of the service sector (for example, financial services and IT services) with similar characteristics of that ones find in the travel and tourism industry.

Werthner and Klein (1999:32) define travel as the movement of persons from one place to another by any means and for any purpose, while tourism comprises the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business or other purposes.

The TTI can be defined as a conglomerate of all those individuals and organizations that are involved in the production, distribution and consumption of travel and tourism products[18]. It can be seen as an umbrella industry, containing a set of interrelated businesses, involving travel companies, accommodation facilities, catering enterprises, tour operators, travel agents, providers of recreation and leisure facilities[19].

The figure 1 represents an overview of the TTI with (almost) all segments involved. It should be noted that it is a dynamic system where nearly all players are interacting. Depending on the product types and the client´s needs, different product configurations and communication channels can be realized in a dynamic way (Werthner and Klein, 1999:49). An important aspect that ones should bear in mind about the travel and tourism structure: each of the participating actors either supplies or delivers product components (whose main content could be information-based) or simply information.

It is important to note that the whole system is engaged in an external environment that affects the strategies and routines of each player, as, e.g., human and cultural aspects of the country, the technological and industrial policies or legal issues. The deregulation of the airline sector is one example on how the external environment affects the strategies of the actors involved.

The figure 1 (see annex) shows the market structure, with circles and charts indicating the classes of players which suppose to be interrelated with many other players distinguished in the system. The figure distinguishes between: (i) consumers, (ii) intermediaries and (iii) the industries and services available in the destination region. Each of the three is subdivided into different categories of players. It should be noted that, in fact, nearly all players are interacting, i.e., destination management organizations interact with tour operators as well as with travel agents, however, their main working relationship is with suppliers and local tourist boards within their destination.

The notable characteristic of the TTI is that on the supply side (represented in the figure by “destination region”) the industry acts as a network where different suppliers as well as intermediaries (travel agencies, destination management organizations, websites, transportation etc.) cooperate in order to offer the final product and to service the consumer (Werthner and Klein, 1999:43).

The first group is the consumers in their place of origin. There are two main categories of end users: (i) leisure consumers: individuals aiming at leisure; and (ii) business or corporate consumers: corporations, government bodies or international organizations that spend a huge amount of money, annually, in business travel around the world.

In order to organize the travel, both types of consumers depend on information provided by intermediaries or by the diverse players at the destination region. With the advent of the internet and the penetration of ICTs in promoting, marketing and selling tourist products and services, the TTI becomes increasingly customer driven. New technologies have helped to support the changing needs of the industry, that before was focusing more on transactions than on consumers that more and more seek for electronic interaction with the industry (UNCTAD, 2005:156).

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[18] Kärcher (1997) in Werthner and Klein (1999:32).
[19] Lundberg (1990) in Werthner and Klein (1999:32).

The second group of the system is composed by intermediaries, destination management organizations and the global distribution systems. They provide information about the products available, connecting the consumers to the destination region.

In the figure, intermediaries can be said as private players such as travel agencies and tour operators. Travel agencies act as a distributor or retailer on behalf of the suppliers. Their main function is to provide information about products to the potential clients. Travel agencies are, in general, small and medium size enterprises and, traditionally, are always under pressure by commission reduction strategies of both, airlines and tour operators. The travel agencies get information about tourist products through Global Distribution Systems - GDSs and pays for its services on the one hand and, on the other, get commissions from the individual service suppliers. However, in the disintermediation scenario process, travel agents should change their own strategies, instead of being only mere intermediaries.

The main function of tour operators is to purchase and to assemble a large number of components produced by the suppliers and to sell these as packaged products.

The CRS/GDS[20] (Computerized Reservation Systems/Global Distribution Systems) represent one of the major players in the tourism value chain, since they provide the main (electronic) link between, on the one side, the huge supplier groups (representing an important distribution channel for airlines, hotels and car rentals) and, on the other side, the travel agent community and the individual consumer as well. In fact, there are four major systems[21]: Amadeus[22], Galileo, Sabre and Wordspan. The GDS provide all travel information and reservation needs for travel agencies and tour operators, having become an essential channel of distribution for any product. Among their new strategies, nowadays they are available at the internet through their own websites and they are diversifying their products (such as selling systems to travel department of corporations that spend a huge amount of money with travels annually).

The Destination Management Systems/Organizations - DMS/DMOs (national, local or regional levels) provide the consumer with diverse information about the attractions of the destination region. A detailed explanation about them is presented in section 8.

The diverse kinds of transports are also represented. They are the means the travellers use for departing and returning from their places of residence to the tourist destination.

The third group is the destination region, where the consumption of the tourist products occurred. The traveller/customer will make use of the hospitality industry, which includes all range of accommodation to spend their days of leisure or business activities, as well as restaurants and related places to eat.

Behind the tourism industry, the support industries make available all necessary infrastructures such as telecommunication, hospitals, police, banks etc. Other related industries constitute also an important basis when supplying the tourism industry firms with food, clothing, souvenirs etc. Real estate, diverse other services, furniture, civil construction,

[20] "The term CRS denotes electronic airline reservation systems, used for managing flight and seat inventories for sales and operation purposes. The term GDS describes a network of one or more CRS for distribution of products/services of the participating networks of different countries" (Werthner and Klein, 1999).

[21] SABRE was the first CRS, created in 1959, by the American Airlines; Wordspan in 1990; Galileo and Amadeus (launched by Air France, Iberia, Lufthansa and SAS) were created in 1987.

[22] According to the promotion material of Amadeus, the company has the widest world presence among the GDS. For instance, one can find Amadeus in about 100 countries, where Mc Donald´s is absent. The world´s largest fast food chain is present in 119 countries, while Amadeus operates in more than 200 countries.

inter allia are other examples of supply industries. Therefore, the effects of the TTI on the economy are difficult to calculate since it is spread across numerous sectors and industries, including agriculture, construction, financial services for cash and credit cards, or even public sector activities such as border control.

In the destination region, the transport and the DMOs are important part of the system. Their roles in the destination regions are to provide travellers with their services of, respectively, the use of the different transports as well as of the information services provided by the local government agencies – when apply.

A travel or vacation is not a single transaction; on the opposite, it covers a wide range of purchases of service and goods, of transport and accommodation facilities, of food and beverage, admission to attractions, gifts or souvenirs, assuming the existence of infrastructure based on previous investments (Werthner and Klein, 1999:35). Therefore, there is all range of leisure industries, which means parks, safaris, museums, shopping, instead of other types of entertainments.

In fact, depending on the destination city or country, the tourism industry is composed by many segments, such as: (a) business, (b) events, meetings and seminars, (c) health, (d) shopping, (e) sports, (f) entertainment, rest and leisure, (g) educational and scientific activities, (h) eco-tourism and adventure, (i) gastronomy – eating and drinking, (j) religious and (l) cultural and heritage. Despite that, there are other ways to classify or distinguish tourism depending on the assets of a specific city or country. For example, tourism groups of interests could be divided as for: (a) singles, (b) couples or honeymoon, (c) families, (d) gays and lesbians, (e) disease people, *inter allia*. A specific destination could also develop specific infrastructure according to the age of the tourists: (a) children, (b) younger or (c) elders.

After having presented a brief overview of the structure of the TTI worldwide, as well as some tourism segments and classifications, in the next topic I will present the nature of the tourism products and the role information plays in the composition of products within the industry.

4- THE NATURE OF TOURIST PRODUCTS: THE ROLE OF INFORMATION FOR THE TRAVEL AND TOURISM INDUSTRY

The understanding of products characteristics is an important requirement to disclose not only what lies behind innovation in the service sector, but also to analyse the nature of tourist products and services. This topic will discuss the role information plays in tourist products, which are intensive in information during the booking phase and labour-intensive during the delivery phase (Wiig, 2003:63).

The information-intensive characteristic of tourism products makes the industry an ideal field for the rapid and widespread diffusion of ICTs (Poon, 1993:156). The huge amount of data that circulate during the conception, development and distribution of travel products require a good and complex management of information. It is important to mention that behind the travel and tourism products there is a system of information technology[23] (SIT). Despite all of these technologies, the internet will be the only focus of my analysis in this paper.

Unlike consumer durables and industrial goods, the intangible nature of the tourism services cannot be physically displayed or inspected at the point of sale. Travel and tourism services are normally bought before the time of its use and away from the place of

[23] Consisted by internet, computerized reservation systems, teleconferencing, videotext, videos, video brochures, computers, management information systems, airline electronic information systems, electronic funds transfer systems, digital telephone networks, smart cards, satellite printers, mobile communications, among many others difficult to count (Poon, 1993:156).

consumption. As a result, tourists have to travel to the place of consumption and they are normally not able to test the product in advance.

Tourism products involve the movement, accommodation, entertainment and other services. The travel products include a huge amount of alternatives. Some of them are scheduled and charter airline flights, hotel and other forms of accommodation, car rental, package holidays, ferry, railway and bus tickets, cruise packages, yachting, excursions, theatre tickets etc. These activities must be combined differently, integrated and "packaged" to suit complex and rapidly changing consumer requirements. Services such as hotel, car rental, package tours and airline seats are not physically transferred to travel agents who, in turn, stock them until sold to consumers. Rather, it is information about availability, price, quality, location and convenience of these services that is communicated and commercialized.

The tourist products/services are almost completely dependent upon descriptions (information) in printed and audiovisual forms. Thus, communications and information transmission tools are indispensable to the tourist trade (Poon, 1993:154). As a result, as asserted by Werthner and Klein (1999:31), "information is the only means to close this gap".

Considering that the exchange of information is of great importance at every stage in the sales cycle of the tourism product, an innovative TTI depend upon the adoption and diffusion of ICTs which make more dynamic the marketplace. Tourism suppliers have traditionally provided this information in the form of print-based media such as brochures or flyers published in local or regional guides. However, developing and distributing such promotional material is costly, time-consuming and labour-intensive. In addition, such information is static. Consumers are looking for tailor-made vacations and expect to obtain related information online.

From the emergent and developing countries perspective, the information-based products of the tourism industry represent an alternative to improve their innovativeness. Not only because information are now available online (allowing innovations in the way the products are now distributed), but also because it also represent an innovation since new tourism products would address specific market segments[24] in respect of which developing countries have a competitive advantage. Such tourism niches could help destinations in developing countries in diversifying their offer, as well as their consumers through the use of ICT tools and, more specifically, the internet.

5- THE ROLE OF ICTS FOR AN INFORMATION-INTENSIVE TRAVEL AND TOURISM INDUSTRY

The information-intensity of travel and tourism products is a key driving force for the rapid diffusion of technology in the industry, which means that no player in the TTI will be untouched by ICTs´ effects (Poon, 1993:153).

Especially in this industry, information technology not only enables change, but also induces it (Werthner and Klein, 1999:1). This is especially true for tourism where IT is used both for the internal product creation process (e.g., e-tickets) as well as for the external linking among all players of the value-chain, i.e., distribution and marketing activities (with the internet enabling the release of products as well as their booking process).

ICTs already played an important role in previous phases of the development of today´s modern tourism. In the travel and tourism industry, especially the airline industry, has

[24] Ecotourism and related activities (sports, culture, sun and beach etc.), for instance, is looked at by many governments in developing countries and LDCs (Least Developing countries) with a growing interest, as it promises direct financial benefits and empowerment for local communities, thus improving their welfare while protecting natural and cultural resources. (UNCTAD, 2005:153)

been an early adopter of ICTs. However, the diffusion of the ICT´s differs among the diverse segments of the value-chain. In one side lie the airlines and the GDSs with high innovative performance, while on the other extreme, the small and medium size firms lay in the local destinations with poor or relatively poor innovative strategies. There are many reasons for this discrepancy, which undoubtedly affects the rhythm in the adoption and diffusion of innovations according to the environment where the firms are based (Werthner and Klein, 1999:185). While airlines operate globally and with proper IT solutions, the suppliers of tourist products within the diverse destinations all over the world have a local focus.

Airlines and the GDSs played an important role in fostering and spreading innovations within the industry. Airlines were among the first world companies creating worldwide electronic networks, not only for the means of selling and distribution their products, but also for their internal management (Werthner and Klein, 1999:44-45). In pricing their products, airlines use advanced and complex yield management[25] methods.

The airlines are responsible for the creation of the CRS/GDS[26], which act as the main electronic interface with all actors of the TT distribution channel and, before the advent of the internet, they centralized all information available worldwide about all range of tourist products. The GDSs, developed and operated by airlines to cope with the increasing volume of passengers and the related logistic and operational settings, were among the first worldwide applications of information technology.

The GDSs aim to automate information systems related to flight reservations, schedules, prices and availability. These "electronic distribution systems" have boosted competitiveness and productivity by automating processes and integrating new systems to improve business functions and reduce operating costs through yield management. They are also represented in the internet via Expedia, Travelocity and Orbitz[27].

This important innovation to the industry (GDS) is sharing, nowadays, with the internet, the position of the most important innovations for the industry worldwide. However, despite their importance, the centre of my analysis in this paper considers the role played by the

[25] "Yield management is the process of trying to maximize revenue by selling the same product (such as a seat on a fight) to different customers at different prices depending on the demand and supply." Buhalis (2003:352). This system began to be applied in the United States in the 1980s and enables suppliers to increase their revenue and the costumers to benefit from lower prices for the same quality of service, by calculating the best pricing policy for the sale of a product or service. UNCTAD (2005:183).

[26] The SABRE case study developed by O´Connor (2001) is one illustrative example about the role of a CRS within the TTI "SABRE is highly profitable, with earnings of $200 million on sales of $1.8 billion in 1997. Their initial investment in research development and installation of the original SABRE system, in 1959, was almost $40 million (the price of four Boeings 707 at the time) which was considered by industry analysts to be a ridiculous sum to invest in what was, after all, an office automation project. This emphasis on innovation continues, with SABRE spending over $90 million on systems development in 1997, with the joint goals of better satisfying its customers and enlarging its market share. The SABRE core system runs on a very large mainframe located in Tulsa, Oklahoma. This underground facility is designed to withstand virtually anything – earthquakes, storms, floods, even terrorist attack – to ensure that SABRE is kept up and running to provide continuous service to its customers. It processes over 4500 messages and over 65,000 data accesses per second and has data storage capacity in excess of 1800 Gigabytes. It has computer terminals in over 33,000 agencies in 184 countries on six continents, and, in addition to information and reservation services for 750 airlines, it provides services to over 31,000 hotel properties, representing approximately 200 hotel chains, plus rate, booking and availability for over 50 car hire firms. At peak periods, the mainframe system processes approximately 150 million travel requests per day. The group also operates an X.25 network in 76 countries with over 20,000 ports, and this, together with its connections to the numerous travel supplier CRSs, make SABRE the largest private computer system in the world. SABRE itself is organized into three operating divisions: SABRE Computer Services, SABRE Development Services and SABRE Travel Information Network. From the very beginning, SABRE has been at the forefront of the race to apply technology to travel distribution. As well as being the first computerized airline reservation system, they were among the first to install terminals in travel agencies".

[27] "From a B2C perspective, the top three US online travel agencies, Expedia, Travelocity and Orbitz, all owned by Cendant Corp., comprise about 77% of the market. To give an indication of the development of online bookings, gross bookings at Expedia Inc. increased by 578% from $1,793 million in 2002 to $10,364 million in 2004. In Europe, Opodo and Travelocity represent 60% of the entire online travel market. On the B2B side, large American travel groups such as Sabre Holdings Corp. and Cendant Corp. dominate the online market." UNCTAD (2005:156).

internet within the industry, which seems to be more democratic and decentralized when able to empower every player of the system by giving them the opportunity to release their products online.

6- E-TOURISM: THE INTERNET AND ITS EFFECTS ON THE STRUCTURE OF THE TTI

After having presented a brief overview of the important role played by the ICTs in the TTI, this item analyses how internet affects the structure of the tourism industry[28], depending on the way the players appropriate the ICT in order to innovate their ongoing activities.

The internet[29] is changing considerably the traditional structure of the industry and the most visible consequences for the tourism market are the disintermediation or, in other cases, the re-intermediation of processes and relations. The internet brings more autonomy for suppliers (hotels, airlines, car rentals etc.) since they are represented in the market without paying fees to third-part intermediaries (UNCTAD, 2005:154). Examples of that are the consumers who do not need the travel agency to buy an e-ticket or the travel agencies that are less dependent on the GDS.

The internet has become an almost universal feature of the tourism industry. Its power allows information to be managed more efficiently, and transported worldwide almost instantly. As a result, it has had a major effect on the methods of operation of the TTI, especially concerning the greatest impact on the marketing and distribution functions[30].

To reach international tourists, suppliers need intermediaries such as travel agents and tour operators who can obtain and provide information and bundle goods. Travel agencies[31] have traditionally taken care of these tasks through the use of GDS.

Tourist products are now available to consumers in three different ways: through GDS homepages, through internet and, lastly, through traditional intermediaries (travel agencies, tour operators, hotel chains, tour associations, DMOs). The internet has provided consumers with an increasing number of options for obtaining information and organizing their trips, with more travel choices and price transparency in a more online highly competitive environment (UNCTAD, 2005:154).

The interaction between tourism and its internet application can be called e-tourism, which is mentioned in specialized literature as one of the fastest growing e-commerce industries[32]. The World Tourism Organization – WTO (2004) asserted that e-tourism means "e-

[28] ICTs influence not only for internal organizations of the firms themselves, but also for inter-industry relationships in order to create and distribute their products. For instance, airlines show an intense use of IT in the internal planning, fleet management, flight security systems on one hand and, on the other, in the airline production and distribution process, when their partnership with other segments of the TT system is of great importance. Tour operators are also very IT intensive, since the complex product creation up to the planning and distribution process. Travel agents are predominantly linked to the reservation systems (CRS/GDS) and they obtain most of their available information from IT sources that let them connected to other segments of the system. The case of accommodations is the same, by using IT for their internal management and planning, as well as for external marketing activities

[29] Nowadays, tourism is among the most important application domains in the web. Estimates show that between 33% and 50% of internet transactions are tourism-based. Strassel (1997) in Werthner and Klein (1999:15). These figures represent an empirical proof of the thesis that tourism and IT are closely related. Despite the fact that the real volume on internet booking cannot be measured properly, Wethner and Klein (1999:15) mentioned an estimative that within the next 10 years, 30% of the tourism business will be internet based.

[30] See Poon (1993, O´Connor (1999), Werthner and Klein (1999), Marin (2004), WTO (2001).

[31] The market-share of traditional travel agents had reduced. However, travel agents still play an important role in the market since human contact remains important particularly when the travel is complex, and the security of online transactions remains an issue for consumers. In addition, some of them have joined leading suppliers of e-business solutions to the travel industry that are often powering a large number of websites" (UNCTAD, 2005:157).

[32] "During 2000, online travel bookings in the United States and Europe rose to $15.5 billion from $8 billion in 1999. Online travel bookings now exceed online software and hardware purchases, previously the leading category in consumer electronic commerce. Estimates for online travel bookings for 2001 vary between $18 and $25 billion". UNCTAD (2001:41).

business for tourism", and explains that for tourism destinations and businesses, e-business is about realizing the opportunities of improved processes both externally, through the internet, and internally, through intranets.

According to Buhalis (2003:76-77),

> "e-Tourism reflects the digitalization of all processes and value chains in the tourism, travel, hospitality and catering industries. At the tactical level, it includes eCommerce and applies ICTs for maximizing the efficiency and effectiveness of the tourism organization. At the strategic level, e-Tourism revolutionizes all business processes, the entire value chain as well as the strategic relationships of tourism organizations with all their stakeholders. E-Tourism determines the competitiveness of the organization by taking advantage of intranets for reorganizing internal processes, extranets for developing transactions with trusted partners and the Internet for interacting with all its stakeholders. The e-Tourism concept includes all business functions (e-Commerce and e-Marketing, e-Finance and e-Accounting, e-HRM, e-Procurement, e-R&D and e-Production) as well as e-Strategy, e-Planning and e-Management for all sectors of the tourism industry, including tourism, travel, transport, leisure, hospitality, principals, intermediaries and public sector organizations".

This technology can reduce costs and can make easier the relation with other suppliers. The internal dimension is about transformation of the way in which the organization functions, enabling it to work more integrated through the use of common systems. Technology is one of the conditions, but not the only one. New organizational arrangements (organizational innovations) are required as part of the innovative process. The firm should have an staff operating as teams, make use of constant research to capture what is happening in the market, should have accumulated human capacity to integrate all information systems available, make use of an strategic planning etc. Yet, ICTs are also important not only to help firms to compete in the market. Moreover, the thousands possibilities of cooperation[33] could generate innovation in products and processes, since innovation is an interactive process.

It can be said that the concept of e-tourism take into consideration the role played by the firms of the value-chain. However, despite all private businesses, national and local governments play an important role in promoting and managing their diverse destination through websites which aim to promote destinations using the internet.

The use of the internet and e-commerce raises a variety of issues regarding, in particular, how the tourism industry in developing countries (where tourism is often an industry of primary importance) is appropriating them. This issue will be addressed in the next section.

7- e-TOURISM: ELECTRONIC COMMERCE AND TOURISM FOR DEVELOPING COUNTRIES

According to UNCTAD (2001:51), "internet-related technologies are considered the most strategic within the context of the new economy at the start of the twenty-first century".

Undoubtedly, the internet is democratic and its tourist contents are accessible worldwide. This brings an opportunity for developing countries to market their tourist destinations and products. However, only few emergent and developing countries are making efficient use of this innovation. In fact, it could be argued that the huge differences that separate developed and developing countries are perpetuated in the way they are available online. The great majority of developing countries reproduce in their homepages the lack of planning and strategies visible in their physical institutions.

[33] "For instance, an airline or a hotel will make profits by selling its products directly to consumers, but also by participating in other distribution networks to reach more consumers and sell available seats or rooms until the last minute", UNCTAD (2005:157).

According to UNCTAD (2005:158), in developing countries, the tourism industry tends to be fragmented and heterogeneous, encompassing a wealth of tourism SMEs[34] that could be better organized and promoted. Small businesses such as hotels in developing countries have often been excluded from global tourism distribution channels such as the GDS due to the high costs. In order to make available their products worldwide, suppliers in developing countries depend on international and foreign tour operators that, sometimes, "appropriate" the tourist product according to their interests. And, as reported by UNCTAD (2005:158), "Before the advent of the Internet, local hotels often had no other option that to sell their room capacity at a low cost to well-known tour operators, ensuring a small but stable amount of revenue for them throughout the year. As a result, the destinations marketed to tour operators may have gained in popularity, increasingly in the form of low-price package vacations, encouraging the development of "mass tourism", but earned very low returns".

By means of a website, tourism suppliers in developing countries could achieve autonomy and save costs by promoting and selling products directly to consumers through their website. Needless to say that the internet is not a panacea, but should be regarded as a distribution channel complementary to other offline and online distribution channels. Internet is a powerful tool allowing suppliers to manage their assets, make decisions on yield management and reduce commissions to third-party distributors.

In the following section, I will discuss ICTs as one of the most effective tools allowing public authorities and tourism firms to be in charge of the organization and promotion of their tourism, as well as for encouraging the adoption of e-business practices among national tourism providers and improving their competitiveness in tourism markets.

8- Destination Management Systems/Organizations through the Internet

As asserted by Buhalis (2003:280), "destinations are recognized as the *raison d´être* for tourism" and they are increasingly seen as an amalgam of products, facilities and services. Yet, according to him, "Traditionally, planning, management, marketing and coordination of destinations are being undertaken by either the public sector[35] (at national, regional or local level) or by partnerships between stakeholders of the local tourism industry[36]".

It is diffused in the literature on the subject that ICTs and DMSs, in particular, can support destinations by strengthening their competitiveness[37]. I agree with this statement; however, my argument is that this technology will only be succeeded if allied to necessary organizational innovations. If one takes national official website as an example. The use of the internet or a computer *per se* to display electronically the information is not enough. Co-operation among the players, e.g., government and hotels or travel agencies is necessary to better release the products through the web, need of strategic and integrated approach to sell the products etc.

[34] For example, WTO (2001) estimates that 85% of accommodation enterprises in developing countries are small or medium-sized.

[35] It should be noted that "the involvement of the public sector is necessary for the development of a brand image, the integration of tourism enterprises into the DMS and the contribution of initial funds. However, the operations of the DMS can be subcontracted to private companies" considering that, in many cases, "the public sector is the best interlocutor to coordinate the various interests of the stakeholders and to strategically support local tourism enterprises, while the private sector is better prepared to exploit the system in a commercial way" (UNCTAD, 2005:158).

[36] See Cooper et al., 1998; Mill and Morrison, 1998) in Buhalis (2003:280).

[37] Buhalis (2003), Werthner and Klein (1999), O´Connor (1991), UNCTAD (2001, 2005).

ICTs, more specifically the internet, should be regarded as a strategic tool that should be linked with other organizational innovations. In addition, many technological, political and management constraints should be tackled.

Electronic destinations (Werthner and Klein, 1999), Destination Management Organizations (UNCTAD, 2001) or Destination Management Systems (UNCTAD, 2005; O´Connor, 2001; Buhalis, 2003) are the three names are given to the set of systems (electronic or not) destinations use to inform, market and sell their products.

The main objectives of a DMS are the following[38] (UNCTAD, 2005:158):

(a) To efficiently integrate and facilitate interaction among all stakeholders;
(b) To provide tourism enterprises with the means to be better integrated into the tourism supply chain by organizing and promoting personalized and enriched tourism experiences;
(c) To optimize the relationships with targeted groups;
(d) To provide consumers with comprehensive and accurate information, if possible, with booking facilities for tourism services and products available;
(e) To develop an integrated tourism product and service offerings;
(f) To provide up-to-date and attractive tourism information and products according to the country´s interests;
(g) To allow consumers to easily make a reservation and quickly receive a confirmation;
(h) To reduce marketing costs compared with traditional channels (such as printed material);
(i) To collect information on customers and to design marketing strategies for different market segments.

DMSs are in charge of marketing and branding the destination and to inspire credibility and trust among consumers. From the strategic point of view, DMSs can support the formulation of policies and strategies of the local suppliers and governments by means of information about the potential consumers/travellers.

The main beneficiaries of a DMS are: (a) potential travellers; (b) providers of tourism products and services such as hospitality, restaurants and leisure and transportation companies; (c) national travel agents; (d) public sector: department in charge of tourism, national tourism offices, regional administration, municipalities, departments of economy, foreign affairs, environment etc.; (e) IT providers and (f) investors.

In the light of the above, one can argue that DMS are strategic tools that can help destinations (government and private firms) in developing countries to better integrate, promote and distribute their tourism products and services. However, marketing tourism information is a challenging task for developing countries which are facing challenges of diverse nature in coping with innovation in the TTI. UNCTAD (2005:158-159) suggests that "defining a tourism strategy based on destination resources, consumers´ demand and the interest of local communities is the first step to embarking on an e-tourism strategy, and starting to build the image of the destination, using a DMS as a promotional tool and eventually as an online reservation system."

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[38] I would like to underscores that UNCTAD carried out studies on the issue of e-commerce and innovation to foster development of emergent, developing and least developing countries - LDCs, since 2001 onwards. UNCTAD launched, in June 2004, the E-Tourism Initiative – ETI, "which is structured around a comprehensive package that includes ICT-based tools and a methodology, based on a steady partnership-building approach. Its main goals are to support the personalized traveller decision process and to allow developing and LDCs to organize, market and distribute online aggregated tourism services from SMS enterprises, which are traditionally kept out of the market" (UNCTAD, 2005:160).

The internet seems to be one innovation used by DMS. The creation of a website depends on the costs involved and the capacity of DMOs to run different functionalities, depending on the technological, human and financial resources available, and the capacity of the various stakeholders (UNCTAD, 2005:158-9), critical attributes for the majority of developing countries. These issues will be addressed throughout the next section.

9- Innovation in the TTI of developing countries: how Brazil and South Africa are managing their destinations through the internet?

The TTI is a traditional industry generally associated with low investments in technologies and as being labour-intensive. Few articles and books spread over different fields present empirical data concerning innovation in the TTI, reflecting the insufficient recognition of its importance[39]. Furthermore, with few exceptions, most of these studies are directed to unravel the innovation features of the tourism industry in developed countries.

In what follows, I point out the importance of tourism activities for development issues in developing countries, together with some data about it. In section 9.2, I explain the methodology I used to capture not only the technological, but also organizational innovations taking place within the industry.

9.1- The Travel and Tourism Industry in emergent and developing countries: brief information and general data

The TTI is one of the most important industries for developing countries and least developed countries[40], being recognized as an instrument for national and local development. e-Tourism represents an opportunity for developing countries to improve their competitiveness through a significant reduction in transaction costs[41].

In fact, the economic and social importance of the TTI lies on the following factors (WTO, 2001):

(a) Spread capacity among other related industries,

(b) Labour-intensive (job creation potential),

(c) Capacity to create jobs for women and young people,

(d) Important assets available such as natural resources and culture,

(e) Creation of opportunities for small and medium sized firms,

(f) Rather low financial entry barriers compared to other industries[42], and

(g) Absence of barriers or quotas against tourism.

According to World Tourism Organization - WTO and World Travel and Tourism Council - WTTC, in 2003, tourism accounted for about 11% of the world´s gross domestic product (GDP) and foreign tourism earnings amounted to $523 billion with 691 million

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[39] Journals and conferences such as the ENTER Conference on Information and Communication in Tourism, and also the International Federation of Information Technology and Tourism – IFITT are important references. The contributions of the following researchers are notable: Werthner, Klein, O´Connor, Marin, Sheldon, Poon, Schertler, Buhalis, Archdale, Kärcher, Wiig, *inter alia*

[40] Tourism is the leading service sector in 24 LDC´s and the first source of foreign currency exchange earnings in 7 of them (Maldives, Gambia, Vanuatu, Tuvalu, Comoros, Samoa and Tanzania). See World Tourism Organization (WTO) and United Nations Conference on Trade and Development (UNCTAD), "Tourism in the Least Developed Countries – Third UN Conference on the Least Developed Countries, Brussels, May:2001).

[41] See documents of UNCTAD, WTO – World Tourism Organization and WTTC – World Travel and Tourism Council.

[42] Werthner and Klein (1999:31).

international tourism arrivals. WTTC points out that this industry supported over 200 million jobs worldwide, representing about 9% of the global workforce.

An UNCTAD report (2005:149-153) reflects about global trends in tourism worldwide (developing countries) and present some data on the issue:

- Developing countries, albeit starting with very low levels of arrivals (about 8% of international tourism arrivals in 1960), have attracted a growing number of travellers over the years totalling 34.5% in 2004[43], out of which East Asia and the Pacific accounted for more than 19%.
- The number of international tourism arrivals has constantly increased over the period in Asia and the Pacific, reaching 147 million in 2004 and has recorded higher growth than in Europe and North America.
- Tourism in Asia is mainly intraregional and the spectacular growth of China in terms of international tourism arrivals and receipts is the key factor in the rise of tourism in East Asia.
- Apart from East Asia and the Pacific, however, developing countries have not been able to significantly increase their tourism foreign earnings during the same period. In 2003, developing countries attracted over 242 million tourists of which over 148 million were concentrated in 12 countries.
- Latin America, Eastern Europe, Africa and the Middle East represent a small share of the world tourism flows and are dependent on tourists from other regions, in particular Western Europe, North America and Japan[44].
- Despite the rise of tourism in South Africa, Morocco, Egypt, Tunisia, Kenya and Senegal, African continent attracted only 4% of all international tourists and accounted for less than 3% of world tourism receipts in 2003.
- The top ten tourism destinations in developed countries attracted 323 million international tourism arrivals and totalled about $263 billion in international tourism receipts. In comparison, for the top ten destinations in developing countries[45], international tourism arrivals totalled 138 million and tourism foreign earnings amounted to $85 billion.
- Destinations such as India, Morocco and Indonesia are generating more tourism foreign earnings than others such as Tunisia and South Africa, which have attracted, in comparison, more tourists. The way in which tourism has developed in these destinations contributes to explaining this situation.

9.2- Methodology

By making use of survey and interviews, in my thesis my analysis of innovation in the TTI comprises every major player of the travel distribution value-chain: (a) suppliers (airlines, accommodations and car rentals); (b) private intermediaries (GDS, travel agencies and tour operators); and (c) government-like institutions that support tourism activities (DMOs).

However, since I am still in the beginning of my empirical research, I limited my analysis in the present paper to the evaluation of the level of development of the e-tourism websites in Brazil and South Africa. The aim of the research was to analyze two case studies

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[43] Compendium of Tourism Statistics, WTO, edition 2004. In UNCTAD (2005:150).

[44] In the Middle East, 45% of the tourism is intraregional. In Africa, this proportion falls to 40% and in South Asia to 35%.

[45] South Africa is ranked as the sixth more visited country among the developing countries. The top ten developed countries in terms of international arrivals are: France, Spain, United States, Italy, United Kingdom, Canada, Austria, Germany, Hungary and Greece. The top ten developing countries/territories in terms of international arrivals are: China/Hong Kong (China)/Taiwan PC, Mexico, Turkey, Malaysia, Thailand, South Africa, United Arab Emirates, Egypt, Singapore and Tunisia. UNCTAD´s (2005:152) elaboration based on data from World Tourism Organization.

based on the national official websites of both countries based on key informative and strategic functions suggested by UNCTAD about what is expected to be included in a website whose main purpose is marketing the destination of developing countries. Both websites were extensively visited many times during September and October, 2006. See below the principles in which I based my analysis:

Table 1- Key services and functions of a DMS

Services and functions of a DMS	Informative	Strategic
General information	√ Information on destination: history, culture, natural assets, geography, main tourist attractions; √ Practical information: visa requirements, international and national companies flying to the country, maps, pictures, specific events (festivals, fairs, markets), weather forecasts, entertainment), foreign consulates within the country, embassies abroad, vaccinations, hospitals, currency and foreign exchange etc.	√ Content available in the languages of destinations: main existing and potential tourism markets; √ Depending on the language chosen, the content and its presentation can differ to match different targeted tourism markets.
Management of information on tourism products and services	√ Accurate description (including photos) of the products and services (accommodation, restaurants, museums, cultural centres, boutiques etc.), including information about surrounding areas; links to their websites if available; √ Information on cultural or leisure activities, excursions and guided tours; √ Contacts of national travel agencies, transport companies (airlines, train, car, boats etc).	√ Suggestion ideas for holidays: places to go and things to do (adventure, nature, sports, art and culture, gastronomy etc); √ Itinerary planning; √ Real-time dynamic / customized packages; √ Information search by key word, category, geographical location etc.; √ Market optimization and yield management.
Customer management functions	√ Customer database management; √ Communication with customers by e-mail, telephone or fax, via a call centre, or direct contact with tourism providers.	√ Market research and impact analysis; √ Marketing campaigns.
Reservation functions	√ Bookings are made by e-mail, telephone or fax, via a call centre or by contacting directly the suppliers.	√ Online payment; √ Security of transactions.

Source: UNCTAD (2005:160).

The table detailed some of the main services and functions that a DMS should include in order to meet the expectations of stakeholders, in particular consumers and tourism suppliers. According to UNCTAD (2005:159), the two sub-level categories, “informative” and “strategic”, are intended to reflect the degree of information that DMOs can gradually offer when building up their DMS. Depending on the degree of requirements and the availability of resources of destinations in developing countries, DMS can be gradually implemented in four stages as noted below.

A website can have different forms and functionalities depending on its financial, human capacity and organizational characteristics. They can be divided into four stages depending on their different functionalities, from the most basic function (level 1) to the most complex (level 4). A new function is being added from one level to the next:

- Level 1 includes the distribution of information on tourism products and services (like an electronic brochure);
- Level 2 includes the functions of level 1 plus online reservation facilities;
- Level 3 includes the functions of levels 1 and 2 plus customer database management to improve the marketing of the destination globally;

- Level 4 includes the functions of levels 1, 2 and 3 plus the strategic management of the destination.

Based on empirical evidence, UNCTAD (2001, 2005) suggests that the large majority of DMS in developing countries have only reached level 1.

It should be noted that technological and non-technological strategies should be implemented in order to format an attractive website. Buhalis (2003:280-288) points out a number of steps that should be followed when developing a website for a destination:

1. Develop a strategic overview, brand, look of the destination offering;
2. Prepare an e-Tourism destination strategy;
3. Secure specialist support from ICT, marketing and DMS experts;
4. Advise and consult with all key stakeholders including principals, transportation companies, tour operators and local travel organizations;
5. Determine functional specifications and business model of the site;
6. Establish technical specifications, procurement and update programme;
7. Request tenders and decide on the partners working on the project;
8. Select system suppliers and/or software developers;
9. Organize the data collection and input to content management tools;
10. Build, pilot and test the website;
11. Host and maintain the DMS;
12. Register the site with search engines and maintain good ranking;
13. Provide analysis of users and their usage of the site;
14. Develop feedback mechanisms and establish a process of continuous improvement;
15. Establish long-term strategy and account for technological upgrades;
16. Monitor, evaluate and review process regularly.

Each of the above steps involves many other actions, which is out of the scope of this research to enumerate. However the development of e-tourism is often hampered by a number of issues. Most national tourism providers in developing countries continue with traditional operational practices and are+ not yet taking advantage of ICTs for conducting their business operations (UNCTAD, 2005:160). The barriers developing countries face to the successful development of DMSs are listed below[46]:

- Lack of strategic orientation;
- Inability to strengthen competitiveness of the local industry;
- Technology leading rather than follows appropriate marketing and management strategies;
- Poor integrated approach;
- Inability to provide total services for tourism demand and supply;
- Limited geographical basis, which makes the system unfeasible;
- Premature innovation in a traditionally reserved industry;
- Lack of standardization and compatibility;
- Lack of public sector interest and funding;
- Product rather than demand orientation;
- Lack of ICT infrastructure and of human capacity;
- Lack of awareness of ICT potentialities and lack of knowledge of ICT tools.

I the following section, I proceed with the analysis of the level of development of the Brazilian and South African websites and to identify their characteristics and challenges faced in the successful promotion on their destinations.

[46] See Buhalis (2003:288) and UNCTAD (2005:161).

9.3- An analysis of national official Brazilian and South African websites

- Challenges and Opportunities of the Brazilian website[47]

The first arrangements for the creation of the Brazilian official website started in 2003. By the end of 2004, the homepage was active, though only in Portuguese. The co-ordination was led by a company which operated from 2003 to 2005, when it was then replaced by another company. In August 2005, the site started to be re-organized, taking into account that the previous model was quite limited. These operational changes can explain the long time it took to design the official Brazilian website.

The current website is now being re-designed and a new version will be ready by next December. The new content will take into account the results of a study carried out to analyse the main characteristics, potentialities and weakness of the Brazilian tourism products and strategies. The large period necessary until its implementation is mainly due to bureaucratic reasons. In fact, this kind of constraint is present in many steps of the development process and jeopardizes a fast decision-making and implementation.

EMBRATUR - a federal autarchy linked to the Ministry of Tourism – is in charge of the website management. Since it is an autarchy, some requirements must be met. For instance, there is a legal framework that does not allow products to be traded through the website – which should only promote the destinations and does not allow any kind of online selling of products. This legal constraint is the main obstacle for the technological development of e-commerce.

Other difficulties mentioned are the high cost of the adoption of new technologies, the intrinsic technological requirements for the adoption of tools that could create a more attractive content and, last but not least, bureaucratic difficulties as for public procurement necessary to buy products.

Promoting tourism products in a more dynamic way through the internet finds constraints to present data in an attractive way, in the decision-making process concerning the strategic way the products will be available online, on which products the website will rely on and to search the better technological options.

- The Brazilian (www.braziltour.com.br) and the South African website (www.southafrica.net)

The initial outcomes of my research suggest that the South African homepage seems to be more attractive and sophisticated than the Brazilian one. This conclusion is based on the services and functions the website offers (see table 1 as well as the 4 levels of the functionalities introduced above). Considering this, it could be said that, the Brazilian homepage has predominantly an informative content, with no strategic integration among the products and players of the system. If, on one hand, due to legislative issues, the website cannot commercialize the products, this limitation should be surpassed by a more dynamic website if only promoting the products – what is not happening yet. In my viewpoint, Brazil had

[47] This item had been written based on two interviews by phone with members of EMBRATUR (Insituto Brasileiro de Turismo) – a federal autarchy, in Brazil. A detailed interview and visit to the installations of the institution will take place in the beginning of November. However, after many attempts, I could not arrange an appointment in the South African Tourism institution, not even a conversation by phone with the person (s) in charge of the website. I keep trying an interview with people in South Africa.

reached only the level 1 on the functionalities of the official site, being operated nowadays as an informative electronic brochure.

South Africa website is dynamic, attractive, sophisticated and easier to use. For example, their strategies in focusing on different kinds of consumers, is visible through the different suggestions of products according to each nationality. In terms of its functionality, the website reached the level 4. It took around six years from its theoretical conception based on countless studies and technological aspects to the gradual implementation of the web as it is today.

The results of my research in analysing diverse aspects of both websites are the following:

- In the Brazilian website the history about the country is static and chronologic, with no emphasis in other qualitative aspects. In the South African (SA) website, the information about its history is more qualitative and broad, emphasizing the aspects tourists would like to know. There are 9 subjects and 1 link in the page concerning this specific subject.
- Concerning People and Culture, there is no information about the Brazilian people or the Brazilian hospitality in receiving tourists, despite the fact that Brazilian hospitality has been pointed out as one of the positive aspects foreign tourists find when travelling to Brazil. In the SA website, there are 4 different subjects on the theme with 4 links driving the tourist to get more information, if it is the case.
- Some information that is available in the SA homepage, but missing in the Brazilian website: natural assets, location of the country, main distances from other destinations, size, people, language spoken and curiosities, time differences, money/financial and banks information, tipping, taxes, disabled travellers, "best of" (10 suggestions and 6 links), clothing depending on the region and season, electricity, health and safety, hospitals and medical care, malaria or other diseases, personal safety, food and water, road safety, driving, shopping information, feedback on the homepage and maps. Information about climate, provinces/major cities, "getting there" are displayed in the Brazilian website but not in an "easy to find" or in a systematic way.
- Concerning natural assets, SA presents information about 7 products (lands, national parks, eco-holidays, beaches, botanical gardens, whale watching and namaqualand) with 3 links for more information.
- In cities and regions, SA introduces information about major cities and explains the differences about the 9 provinces. In the Brazilian website, there is no explanation about the differences of the 5 regions and to find information about every of the 27 states you need to go to "tips and support" -> airport -> all states information.
- In the "FAQ" of the Brazilian website, the questions are directed to professionals, not for tourists, while in the SA homepage there are 17 questions and answers for tourists. In the latter, for professionals you find a link at the bottom of the page.
- In the "Contact us" of the Brazil´s website there is only a form to fill out for enquiries, while in the SA page you find e-mail addresses, address of the head office, fax, phone numbers, info about brochures and about international offices.
- Languages mean more than the translation of the content´s page. Its strategic use implies to promote the tourism products based on the characteristics and expectations of the tourist. Both websites are multilingual: 8 languages/countries in the Brazilian´s case while the information about the SA website is available in 14 languages/countries, with variations

depending on the profile of the tourists. For Italian tourist there are links to agencies that organize family programs, as well as suggestions for honeymoon packages, while for other destinations you find information about gay and lesbian or specific things to do if you come for business or trade exhibitions.

- The tourist destinations/itineraries or experience is the most complex part of an website since the information should be display in an attractive, easy-to-use and integrated way, linking the products, the cities, the intermediaries, places to stay, things to do etc. This difficult to attain integration is much more than only display the information available online. All players in the country should be involved in order to market all possibilities of a destination. In the Brazilian website, there is only 5 "destinations and itineraries", with no other sub-divisions for each of these products. They are: sun and beach, eco-tourism, culture, sport, business and events. There is no information in the main page driving the tourist to know more about, for instance: the rich food the different regions provide, where to go for shopping, the main popular cultural parties around the country, specific information about segments such as gays and lesbians etc. In fact, some of this information is available, but difficult to find. Moreover, links are provided to other institutional websites whose contents are only in Portuguese.

- A comprehensive set of tourist information services and products are available at SA website. The different products are displayed under "Experience" and "Explore", including product descriptions, photos, guides, brochures that can be downloaded, special offers, last minute promotions etc. There are general explanations about the 8 following "experiences": adventure, urban buzz, discovery, pamper, backpackers (with many links), gay & lesbian, culture and heritage, and conferencing.

- Yet in SA website, under "Explore" category the visitor can find diverse options in each of the following categories (including many links, phone contacts, e-mail, photos etc.):

  Routes: Birding, Gay and lesbian, historical, scenic, floral, heritage, rail, wine.
  Outdoor adventures: abseiling, climbing, gliding and paragliding, hot ai rbalooning, skiing and snowboarding, walking safaris, bungy jumping, fly fishing, hiking/walking, mountain biking, skydiving, canyoning/kloofing/tubing, flying schools, horse riding and trails, sandboarding, treetoping.
  Nature: National Parks, private game reserves, botanical gardens, biosphere reserves, provincial parks and nature reserves.
  Small town SA: 13 small cities are indicated to be visited + info on each of them
  Beaches & Watersport: best beaches, watersport overview, canoeing/kayaking/rafting, diving and snorkelling, surfing, windsurfing and kitesurfing, scubadiving.
  Entertainment: City nightlife Durban, City nightlife Cape Town, City Nightlife. Johannesburg, City Nightlife Port Elizabeth, Art Galeries, Museums, Music, Music festivals, casinos.
  Health and beauty: health and beauty, spas.
  Sports: info about the main sports of the country.
  Food & wine: wine, SA cuisine overview, SA cuisine history, SA cuisine local specialties, a traditional south african barbecue, Indian SA food, North and South African specialities, Portuguese SA cuisine, Sensational seafood, culinary safari, Afrikaner food, Cape Malay cuisine.
  Shopping: SA shopping, SA fashion, craft centre and market.

- As mentioned above, the Brazilian website is not allowed by the country´s legislation to commercialize their products on the web. As a result, for instance, one will only find information about where to stay if linked to other regional or institutional homepages whose contents are limited available to other languages. The SA website provides information about all kinds of **accommodation** available, despite the fact that the tourist cannot book online. An another deficiency of this category of product is that the information about the accommodation is displayed in alphabetic order, by "product (photo) – description – province – grade", with a deficient possibility of search. In order to have an idea about the amount of products available in this category, you can find at the homepage: 102 backpackers/hostelling, 1,673 bed & breakfasts, 144 country houses, 250 camping/caravans, 15 executive/corporate, 213 farm houses, 13 farm cottages, 44 game reserves, 1,789 guest houses, 859 hotels, 11 Inn, 781 lodges, 111 resorts, 1,490 self-catering, 15 spas, 9 miscellaneous accommodations and 1 for The Blue Train.

- The **intermediaries** players are absent in the Brazilian homepage, while are extensively enumerated in the SA web, where the tourist is linked to: 89 conference organizers, 481 conference venues and exhibitions halls, 496 tour guides, 495 tour operators, 37 tourism information bureaus, 131 tourism transport, 72 travel agencies and 42 travel services.
- The **search engine** is also an important instrument to drive the costumers to what they are interested in. In the Brazilian case it is possible to find only "search -> OK", while in the SA page you can search by "key word", "category" and "province". The tourist can find information about 12 different categories (accommodation, activities, attractions, conference services, restaurants, shopping, tour guides, tour operators, tourism information offices, tourism transport, travel agencies and travel services) available in the 9 provinces of the country.

The analysis introduced above is far from complete, especially about what lay behind the website: strategies of the organization in charge of the website, political and legal aspects, investments, co-operation among the players etc.

10- Concluding remarks

The ideas developed in this paper lead to some conclusions, as follows.

First and foremost, the service sector is not only a passive recipient of technologies produced elsewhere. The industries of this sector can be innovative by their own and further studies are required to provide a broad understanding concerning their specificities. My study intends to contribute to the understanding of this issue by suggesting new alternative approaches and methodologies to the analysis of how innovation emerge within the TTI, by the evaluation of two websites – that is one major part of a DMS.

Secondly, it seems to be clear that ICTs *per se* are not a sufficient tool to innovation in major industries of the sector. In fact, a successful ICT implementation depends on other required organizational innovations. In my opinion, the differences among firms in their capability to innovate will be mainly determined by the way they appropriate the organizational innovations. Firms should implement organizational innovations and, to be innovative, they cannot only automatically adopt ICTs – as it is the case of almost all tourism websites that, to a great extent, operate basically as "electronic brochures" about their products.

Thirdly, ICTs represent a great potential to the development of e-tourism websites, especially for emergent and developing countries which depend on international tour operators to market the destination according to their commercial interests. Destinations have their own priorities in terms of tourism development (domestic, regional, international), such as to increase market share or income or to develop innovative products and services. However, as aforesaid, the large majority of them are unable to exploit the full potential of this technology and, as a result, to market and distribute their tourism products on a global scale due to various constraints. I argue that the success in the development of a DMS –the website in the case - is mainly associated with its organizational structure and the cooperation mechanisms established between the Government and the private sector. Not only public institutions, but also all players of the marketplace play an important role in fostering promotion of a destination and improving their competitiveness in tourism. An innovative tourism industry can really contributes to growth and development of these countries.

Finally, the following strategies should be taken into account, as for government, as for private firms and other organizations, for the development of the TTI of developing countries:

- To formulate a national e-tourism strategy;
- To foster an enabling environment for e-tourism, in which the government plays an important role in coordinating efforts and in building trust among the players;
- To promote solid public and private partnership, as well as private-private co-operation;
- To adopt new business models and strategies;
- Adopt customer-oriented strategies while offering sustainable tourist products;
- Identify the most valuable products and services;
- Market e-tourism websites.

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