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in the tourism industry

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STRATEGIC USE OF INFORMATION TECHNOLOGIES IN THE TOURISM INDUSTRY

ABSTRACT

Information technologies (ITs) prevail all functions of strategic and operational management. As information is the lifeblood of tourism, ITs provide both opportunities and challenges for the industry. Despite the uncertainty experienced in the developments of ITs in tourism, the **"only constant will be change"**. Increasingly, organisations and destinations, which need to compete will be forced to compute. Unless the current tourism industry improves its competitiveness, by utilising the emerging ITs and innovative management methods, there is a danger for exogenous players to enter the marketplace, jeopardising the position of the existing ones. Only creative and innovative suppliers will be able to survive the competition in the new millennium. This paper provides a framework for the utilisation of technology in tourism by adopting a strategic perspective. A continuous business process re-engineering is proposed in order to ensure that a wide range of prerequisites such as vision, rational organisation, commitment and training are in place, so they can enable destinations and principals to capitalise on the unprecedented opportunities emerging through ITs.

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INFORMATION TECHNOLOGIES AS A BUSINESS TOOL

Developments in ITs revolutionise both economies and enterprises. ITs are defined as the “collective term given to the most recent developments in the mode (electronic) and the mechanisms computers and communication technologies) used for the acquisition, processing analysis, storage, retrieval, dissemination and application of information¹. At the macroeconomic level, ITs become instrumental in the development and prosperity of regions, as they determine their competitiveness in the global marketplace. At the microeconomic level, ITs prevail all functions of strategic and operational management and impel the competitiveness of enterprises.

The enhancements in ITs' processing power in the last decade revolutionise their capabilities as they constantly increase computing speed; decrease equipment size; reduce hardware and software costs; and improve the reliability, compatibility and inter-connectivity of numerous terminals and applications. A great degree of innovation is incorporated in hardware, software and network developments, whilst intellect becomes a critical asset in ITs' management. Paradoxically, the more powerful and complicated ITs become, the more user-friendly and inexpensive they are, enabling more people and organisations to take advantage. Hence, Hopper² proposes that "in the not-so-distant future, computers will be as familiar part of the business environment as telephones are today. They will also be as simple to use as telephones or at least nearly so". The emergent information society and the knowledge-based economic powers will therefore redefine the ability of regions and enterprises to prosper in the new millennium.³

Inevitably the tourism industry is also affected by the technological revolution. Both tourism destinations and enterprises increasingly need to adopt innovative methods and to enhance their competitiveness. On the demand side, the new, sophisticated, knowledgeable and demanding consumer increasingly becomes familiar with the emergent ITs and requires flexible, specialised, accessible, interactive products and communication with principals. Hence, new best management practices emerge, taking advantage of the ITs revolution and re-engineering the entire business processes of the industry. This paper aims to analyse some of the most critical IT developments and to demonstrate how they influence the tourism industry. It blends the theoretical background of ITs with the strategic functions of the industry and proposes a multi-dimensional framework for the incorporation of ITs in tourism.

Information Technologiess As A Major Contributor To Competitiveness And Competitive Advantage

The fusion of ITs provides unprecedented tools, which facilitate the creation of new industries, restructure existing industries and radically change the way firms and regions compete. ITs reshape the nature of competition in most economic activities, whilst they link consumers and suppliers, adding value to organisations' products. Hence, ITs change the competitive game for almost all organisations, regardless the industry they operate in, their location or size.⁴⁻⁶ In particular, technology affects competitive advantage as it determines the relative cost position or differentiation of organisations.⁷ A firm can achieve several strategic benefits by using ITs, namely: establishing entry barriers; affecting switching costs; differentiating products/services; limiting access to distribution channels; ensuring competitive pricing; decreasing supply costs and easing supply; increasing cost efficiency; using information as a product itself; and building closer relationships with suppliers and customers.⁸

Table 1 illustrates the results of the latest annual Manufacturing Attitudes Survey. Manufacturers not only regard investments on ITs as crucial in enabling them to outperform competitors, but also their expectations from IT systems go far beyond their operational management and focus primarily on the strategic management of enterprises. As information is a source of power in negotiations with partners, the adoption of ITs often redefines the power balance between partners, and changes their bargaining relationships.⁹ Perhaps, small and medium sized enterprises gain more advantages by

using ITs, as bargaining power is gradually relocated from institutional buyers and wholesalers to suppliers, due to the more effective and interactive communication they can achieve with their target markets. Small size in combination with innovation and effective networking by using ITs also enables them to develop “virtual size” and empowers their competitiveness. Smaller firms can therefore develop and deliver the right product, to the right customer, at the right price and place, without over-depending on intermediaries. This would enable small firms to enhance their position and increase their profit margin.

Table 1 Impact of information technologies on businesses

Significantly enhance competitive edge	79%
Improves information	77%
Better external communications	65%
Manage computers expectations better	63%
Improve decision making process	61%

Source: (10) Conspectus, August 1996, p.42.

Hence, ITs offer new management and business opportunities and can be applied strategically in at least four different ways: gain a competitive advantage; improve productivity and performance; facilitate new ways of managing and organising; and develop new businesses.⁸ Ultimately, firms investing in ITs attempt to gain a competitive advantage by lowering their cost or by improving customers' perception about the quality of their products and services, and hence differentiating their offering.⁷⁻⁹

Prerequisites For Achieving Competitive Advantages Through Information Technologies

Despite the potential benefits, ITs do not guarantee profitability and they may even worsen the competitive position of firms and the attractiveness of an industry.⁷ There is also a debate on whether ITs-originated competitive advantage can be sustained, as investments in technology are often matched by competitors. Strassmann¹¹ suggests that there is no significant correlation between spending on ITs and profitability. There is also criticism that ITs often fail to add value in an organisation's operation, whilst the costs associated (capital, training, staff) sometimes exceed the benefits generated.¹²⁻¹³ This is often attributed to the lack of long term ITs vision, which deters enterprises from capitalising on opportunities and gaining benefits. ITs are not a panacea and in fact incorporate several risks as well as considerable costs. Organisations should therefore realise that ITs contribute to both sides of the general business equation, since they add to both revenue and cost streams.

However, ignoring and under-utilising ITs could be disastrous as it would create strategic vulnerability and competitive disadvantage.⁴ Thus, no action is not an option. ITs can be fruitful, only if certain prerequisites are satisfied, namely: long term planning and strategy; innovative business processes re-engineering; top management commitment; and training throughout the hierarchy. Using ITs as a stand-alone initiative is inappropriate. Their usage has to be coupled with the re-engineering of all business processes as well as with a redesign of organisational structures and control systems. Perhaps the greatest challenge is to identify and train managers who will be effective and innovative users of ITs and would lead technology-based decision making towards quantifiable gains and advantages. Intellect, therefore, becomes one of the major assets of organisations, while continuous education and training are the only methods to develop and maintain this asset. Provided that rational and innovative planning and management is exercised constantly and consistently, ITs can support the success of organisations.¹⁴⁻¹⁶

TOURISM AND INFORMATION TECHNOLOGIES

Tourism is inevitably influenced by the business process re-engineering experienced due to the technological revolution. As information is the life-blood of the travel industry, effective use of ITs is pivotal. Hence, "a whole system of ITs is being rapidly diffused throughout the tourism industry and no player will escape its impacts".¹ Unlike durable goods, intangible tourism services cannot be physically displayed or inspected at the point of sale before purchasing. They are bought before the time of their use and away from the place of consumption. Hence they depend exclusively upon representations and descriptions, provided by the travel trade, (e.g. information in brochures), for their ability to attract consumers. Timely and accurate information, relevant to consumers' needs, is often the key to satisfaction of tourist demand. Therefore, ITs provide the information backbone that facilitates tourism.¹⁷

The revolution of ITs has profound implications for the management of the tourism industry, mainly by enabling efficient co-operation within the industry and by offering tools for globalisation. In few other economic activities are the generation, gathering, processing, application and communication of information as important for day-to-day operations. The rapid development of both supply and demand makes ITs an imperative partner and thus they increasingly play a more critical role in tourism marketing, distribution, promotion and co-ordination. The re-engineering of these processes generates a paradigm-shift altering the structure of the entire industry.¹⁸⁻²⁴ Thus, ITs have a dramatic impact on the travel industry, because they force the sector to rethink the way in which it organises its business, its values or norms of behaviour and the way in which it educates its workforce.²⁵

Information Technologies And Tourism Demand

WTO argues that "the key to success lies in the quick identification of consumer needs and in reaching potential clients with comprehensive, personalised and up-to-date information".²⁶ The rapid growth of both the volume and the quality requirements of contemporary travellers, require powerful ITs for the administration of the expanding traffic. Tourists become sophisticated and more demanding, requesting high quality products and value for their money. Thus, destinations and principals need new methods to serve the new types of demand. The usage of ITs in the industry is driven by both the development of the size and complexity of tourism demand, as well as by the rapid expansion and sophistication of new tourism products, which address mini-market segments. Increasingly, new, experienced, sophisticated, demanding travellers seek information about more exotic destinations and authentic experiences, as well as require to interact with suppliers in order to satisfy their specific needs and wishes. The contemporary/connected consumer "is far less willing to wait or put up with delays, to the point where patience is a disappearing virtue".²⁷

In order to satisfy tourism demand and survive in the long term there is no choice but to incorporate technology and enhance the interactivity with the marketplace.^{23, 26-27} Increasingly, ITs enable travellers to access reliable and accurate information as well as to undertake reservations in a fraction of time, cost and inconvenience required by conventional methods. ITs improve the service quality and contribute to higher guest/traveller satisfaction. Customer satisfaction depends highly on the accuracy and comprehensiveness of specific information on destinations' accessibility, facilities, attractions and activities.²⁸⁻³⁰ This is because the gap between consumers' expectations and perceived experiences is smaller and thus, unpleasant surprises from the destination or principals are minimised.²¹ In addition, several other ITs facilitated factors enhance consumer satisfaction, namely: consumers have more information and enjoy a greater choice; a reduction of the bureaucracy and paper-work effectively frees time for customer service; customising the product and establishing "one-to-one" marketing by using intelligence collected by loyalty schemes (e.g. dietary requirements, product preferences); providing new services, (e.g. as in-flight or in-room entertainment and information channels); facilitating operational tasks (e.g. in-room TV checkout) ; personalised services (e.g. telephone operator acknowledges guest by his name); and finally better integration of departments and functions of organisations towards better service.

Computer Reservation Systems (CRSs) and increasingly Internet providers satisfy the needs of consumer for convenient access to transparent and easy to compare information. They cover the

entire variety of choices of travel, lodging and leisure services, destinations, holiday packages, as well as display the actual prices and availability of such services. These services also provide immediate confirmation and speedy documentation of reservations, allowing a greater degree of flexibility and enabling prospective travellers to book at the "last minute". Experienced travellers are therefore empowered by information and booking systems and increase their personal efficiency by creating tailor-made products independently. ITs also assist principals to understand consumer needs through marketing research and loyalty/partnership schemes. Improved access to information covering all aspects of tourist activities provides the framework for offering personalised services at price levels comparable to those of standard packages.³¹⁻³³

The revolutionary developments in ITs, which have been experienced through the proliferation of the Internet and the World Wide Web since 1995, illustrate that consumers increasingly rely on the Internet for travel information. They utilise commercial and non-commercial Internet sites for planning, searching, purchasing and amending their travel. Non-tourism organisations tend to seize the emergent opportunity by utilising the ITs tools. This is already the case with major ITs providers, (e.g. Microsoft developed Expedia, an electronic travel agency) to satisfy tourism demand.

The Re-Engineering Of The Tourism Production And Distribution

The impacts of ITs are evident in the tourism production, marketing, distribution and operational functions of both the private and public sectors.³⁴ ITs can also boost staff morale, managerial effectiveness, productivity and ultimately profitability of tourism organisations, provided that managerial attitude is adapted to the new business environment and takes advantage of the emergent opportunities.³⁵ In particular, ITs have pivotal implications for the distribution channel, as they introduce unprecedented and innovative methods. Distribution is one of the few elements of the marketing mix, which can still enable tourism enterprises to improve their competitiveness and performance. Distributing the right marketing mix, to the right segments, through the right intermediaries, will be instrumental for the long-term success of principals. ITs not only facilitate distribution, but they also enable differentiation and/or cost advantage, as well as empower interactive communication between principals and target markets. This is accomplished by re-engineering the entire processes of producing and delivering products, in order to optimise efficiency and productivity, and to maximise the value-added provided to consumers.²⁰

The evolution of ITs demonstrated that destinations and principals will be unable to compete effectively, unless they were able to promote themselves in the emergent electronic distribution channels. ITs transformed distribution to an electronic marketplace, where access to information and ubiquity is achieved, while interactivity between principals and consumers is empowered. Three main waves of technological developments established ITs in tourism enterprises, namely Computer Reservations Systems (CRSs) in the 1970s; Global Distribution Systems (GDSs) in the 1980s and the Internet in the 1990s. Although these technologies emerged with gaps of about 10 years from each other, they currently operate both separately and jointly, controlling different functions and target markets.

Computer Reservation Systems (CRSs)

Computerised networks and electronic distribution in tourism emerged in the early 1970s, through internal CRSs. They became central to the distribution mix and strategy of airlines. CRSs are widely regarded as the critical initiators of the electronic age, as they formulated a new travel marketing and distribution system. A CRS is essentially a database which manages the inventory of a tourism enterprise, whilst it distributes it electronically to remote sales offices and external partners. Intermediaries and consumers can access the inventory and they can make and confirm reservations. The rapid growth of both demand and supply, as well as the deregulation of the American air transportation demonstrated that the tourism inventory could only be managed by

powerful computerised systems. Airlines pioneered this technology, although hotel chains and tour operators followed by developing CRSs.^{2, 33}

CRSs enable principals to control, promote and sell their products globally, while facilitating their yield management. In addition, they integrate the entire range of business functions, and thus can contribute to principals' profitability and long term prosperity. CRSs often charge competitive commission rates in comparison with other distribution options, whilst enabling flexible pricing and capacity alterations in order to adjust supply to demand fluctuations. CRSs also reduce communication costs, while providing intelligence information on demand patterns or the position of partners and competitors. Hence, CRSs contribute enormously to both the operational and strategic management of the industry.³⁶⁻³⁸

Global Distribution Systems (GDSs)

Since the mid 1980s, airline CRSs have emerged into Global Distribution Systems (GDSs), by gradually expanding their geographical coverage, as well as by integrating both horizontally (with other airline systems) and vertically (by incorporating the entire range of tourism products and services, such as accommodation, car rentals, train and ferry ticketing, entertainment and other provisions). To avoid unnecessary over-lappings principals integrated their CRSs with GDSs, by developing interfaces. Several "switch" companies, such as THISCO and WIZCOM, emerged to facilitate interconnectivity.¹⁷ This enabled the display and purchasing of the majority of tourism products on-line. As GDSs connect most tourism organisations with intermediaries around the world, they lead the standardisation processes and control a considerable market share.

GDSs emerged as the "circulation system" or the "backbone" of the industry by establishing a global communication standard and a new tourism electronic distribution channel. Evidently GDSs became businesses in their own right, as they changed their nature from tools for vendor airlines and accommodation corporations, to "electronic travel supermarkets" and strategic business units for their corporations.^{2,33,30} However, fierce competition forced a number of mergers and acquisitions in the GDS industry. It is predicted that only two or three of the major ten GDSs will survive and therefore, further concentration and integration is anticipated. Currently four systems, namely Galileo, Amadeus, Sabre and Worldspan, dominate the global market. Since GDSs are connected with most major principals, they offer similar services. In June 1996, for example, Amadeus displayed availability for 432 airlines, 29,000 hotels and 55 car rental companies through 162,329 terminals in 106,394 travel agencies around the world.³⁹ However, each GDS has a stronger market share at the region where its parent airlines operate, as traditional links with travel agencies have been utilised for the penetration of GDSs. Table 2 illustrates the number of GDSs' locations and terminals in Europe, where each of the major GDSs are used.³⁶⁻⁴¹

GDSs increasingly offer both leisure and business products, by providing information and allowing reservations for theatre tickets, holiday packages and tourism destinations. Eventually core GDSs are expected to be based on a network of smaller, regional and specialised computerised systems for their leisure products. The development of Destination Management Systems will enable small and medium sized tourism enterprises to be represented.^{30, 42} Diverting into the leisure market responds to demand trends, while enabling GDSs to diversify their portfolio in order to take advantage of their technological infrastructure and network as well as economies of scale. This will assist them to deliver diversified services to broader markets and therefore suffer less from their business market saturation.⁴³⁻⁴⁷

GDSs' efficiency and reliability enable principals to distribute and manage their reservations globally, by bridging consumer needs with the tourism supply. Hence, great synergies are achieved, where globalisation drivers stimulate GDS developments and vice versa. Go⁴⁸ identifies four major sets of conditions, namely, cost, market, government and competitive drivers (Table 3), and demonstrates why the globalisation of the tourism industry is closely interrelated with its ability to use computerised systems. Ultimately GDSs should aim to increase the satisfaction of their stakeholders, (i.e. consumers, principals, travel agencies and shareholders), offer superior products and enable

partners to maximise their profitability.

Table 2 Penetration and market shares of Global Distribution Systems in European travel agencies

	German y	France	Spain	Denmar k	UK	Italy	Hollan d	Belgiu m	Portuga l	Greece	Ireland	Luxembourg	Total
Agencies													
Amadeus	11000	3150	2291	188	20	0	0	100	11	0	0	0	16760
Galileo	200	124	101	22	2185	2384	403	158	350	84	47	0	6058
Sabre	600	358	91	21	624	518	79	96	1	178	17	13	2596
Worldspan	300	150	100	90	500	180	200	150	160	120	30	0	1980
Total outlets	12100	3782	2583	321	3329	3082	682	504	522	382	94	13	27394
Terminals													
Amadeus	23000	7200	3661	1275	60	0	0	388	11	0	0	0	35595
Galileo	400	250	111	115	9421	5267	2100	438	554	88	211	0	18955
Sabre	1300	774	167	77	2251	960	167	280	1	224	45	26	6272
Worldspan	1000	700	110	180	950	280	600	500	200	150	40	0	4710
Total terminals	25700	8924	4049	1647	12682	6507	2867	1606	766	462	296	26	65532
Terminals per outlet	2.12	2.36	1.57	5.13	3.81	2.11	4.20	3.18	1.46	1.21	3.15	2.00	2.39

Source: Adapted from (49) Smith and Jenner, 1994,p.62 and (39) Hyde,1992, p.26-27.

Note: [Terminals per outlet = Total terminals/Total outlets]

As travel agencies might operate more than one Global Distribution Systems, the "terminals per outlet" ratio is provided only for comparison reasons between countries.

**Table 3 Computer Reservation Systems and Global Distribution Systems
as drivers for tourism and hospitality globalisation**

<p>Cost drivers</p> <ul style="list-style-type: none"> • Increase efficiency • Low distribution cost • Low communication cost • Low labour cost • Minimisation of waste factor • Facilitator of flexible pricing 	<p>Market drivers</p> <ul style="list-style-type: none"> • Satisfy sophisticated demand • Flexibility in time of operation • Support specialisation and differentiation • Provide last minute deals • Accurate information • Support relationship marketing strategies for frequent flyers/guests • Quick reaction to demand fluctuation • Multiple/integrated products • Yield management • Corporate intelligence • Marketing research
<p>Government and regulatory drivers</p> <ul style="list-style-type: none"> • Deregulation • Liberalisation • Government supported 	<p>Competitive drivers</p> <ul style="list-style-type: none"> • Managing networks of enterprises • Value-added skill building • Flexibility • Knowledge acquisition • Strategic tool • Barrier to entry

Source: Adapted from (48) Go, 1992, p.23-24.

The emerging super highway - the Internet and the World Wide Web

The Internet (or the "Information Superhighway") convergence media, telecommunications, and information technology, increases the interactivity between consumers and suppliers⁵⁰. Since the early 1990s, the World Wide Web (WWW) has emerged as the fastest growing area of the Internet, enabling distribution of multimedia information. As textual data, graphics, pictures, video, and sounds are easily accessible through the WWW, it soon became the flagship of the ITs' revolution and instituted an innovative platform for efficient, live and timely exchange of both ideas and products. Consequently, unprecedented and unforeseen implications are drawn for the future of tourism marketing and consumer behaviour. Although there is no accurate estimate of Internet users or sites, the pace of the Web development demonstrates the role it will play in peoples' lives.

New practices such as home shopping, tele-entertainment, tele-working, tele-learning and tele-banking are expected to change everyday activities. Eventually consumers will live in "electronic houses" or "intelligent homes" and will be served by "virtual enterprises" through a very interactive communication framework. The Internet also influences political life, as it introduces a democratic, transparent, uncontrollable and difficult to dominate way of communication, where everyone is more or less able to broadcast their views regardless of hierarchical rankings and political power. Hawkins⁵¹ suggests that "business and organisations world-wide are realising that marketing on the Web is multi-dimensional content marketing that requires the following paradigm shifts: from traditional advertising to interactive marketing; and from developing and managing one way information flows to computer-mediated empowerment of users, consumers, and entrepreneurs who will be engaged in electronic commerce in the information age".

Encouragingly, the tourism industry launched several services to take advantage of the information superhighway. Table 4 illustrates a number of tourism organisations represented on the Internet. The Internet and the WWW provide unprecedented opportunities for the industry as they bridge the gap between consumers and suppliers and empower closer interaction. The WWW provides an extremely vital service by incorporating similarly structured information and enabling the packaging of a wide range of diverse products and services. ITs also provide the infrastructure for inexpensive delivery of multimedia information, promotion and distribution for both principals and destinations.⁵²⁻⁵⁴ ITs also assist the provision of tailored made products in order to meet the needs of individual consumers, and as a consequence, they are expected to become instrumental in differentiating tourism supply. The Internet can also strengthen the marketing and communication functions of remote, peripheral and insular destinations as well as small and medium-sized enterprises, by empowering their direct communication with prospective customers as well as by assisting the distribution process.^{21,30,55} Hence, the rapid development of the Internet and the WWW provide unprecedented and affordable opportunities for the global representation and marketing of tourism. Nevertheless, the information currently available on the Internet is often chaotic and misleading, mainly due to its immaturity and lack of any type of standardisation. Several issues need to be addressed, namely: security of transmissions; credibility of information; intellectual property and copyrights; bandwidth and speed limitations; user confusion and dissatisfaction; lack of adequate trained specialists; equal access and pricing.⁵⁶⁻⁶⁰

Table 4 Representation Of Tourism Enterprises And Organisations On The Internet

Airlines	Uniform Resource Locator	Hotels	Uniform Resource Locator
Aer Lingus	www.aerlingus.ie/	Best Western	www.travelweb.com/best.html
Aeroflot	www.seanet.com/Bazar/Aeroflot/Aeroflot.html	Choice Hotels	www.hotelchoice.com
Air Canada	www.aircanada.ca/	Consort Hotels	www.u-net.com/hotelnet/
Air France	www.airfrance.fr/	Embassy Suites	www.promus.com/embassy.html
Air UK	www.airuk.co.uk	Flag International	www.hilink.com.au/flag/flaghome.html
American Airlines	www.amrcorp.com/aa_home/aa_home.htm	Forte & Le Meridien	www.forte-hotels.com
Austrian Airlines	www.aua.co.at/aua/	Forte Travelodge	www.fortetravelodge.com/index.html
British Airways	www.british-airways.com/	Grand Heritage	www.grandheritage.com/
British Midland	www.iflybritishmidland.com	Hilton Hotels Corporation	www.hilton.com
Canadian Airlines	www.CdnAir.ca/	Holiday Inn Worldwide	www.holiday-inn.com/
Cathay Pacific	www.cathay-usa.com/	Hong Kong Hotels	www.hk.super.net/~rlowe/bizhk/comp/hotel
Continental Airlines	www.flycontinental.com	Hyatt Hotels & Resorts	www.travelweb.com/hyatt.html
Delta Airlines	www.delta-air.com/.htm	Inter-Continental	www.interconti.com/
EasyJet	www.easyjet.com/	Kempinski hotels	www.travelwiz.com/HOTELS/KEMPINSKI/index
Emirates	www.onu.edu/~mparham/uae/emirates/emirates	Leading Hotels of the World	www.interactive.line.com/lead/
Finnair	www.finair.fi/	Luxury Hotels of the World	www.slh.com/slh/
Iberia Airlines	www.civeng.carleton.ca/SiSpain/travelli/iberia/menu.html	Mandarin Oriental	www.travelweb.com/this-co/mandor/common/manres.html
Icelandair	www.arctic.is/Transport/Icelandair/Icelandair.html	Marriott International	www.marriott.com/
Indonesian Airlines	www.emp.pdx.edu/htliono/trans.html	Millennium and Copthorne	www.ibmpcug.co.uk/~ecs/copthorn.html
Japan Airlines	www.jal.co.jp/	Novotel	www.novotel.com/welcome/
KLM	www.klm.html	Pan Pacific Hotels and Resorts	www.panpac.com/hotels
Lauda Air	www.lauraair.com/engl/indexe.htm	Radisson Hotels	www2.pcy.mci.net/marketplace/radisson/
LOT Polish Airlines	www.lot.com	Red Lion Hotels	www.teleport.com/~peekra/RLhome.html
Lufthansa	www.lufthansa.com/	Relais & Chateaux	www.calvacom.fr/relais/accueil.html
Malaysia Airlines	www.sino.net/asean/malaysia.html#travwtc	Virgin Ultimate	www.virgin.com/ultimate/ultimate.html
Mexicana	www.mexicana.com/index.html	Westin Hotels and Resorts	www.westin.com/

Northwest Airlines	www.winternet.com/~tela/nwa-info.html	Hotel Directories	Uniform Resource Locator
Qantas Airways	www.anzac.com/qantas/qantas.com	Hotel Net	www.demon.co.uk/hotel-net/
Saudia Airlines	www.ee.wpi.edu/~zakharia/saudi-communications.html	London Hotels Discount	www.demon.co.uk/hotel-net/lhdr.from.html
Singapore Airlines	www.singaporeair.com/	Travel Web	www.travelweb.com/
South African Airlines	www.saa.co.za/saa/	Worldwide Hotel Directory	www.travind.com/hotels/
Southwest Airlines	www.iflyswa.com/	First Option Hotel	www.expotel.co.uk/expotel
United Airlines	www.ual.com/	Paris Hotels	www.wfi.fr/parishotels/
Virgin Atlantic Airways	www.fly.virgin.com/atlantic	AMTRAK	www.amtrak.com/
Travel Information	Uniform Resource Locator	Rail Travel	Uniform Resource Locator
GNN Travel Center	gnn.com/gnn/meta/travel/	Australian Timetables	brother.cc.monash.edu.au/ccst/aff2/che/bromage/www/tt/index.html
Dr Memory's Favourites	www.access.digex.net/~drmemory/cyber_travel.htm	Deutsche Bahn AG	www.bahn.de/index_e.html
Travel Weekly Online	www.traveler.net/two	European Rail Information	www.eurorail.html
Rough Guides	www.hotwired.com/rough/	Eurostar	Oworld.avonibp.co.uk/eurostar/eurostar.html
Lonely Planet	lonelyplanet.com/	Rail Timetables	www-cse.ucsd.edu/users/bowdidge/railroad/rail-gopher.html
Moon Travel handbook	www.moon.com	Rail Server	rail.rz.unikarlsruhe.de/retail/english.html
Fodor	www.fodors.com/	Railway Schedules	www.wku.edu/~campbjw/schedule.html
Trav.& Tech. Network	www.ten-io.com	Tourism Organisations	Uniform Resource Locator
Around the world in 80	www.coolsite.com/arworld.html	World Tourism Organisation	www.world-tourism.org/
ANTOR	www.tourist-offices.org.uk/	Tourism Research Source	www.vir.com/~chamonix/tourism
Internet travel agencies	Uniform Resource Locator	World Tourism Travel Council	www.wttc.org
Expedia	expedia.msn.com	ABTA	www.abtanet.com/
Travelocity	www.travelocity.com	Destinations	Uniform Resource Locator
Internet Travel Network	www.itn.net/	Ireland	www.Ireland.travel.ie
Travel Web	www.travelweb.com/	Scotland	www.scotland.net
Car Rental	Uniform Resource Locator	Great Britain	www.visitbritain.com/
Hertz	www.travelweb.com	Spain	www.ozemail.com.au/~spain
Alamo	www.freeways.com/	Singapore On-Line	www.travel.com.sg/sog
Eurodollar	www.eurodollar.co.uk/	Japan	www.jnto.go.jp

Source: Adapted from (61) Genesys Consultants, Executive Traveller, August 1996.

It is anticipated that GDSs will eventually take advantage of the openness of the Internet and develop suitable interfaces for consumers and the industry. Sabre has already launched Travelocity while other GDSs have announced similar actions.⁶² The Internet will empower GDSs to attract both institutional and individual consumers, whilst it will increase their productivity and efficiency. Distributed multimedia technologies in combination with the reservation capabilities would also provide a powerful selling tool for the industry, while they would contribute to the training of travel consultants. GDSs are also expected to become user-friendly, despite their concern that an easily operated system will make them easily replaceable. As a result, GDSs or third party providers are expected to use the Internet in order to offer innovative interfaces for direct communication with consumers, enhancing the home travel shopping opportunities.⁵²⁻⁵⁴

The re-engineering of travel intermediation: threats and opportunities

The Internet is also anticipated to change the role of tourism intermediaries, and travel agencies in particular. Hitherto, travel agencies have been the major brokers of tourism services and the interface of the industry with consumers. However, to the degree that the Internet empowers consumers to develop and purchase their own itineraries, travel agencies' future becomes questionable. This is also reinforced by the recent commission capping by airlines around the world. Table 5 demonstrates the most prominent arguments for and against disintermediation of the tourism distribution channel. Future intermediation of the tourism distribution channel will therefore be quite different from the current situation. There are several trends evident already:

- Traditional intermediaries reengineer their processes in order to up-date their offering, improve customer satisfaction and remain competitive²⁴
- New electronic intermediaries emerge (e.g. Expedia, ITN) to take advantage of the ITs' revolution
- Tourism destinations develop regional systems to enhance their representation, boost their image and attract direct bookings^{20,30}
- Principals develop Internet-based interfaces with consumers⁵²

In reality different market segments will use dissimilar distribution channels for selecting and purchasing their tourism products. For example, older generations and people who travel infrequently will probably continue purchasing tourism products from traditional travel agencies. However, business and frequent travellers may use on-line providers to arrange their itineraries and eventually purchase their tickets. This will depend on the security of Internet transactions; the reliability and quality of information available on the Internet; and the convenience of the entire process.

Table 5 Arguments for and against the disintermediation of the tourism distribution channel

<p>Arguments for the disintermediation of the tourism distribution channel</p> <ul style="list-style-type: none">• Travel agencies add little value to the tourism product, as they primarily act as booking offices• Travel agencies merely manage information and undertake reservations• Travel agencies are biased, in favour of principals who offer override commissions and in-house partners• Experienced travellers are much more knowledgeable than travel agencies• Visiting travel agencies is inconvenient, time consuming and restricted to office hours• Commissions to travel agencies increase the total price of travel products ultimately• Personnel in travel agencies are often inadequately trained and experienced• There is an increase of independent holidays and a decrease of package holidays• Technology enables consumers to undertake most functions from the convenience of their armchair• Electronic travel intermediaries offer a great flexibility and more choice• The re-engineering of the tourism industry (e.g. electronic ticketing; now frills airlines; airline commission capping; loyalty schemes) facilitates disintermediation
<p>Arguments against the disintermediation of the tourism distribution channel</p> <ul style="list-style-type: none">• Travel agencies are professional travel advisers and they offer valuable services and advice• Travel agencies use expertise to save time for consumers• Technology is difficult to use and expensive to acquire for individuals• A large part of the market is computer illiterate• The more complex computers and the Internet become, the more people need experts to use them• Travel agencies offer free counselling services and add value by giving advice• Electronic intermediaries primarily serve the business market and are more expensive• Travel agencies can achieve better prices through the right channels and deals• Travel agencies offer a human touch and a human interface with the industry• Travel agencies reduce the insecurity of travel, as they are responsible for all arrangements• Travel agencies can offer better prices by buying in bulk or through consolidators• Internet transactions are not secured and reliable yet

Traditional travel agencies, therefore, will need to re-assess the situation and decide which market segment they would like to concentrate on. Adequate equipment, training and service will be of paramount importance in order to maintain their competitiveness in the long term. Travel agencies will need to transform from booking offices to travel managers and advisers, as well as to add value to the travelling experience. Two strategic directions can therefore be followed: Travel agencies can either offer differentiation value, by designing high quality personalised travel arrangements which consumers will be willing to pay a premium for, or they can offer cost value by delivering less expensive products than competitors, through standardisation, high volume and consolidators. These two strategies will probably dominate the travel industry in the future years.

A MULTI-DIMENSIONAL STRATEGIC FRAMEWORK FOR ITs IN TOURISM

A conceptual synthesis of the usage of ITs in business strategy and in tourism demand and supply in particular yields a strategic ITs framework. This framework attempts to systematise our

understanding of the use of ITs in tourism and to illustrate all strategic implications for the industry. Figure 1 demonstrates the multi-dimensional character of the framework, as well as the technologies it utilises in order to perform its business functions. Table 6 also illustrates several examples of the tourism industry functions undertaken within this framework. The ability of principals and destinations to use this framework effectively will increasingly determine their future competitiveness. The framework incorporates the paradigm shift and the business process re-engineering experienced, which effectively reshape the tourism industry. ITs propel changes in several directions between the three main axes. The combinations originated illustrate how strategic marketing and management can be utilised in order to achieve mutual benefits for all stakeholders in a tourism value-added production chain. An ITs-led integration of industry members is therefore evident and is expected to dominate the industry in the near future.

◆ *Intra-organisational functions*

ITs enhance a number of intra-organisational processes, by supporting a certain level of integration between various functions within organisations; typically the "front" and "back" office. The aim is to increase efficiency and productivity, as well as to enhance the strategic and operational management of the enterprise. Examples from the tourism industry include Property Management Systems or Hotel Information Systems in hotels; integrated Points Of Sales systems; Management and Strategic Information Systems; accounting and payroll systems; food production technology; inventory control for tour operators, transportation companies and other principals. Intranet technology facilitates an internal network by deploying the same technology and presentation tools as the Internet, but restricting access to authorised personnel only. The future growth of Intranets will be rapid. It is estimated that two-thirds of all large companies either have or soon will have an Intranet. Sun⁶³ estimates that world-wide server spend in 1997 on Intranets was around \$6bn, compared with \$3bn on the Internet, while they expect it to reach \$8bn by 1998. For years "ITs managers have been looking for a better way to deliver information within the organisation; now almost overnight the Web has opened the door".

Figure 1: Tourism and information technologies strategic framework

Table 6 Tourism industry communication patterns and functions facilitated by ITs

<p>Intra-organisational communications & functions</p> <ul style="list-style-type: none"> • Within a tourism organisation <ul style="list-style-type: none"> • Management <ul style="list-style-type: none"> strategic planning competition analysis financial planning and control marketing research marketing strategy & implementation pricing decision and tactics middle term planning & feedback management statistics/reports <ul style="list-style-type: none"> operational control management functions • Communication between departments <ul style="list-style-type: none"> networking & information exchange co-ordination of staff operational planning accounting/billing payroll supplies management • Communication and function with branches <ul style="list-style-type: none"> co-ordination of operations availability/prices/information orders from headquarters/administration share of common resource databases <ul style="list-style-type: none"> for customer and operational information 	<p>Inter-organisational communications & functions</p> <ul style="list-style-type: none"> • Tourist product suppliers and intermediaries <ul style="list-style-type: none"> • Pre-travel arrangements <ul style="list-style-type: none"> general information availability/prices inquiries negotiations and bargaining reservations & confirmations ancillary services • Travel related documentation <ul style="list-style-type: none"> lists of groups/visitors receipts/documents vouchers & tickets production • Post travel arrangements <ul style="list-style-type: none"> payments & commissions feedback & suggestions complaint handling
<p>Consumer communication with tourism industry</p> <ul style="list-style-type: none"> • Electronic commerce • Travel advice • Request <ul style="list-style-type: none"> availability/prices/information • Reservation & confirmation • Amendments for a reservation • Deposits and full settlements • Specific requests/enquiries 	<p>Tourism enterprise communication with non-tourism enterprises</p> <ul style="list-style-type: none"> • Other suppliers and ancillary services <ul style="list-style-type: none"> vaccinations travel formalities & visa • Insurance companies • Weather forecasting • Entertainment and communications • Banking/financial services

• Feedback/complaints	• Credit cards • Other business services
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Source: Adapted from (64) Buhalis, 1996, p.133

◆ *Inter-organisational functions*

Networking supports the communication and facilitates interconnectivity between individual organisations. Hence a number of systems and applications emerge to assist communications between tourism enterprises. Electronic Data Interchange enables the transfer of structured data from computer to computer (often hosted by different and remote organisations) using agreed communication standards. This has been extensively utilised between tour operators and handling agencies at destinations to transfer passenger lists, invoices and other paper work. Computer Reservations Systems and Global Distribution Systems are also applications which empower communication between travel agencies and principals such as airlines, hotels and car rental firms. In addition, Destination Management Systems and Destination Integrated Computer Information Reservation Management Systems attempt to integrate the management and marketing of independent tourism enterprises at the destination area and thus facilitate interconnectivity²¹. In particular, small and medium sized tourism enterprises will benefit from ITs-supported networking as they will be able to pool their resources and compete with their larger counterparts.^{20,43} Electronic Mail, the World Wide Web, the File Transfer Protocol are some of the most popular uses of the Internet which empower interconnectivity and communication between organisations and individuals. Moreover, Extranets emerge to provide a secured interface for networked enterprises. Using Internet technology Extranets facilitate a restricted access and interconnectivity to authorised organisations only, and thus, they facilitate the networking of tourism enterprises.

◆ *Consumers*

The development of electronic commerce, defined as “the secure trading of goods, information and services using Internet technologies”,⁶⁵ enables consumers to communicate directly with tourism organisations in order to request information and purchase products, as well as to interact with principals. Consumers empowered by home computing can access information about tourism products and organisations instantly, inexpensively, interactively, almost regardless of the physical location of both service providers and themselves. They can also make and alter reservations and purchase tourism products through electronic shopping and banking systems. The proliferation of CD-ROMs also allows the storage and distribution of memory-consuming multimedia presentations to both individual and institutional customers, improving the promotional function of organisations. Serving consumers electronically also contributes to the cost reduction of enterprises. Sun⁶⁵ estimates that face-to-face banking costs \$1 per transaction; call centres cost \$0.5, whilst Internet banking cost merely \$0.15 per transaction. Similarly tourism organisations can reduce their cost and improve their competitiveness by serving consumers through the Internet.

Tourism organisations can enhance their performance by empowering their strategic marketing and management efforts through undertaking all their functions by advanced ITs. This will enable them to improve their networking and ultimately to improve their “virtuality”.⁶⁶ The following examples demonstrate the benefits generated by advanced integration of all management and marketing efforts for organisations.

➤ *Inter-organisational - Intra-organisational functions*

A number of useful applications are available in the tourism industry, supporting both inter- and intra-organisational functions. These often empower joint marketing efforts as well as horizontal, vertical or diagonal integration. Tourism enterprises can exchange customer information either to facilitate the formulation of total tourism product or to undertake joint marketing campaigns. For example airlines co-operate with hotel chains and car rental companies in issuing frequent flyer miles or providing rewards and privileges to consumers. Airlines also formulate alliances (e.g. Star Alliance) in order to enhance their globalisation and to take advantage of code-sharing agreements. This enables the provision of seamless products and the development of comprehensive marketing

campaigns.

➤ *Intra-organisational - Consumers functions*

Enterprises utilise ITs for addressing individual needs and wants of their consumers. Partnership or relationship marketing attempt to maximise customer loyalty by building bonds between consumer and organisations. Mutual benefits can be achieved in this way, as consumers gain extra benefits, special treatment or discounts while enterprises increase the satisfaction and loyalty of their regular consumers. They also gain a wealth of marketing information about their needs and spending habits, without commissioning expensive marketing research. Direct and database marketing, frequent flyer programmes and guest histories are often utilised in this sense. Experienced consumers may also have access to some electronic facilities, which enable them to achieve a higher flexibility and interactivity with the organisation. Eventually the development of "one-to-one" marketing, where tourism bundles will be packaged for the individual needs of consumers can only be facilitated by ITs.

➤ *Inter-organisational - Consumers function*

Consumers increasingly utilise inter-organisational functions in order to identify and purchase suitable products and services for their needs. As the vast majority of tourism products is offered by small and medium-sized tourism enterprises, consumers often need to have access to information, programmes, schedules, tariffs and availability of a wide range of tourism providers in order to be able to amalgamate their tourism products. Thus, Computer Reservations Systems, Destination Management Systems and the World Wide Web are utilised to access data from different enterprises, either by individual consumers themselves or by travel agencies acting as brokers on their behalf. The trend towards independently arranged trips effectively demonstrates that more consumers will rely on technology for selecting, amalgamating and purchasing their tourism products.

The multi-dimensional strategic framework for ITs in tourism not only does demonstrate the dependence of both demand and supply on ITs, but it also illustrates that networking and interactivity will increasingly dominate the production and consumption functions. Players who fail to participate in the electronic marketplace therefore, will face severe competitive disadvantages in the long term and will probably lose considerable market share.

SYNTHESIS - THE CONTRIBUTION OF ITs TO THE FUTURE TOURISM INDUSTRY

Information technologies influence the strategic management and marketing of contemporary organisations, as a paradigm-shift is experienced, transforming the "best" business practices globally. ITs transform the strategic position of organisations by altering their efficiency, differentiation, operational cost and response time. In particular, ITs have stimulated radical changes in the operation and distribution of the tourism industry. Perhaps the most apparent example in tourism is the re-engineering of the booking process, which gradually becomes rationalised and enables both consumers and the industry to save considerable time in identifying, amalgamating, reserving and purchasing tourism products. Ultimately, prospective tourists will be able to browse through the Internet and identify a rich variety of offers in order to make travel choices suited to their personal requirements. The focus is thus shifting towards individual travel and dynamic packages, targeting mini-segments. The visibility of principals in the marketplace will be a function of the technologies and networks utilised to interact with individual and institutional customers. A closer co-operation is also required throughout the tourism industry, as well as a certain degree of standardisation and interconnectivity. This will improve service and provide a seamless travel experience, whilst it will enable tourism organisations to manage their competitiveness within the new environment imposed by contemporary developments, such as deregulation and globalisation. ITs provide an unprecedented opportunity for horizontal, vertical and diagonal integration, as well as for the development of virtual enterprises.⁶⁶ Training and education of human resources in both innovation management and ITs will enable the industry to develop an understanding of the contemporary developments and a vision for the future.

However, ITs are not a panacea and therefore, a thorough revision of all operational and strategic managerial practices is required in order to achieve the emerging benefits. Should tourism principals neglect the significance of ITs, they will effectively jeopardise their competitiveness and become marginalised from the mainstream of the tourism industry. Business processes re-engineering redesigns the inter- and intra-organisational processes, based on the newly available tools and aims to improve the entire range of functions. In return, re-engineering gives perspective and empowers organisations to achieve competitive advantages and overcome long-term threats. As a result, tourism enterprises need to understand, incorporate and utilise ITs strategically, in order to be able to serve their target markets, improve their efficiency, maximise profitability, enhance services and maintain long term prosperity for both themselves and destinations. The future success of tourism organisations and destinations will be determined by a combination of innovative management and marketing, intellect and vision, as well as strategic use of advanced ITs.

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