College of Information Science and Technology

Drexel E-Repository and Archive (iDEA)
http://idea.library.drexel.edu/

Drexel University Libraries
www.library.drexel.edu

Please direct questions to archives@drexel.edu

The Impact of E-Commerce Technology on the Air Travel Industry

Susan Gasson
Drexel University, USA

EXECUTIVE SUMMARY

This case study examines the impact of online reservation systems and e-commerce on the travel industry. Two questions are examined:

1. How can competitive advantage be obtained from the exploitation of new information technologies—in particular, e-commerce technologies?
2. How has the role of travel agents changed because of the new information technologies being used to achieve competitive advantage in the air travel industry?

Initial discussion concerns the impact of the American Airlines SABRE system, as this has often been touted as giving American Airlines first-mover advantage in the industry. The wider impact of remote-access, computerized reservation systems, or Global Distribution Systems, and e-commerce access to online reservations in the travel industry is analyzed, using Porter's five-force model of industry competitive forces, to understand how the travel industry has shaped and has been shaped by information systems.

The case study concludes with a comparison of the impact of information technologies between the U.S. and European travel industries. It concludes that technology alone does not affect the roles of industry players, but the development of winning technologies exploits structural factors in the environment. Constant evolution of strategic information systems is critical to producing competitive advantage, but opportunism also plays a strong role.

BACKGROUND: THE USE OF INFORMATION TECHNOLOGY IN THE AIR TRAVEL INDUSTRY

In the 1960s, when air travel first became affordable for the individual, travel agents provided an essential service. A travel agent would find a suitable flight in the printed schedules published by individual airlines and telephone the airline-booking agent to make a reservation. At a later time, the airline booking agent would return the call to confirm the

reservation, or to suggest an alternative flight if no seats were available. The airline paid the agent a flat commission fee for the booking. The structure of the air travel industry prior to computerization is shown in Figure 1. The airline industry was regulated, so most routes were served by a single airline. Travel agents mainly served the individual travel market, while corporate travel was booked directly with an airline, to achieve corporate discounts (Clemons & Hann, 1999). The role of the travel agent was to advise clients on travel destinations and to act as an intermediary in the complicated process of arranging travel bookings.

The discussion below presents a case study of how the use of new technologies have affected the air travel industry, analyzing two waves of information technology that have had a major impact on the industry. The first of these is the development of direct reservation systems, such as the American Airlines SABRE system. The second is the development of online sales channels via the Internet.

SETTING THE STAGE: THE DEVELOPMENT OF THE AMERICAN AIRLINES SABRE SYSTEM

American Airlines is a division of AMR Corporation, employing over 128,000 people worldwide and reported net revenue in 2000 of $19.7 billion. One of the largest airlines in the world, AMR Corp. operates American Airlines, TWA and American Eagle. In August 2001, American Airlines announced a competitive alliance with British Airways, allowing them to codeshare (run a flight-schedule jointly, for a certain route) across the entire breadth of their respective global networks and opening up a completely new range of destinations to their customers.

SABRE (Semi-Automated Business Research Environment) was developed by American Airlines in conjunction with IBM. Launched in the early 1960s, SABRE was the first computerized airline reservation system, serving American Airlines reservation counters from coast to coast in the USA and from Canada to Mexico by 1964. SABRE was expensive to develop and, when it came on-line, competitors filed lawsuits claiming that it gave American Airlines (AA) an unfair advantage (mainly because AA flights were listed first by the system). Other airlines rushed to develop their own reservation systems: United Airlines' system created the Apollo system, TWA developed PARS (TWA is now owned by American Airlines), and Delta developed DATAS.

Over 90 percent of the 40,000+ travel agents in the U.S. now connect into various direct reservation systems, but as the learning curve is high for a new system and space is limited,

Figure 1. The Pre-Computerization Air Travel Industry Structure
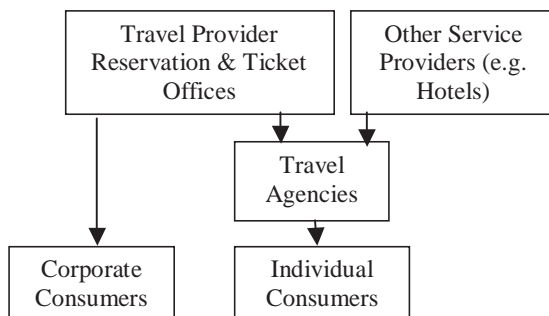
each agent tends to be connected to only one system. Appendix 1 gives the ownership of the major direct reservation systems (now called Global Distribution Systems, or GDS) and the major online travel agencies. Different airlines' reservation systems communicate with one another in real time. An agent can access and book flights on other carriers via its primary system, allowing a travel agent, for example, to book an American Airline flight through Amadeus (the direct reservations system owned by Air France, Iberia and Lufthansa) or to book a Lufthansa flight through SABRE (the American Airlines system). The airline consortium that owns the reservation system receives a fee for each reservation made for a competing airline and the airline providing the agent's reservation system is more likely to receive bookings on its flights. Because of this, each airline tries to maximize the number of travel agents connected directly to its own system and minimizes bookings for its flights via other systems.

The initial competitive advantage provided by the SABRE system has continued to operate to the present day: approximately three out of five airline flight tickets are booked through SABRE (Hopper, 1990; SABRE, 2002). Thus, SABRE gave American Airlines a first-mover competitive advantage that persisted, even after other airlines had developed their own computerized reservation systems. American Airlines made more money from SABRE than they did from flying passengers: revenue from the SABRE reservation system consistently accounted for more than 50 percent of the company's total revenues (Hopper, 1990; SABRE, 2002). In 1992, talking about legislation that would force American to divest itself of SABRE, American Airlines Chairman Robert Crandall said: "If you told me I had to sell either the airline or the system, I'd probably sell the airline." However, in 2000, American Airlines completed the process that turned the Sabre Technology Group into its own company. Sabre is now an S&P 500 company and has a 70 percent stake in Travelocity, the online travel agent (SABRE, 2002).

It could be argued that the competitive advantage conferred by the SABRE system has persisted, but only because of *continual* technical and product innovation:

- Initially (in the 1960s), SABRE served only American Airlines ticket and reservations staff.
- In 1976, travel agents were first offered a direct, remote-access service; by year end the system was installed in 130 locations, serving 86 percent of the top 100 agency accounts (AMR, 2002; SABRE, 2002).
- In 1985, SABRE was the first system that allowed consumers to access airline, hotel and car rental reservations directly, using an IBM PC (the world's first business-oriented personal computer) (AMR, 2002; SABRE, 2002).
- By 1986, the SABRE system was extended to the United Kingdom, paving the way for widespread international expansion. SABRE also installed the airline industry's first automated yield management system in this year: this prices airline seats to yield the maximum revenue for each flight (SABRE, 2002).
- By 1987, SABRE had become the world's largest private real-time data-processing system, serving more than 10,000 travel agents worldwide (AMR, 2002).
- In 1990, SABRE had 40 percent of the air travel booking market. To quote Hopper (1990), "If SABRE doesn't do the job, another system will. SABRE's industry-leading market share of 40 percent means that rival systems account for three out of five airline bookings."

- In 1996, the SABRE Technology Group exploited the increasing popularity of the Internet by launching Travelocity.com, a leading online Business-to-Consumer (B2C) travel site.
- In 2001, SABRE connects more than 59,000 travel agents around the world, providing content from 450 airlines, 53,000 hotels, 54 car rental companies, eight cruise lines, 33 railroads and 228 tour operators (SABRE, 2002), making it the largest Global Distribution System (GDS) for travel services.
- New innovations include wireless connectivity via mobile consumer devices and the use of a hand-held device by American Airlines gate staff, to make seat assignments and print boarding passes, making it simple for airlines to accommodate passengers who have missed connecting flights.

Therefore, SABRE can be seen as an *evolving set* of systems, developed in response to business needs and technical opportunities. Continual evolution itself is not the success factor, it is continual evolution in combination with the opportunistic exploitation of opportunities offered by the industry environment. However, while airlines were developing information systems to exploit new technologies and structural changes in the competitive environment, travel agents were not in a position to do so.

CASE DESCRIPTION: THE IMPACT OF NEW TECHNOLOGIES ON THE AIR TRAVEL INDUSTRY

The Advent of Global Distribution Systems

In the mid-1970s, airlines began to offer travel agents access to direct, computerized reservation systems (see the discussion of the SABRE system, below) and in 1978, the airline industry was deregulated, leading to more price and service competition between airlines on the same route. Providers of computerized reservation systems provided access for travel agents via dialup telephone connections (and eventually permanent or broadband connections). This changed the way in which travel agents completed a transaction and gave them faster and better information about price and availability, compared with the previous, asynchronous process of booking direct with the airline. Travel agents were still essential to the process of booking a flight, as access to the specialized technology required to obtain this knowledge was unavailable to the consumer. Although unavailable for direct consumer use, computerized reservation systems allowed travel agents to provide a more effective service. The travel agent could confirm the booking in real time and seek alternatives if a flight was full, while the customer waited. A real time booking with an airline-booking agent was better than relying on an asynchronous transaction, conducted over several hours or days. The travel market became segmented, as travel agents increasingly targeted corporate customers, providing value-added services like negotiation of bulk fares and arranging complex itineraries (Clemons & Hann, 1999).

Direct reservation system terminals and connections were often offered free to travel agents, as airlines competed for market share with travel agents. A travel agent would normally not use more than one direct reservation system, since they took a great deal of time and training to use. Not all systems initially carried all airlines, but this changed as direct reservation systems became ubiquitous. However, a particular airline's direct reservation

Figure 2. The Air Travel Industry Structure as Affected by GDS (e.g., SABRE)
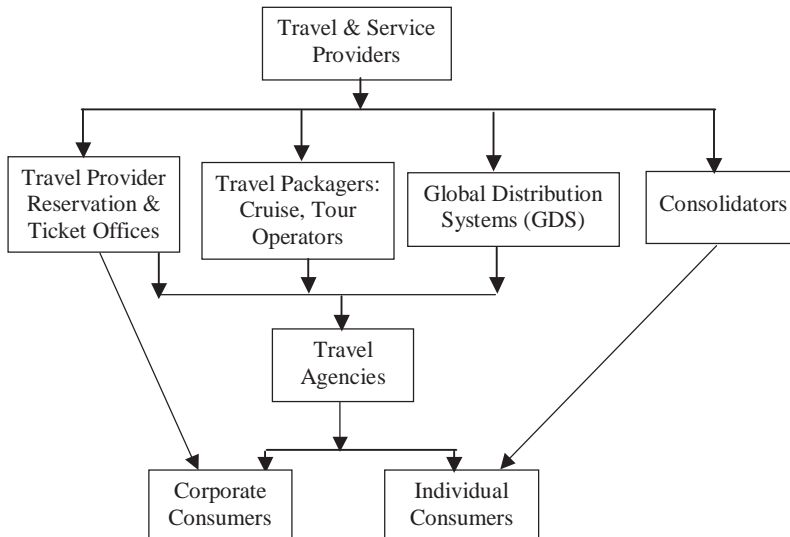
system would usually display that airline's flights first, giving them an advantage. Airlines also had to pay a fee to have their flights included in a competitor's reservation system, which would add to the cost of booking with that airline through a travel agent who used a competitor's reservation system. Over a period, direct reservation systems became more prevalent and encompassed a wider range of products and services, to become Global Distribution Systems (GDS).

GDS enabled travel and service providers (such as hotels and car-hire) the ability to market to customers in remote locations. The role of the travel agent changed as time went on, from knowledgeable travel and destination expert, to an intermediary, who saved the customer time and effort in booking a whole package of travel-related products and services. Another development in the 1980s was the emergence of consolidators: companies who purchased blocks of unsold seats from airlines and so were able to sell direct to the customer at a lower price than the Travel Agent could offer using GDS pricing. This trend fragmented the market, to some extent. Customers became aware of the differential pricing strategies used by airlines and became more price-sensitive as a result.

By the mid-1990s, the market had changed and travel agents became less buoyant. The airlines engaged in price wars and margins were reduced - the airlines sought to cap or to cut commission in an attempt to remain profitable. Although some of the larger agents had replaced dialup connections with broadband or permanently connected links, they were still relying on third-party providers for their information and level of service (the various airline reservation systems). The technology employed (direct access terminals) was becoming outdated, often having cumbersome, text-based interfaces, with difficult-to-negotiate menus and user-interfaces. Most travel agents relied on the same type of local knowledge that they had always used, to differentiate their value to the consumer.

Travel agents that focused on corporate customers could use information systems to provide better fare-search and point-of-sales tools such as ticket printing and this gave them some short-term competitive advantage during the 1990s. However, travel agents still faced

two significant threats to their competitiveness during this period (Clemons & Hann, 1999): rebating (commission-sharing with corporate customers), by competitor travel agents, and commission caps and cuts by the airlines.

Internet Technologies

More recently, travel agents have faced additional threats to their profitability, enabled by the widespread use of the Internet. The first is disintermediation (cutting out the middleman) by the airlines and the computer-reservation system operators. The economics of individual transaction processing have been turned on their head by the ubiquity of internet access: it is now justifiable even for the airlines to serve individual customers, as the cost of processing an electronic transaction is so low, compared to the cost of processing a purchase transaction performed by a human salesperson. Airlines are attracted even more by the profitability of corporate electronic transactions. With sophisticated information systems, it is now possible for airlines to offer complex discounts on bulk purchases across many different routes and classes of travel, for corporate customers. It is also possible for them to use data-mining techniques to target dynamic discounts and value-added service offerings at high-value corporate customers, increasing the business that they attract through using direct sales channels.

The second threat is competition from online travel agents whose overhead costs are much lower and who can achieve much wider economies of scale in processing large numbers of relatively low-margin purchase-transactions. Online travel agents use new technologies to access the direct reservation systems of multiple services in real time, allowing individual and corporate customers to directly coordinate flight, car hire, hotel and other services, as shown in Figure 3. However, there is a cost to using online travel booking services. The search cost can be high: air ticket prices may change from day-to-day or hour-to-hour. The time and effort involved in putting together a complex package of air and land travel services and hotel bookings is often too high for individual customers to contemplate. The online market may well be focused on the most price-sensitive segment of the air travel market: those willing to

Figure 3. Structure of the Air Travel Industry Following E-Commerce Expansion (Modified from Heartland, 2001)
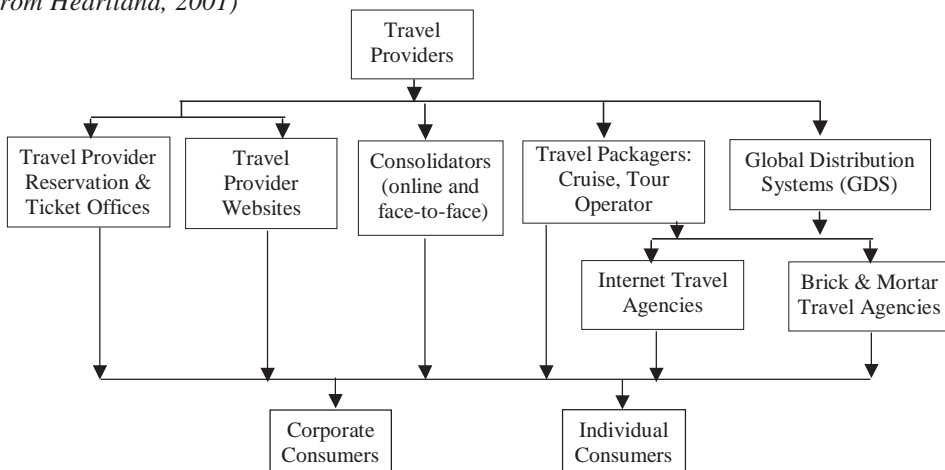
spend a disproportionate amount of time and effort in obtaining a low-cost ticket. Many customers may also visit an online travel agent's site to obtain information and then book elsewhere.

Following e-commerce developments, the travel industry is segmented between:

1. Traditional (brick and mortar) travel agents serving an increasingly smaller pool of individual customers who do not wish to spend the time and effort in searching for lower-priced travel.
2. Traditional travel agents serving the corporate market, whose margins are increasingly eroded by competition on customer rebates and by commission-limiting strategies on the part of airlines and other travel providers.
3. Consolidators whose business is increasingly threatened by the dynamic pricing strategies of online and direct sales channels.
4. Online travel agents who serve the corporate market and price-sensitive individuals.
5. Travel providers selling directly to companies and individuals, all of whom are price-sensitive and have excellent information about alternatives.

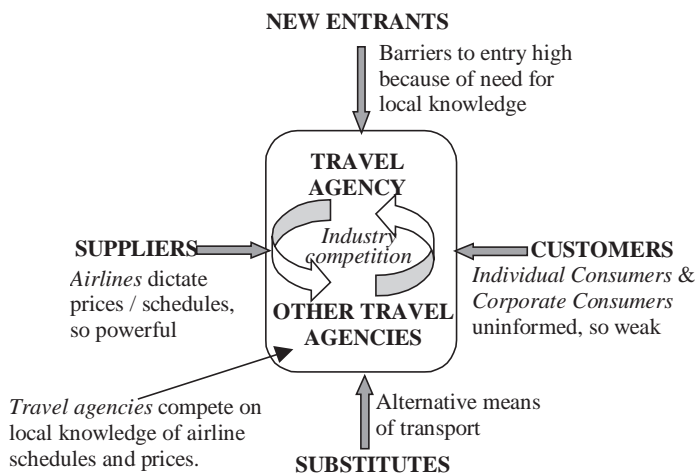# A Competitive Analysis of Changes in The Air Travel Industry

This section uses Porter's five-force model to analyze the impact of new technologies on competition in the air travel industry (Porter & Millar, 1985). This model analyzes the relative competitive pressures exerted on a firm (or type of firm, in this case) by five different industry "forces": direct competitors, new market entrants, substitute products/services, suppliers and customers of the firm. The most significant threats to the firm are then analyzed to determine how information technology can be used to reduce or sidestep the pressure.

Initially, the search time and cost that an individual would have to incur, in telephoning to discover information about alternative flights and airfares far outweighed the inconvenience of visiting a travel agent. The commission fees paid to travel agents were also applied to direct bookings made by individuals, so there was no cost or convenience advantage in not using a travel agent. Travel agents only competed with each other on service rather than cost. The service element mainly consisted of local knowledge about which airlines offered the best schedule from local airports to a particular destination and which airline's price structure was most attractive. The role of specialized system knowledge and local knowledge about airline schedules and pricing structures gave individual agents an advantage over other agents.

The use of direct reservation systems by travel agents raised the barriers to entry for those agents who were not early adopters of these systems. As airlines were competing with each other, to achieve market penetration, direct reservation system terminals and connections were often installed free of charge by the airlines. However, the investment required in training was high and late adopters of the new technology struggled to keep up. Once a critical mass of directly connected travel agents was achieved and flights could be entered in multiple systems, airlines were able to offer dynamic pricing, raising fares during periods of high demand and lowering fares during periods of low demand. Local knowledge on the part of travel agents became less important, as it rapidly became out of date and travel agents could only compete on the level of personal service that they offered. Exploiting their power, in the 1980s, the airlines began to adopt differential pricing, favoring travel agents purchasing more than a certain value of flights from in a month. Many small agents lost business as a result

Figure 4. An Industry Analysis of the Non-Computerized Airline Industry

NEW ENTRANTS

Barriers to entry high because of need for local knowledge

TRAVEL AGENCY

SUPPLIERS

Airlines dictate prices / schedules, so powerful

Industry competition

OTHER TRAVEL AGENCIES

CUSTOMERS

Individual Consumers & Corporate Consumers uninformed, so weak

Travel agencies compete on local knowledge of airline schedules and prices.
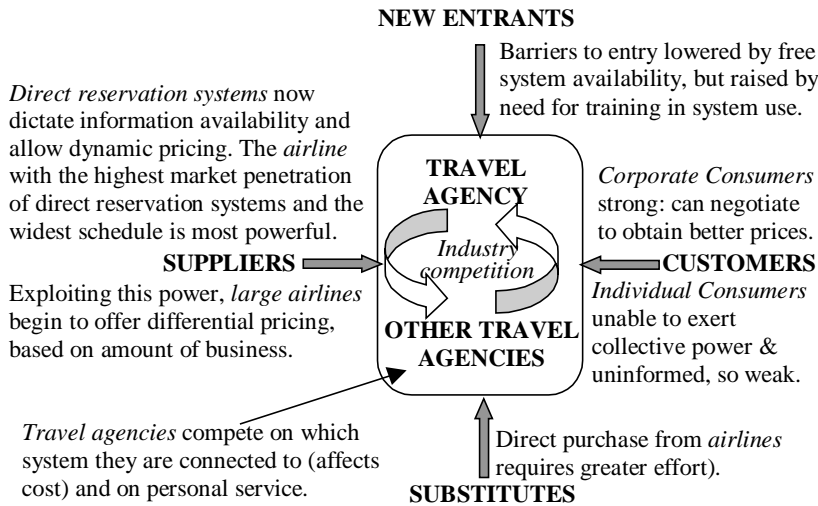
Alternative means of transport

SUBSTITUTES

and had to introduce an additional fee to consumers, making them even more uncompetitive. Consumers lost out, as there was an incentive for larger agents to place as much business as possible with a preferred airline, whether or not this airline offered the best deal for the consumer. However, direct reservations were still not available to consumers, so consumers remained uninformed about choices and locked in to travel agents.

Two recent trends have affected the air travel product-market. An IS application that has radically changed the market for travel agents is the emergence of Global Distribution Systems (GDS), which serve as the main channel for airline ticket distribution in the USA. The evolution of SABRE from a direct reservation system for airline tickets into a GDS serving airlines, hotels, car rental, rail travel and cruise lines is one example. Many other GDSs are in operation today, lowering the costs of entry into the travel agent market immensely, although the subscription and booking fees are now more significant for small companies (Elias, 1999). The advent of GDS has changed the balance of power and the main players in the air travel industry and diversified travel agents into selling multiple products, all of which can be reserved in real time. As shown in Appendix 1, most of the major Global Distribution Systems are owned by consortia of airlines, allowing them to specialize in dynamic pricing over a subset of travel providers.

The second development is an increasing familiarity with Internet technology, on the part of consumers. The second is the replacement of traditional travel agents with online travel agents. As an initial response to use of the Internet by consumers, airlines attempted dis-intermediation (cutting out the middleman). By selling direct to the consumer, airlines were able to offer prices and value-added services unavailable to travel agents. Nevertheless, while dis-intermediation offers cost and value-added benefits to the consumer, it does not add a great deal of convenience. Online travel agents, such as Travelocity (a vertical integration venture by the SABRE Technology Group), Expedia and Orbitz emerged to fill the void. The specialized technology required to make direct bookings is now available to the consumer, often at lower cost (in terms of time and effort) than booking through a traditional travel agent. However, an examination of the major online travel agents and Global Distribution Systems

Figure 5. The Air Travel Industry as Affected by Global Distribution Systems

NEW ENTRANTS

Barriers to entry lowered by free system availability, but raised by need for training in system use.

Direct reservation systems now dictate information availability and allow dynamic pricing. The *airline* with the highest market penetration of direct reservation systems and the widest schedule is most powerful.

TRAVEL AGENCY

Industry competition

OTHER TRAVEL AGENCIES

Corporate Consumers strong: can negotiate to obtain better prices.

SUPPLIERS → ← **CUSTOMERS**

Exploiting this power, *large airlines* begin to offer differential pricing, based on amount of business.

Individual Consumers unable to exert collective power & uninformed, so weak.

Travel agencies compete on which system they are connected to (affects cost) and on personal service.

Direct purchase from *airlines* requires greater effort).

SUBSTITUTES

shows that airlines are once again consolidating their ownership of the major distribution channels, to the probably disadvantage of bricks and mortar travel agents.

A Tale of Two Markets: How Local Environments Affect the Strategic Impact of IS

It is interesting to examine the differences in e-commerce impact between the USA and Europe. The single derivation of most USA Telcos (local telephony providers, which mainly originated from the demerger of the Bell Corp group of companies) meant that they adopted a homogenization of charging structures. USA telephony charging structures earn revenue mainly through the provision of long distance and value-added services. The provision of local telephony services has, until recently, been seen as a base cost of providing access to the network and has been charged accordingly, leading to essential free (or very low cost) local telephone calls. In Europe, on the other hand, a multiplicity of small nations, each with different cultures and funding structures led to a telephony environment which was, until fairly recently, hostile to cross-company traffic. Revenue was therefore earned mainly through local (and local long-distance) calls, rather than long-distance traffic in the USA sense of the word. Peak-hour local calls in the USA average at about seven cents per call (of up to 24 hours). Peak-hour local calls in Europe can cost 50 cents a minute.

It is not surprising then that the uptake of Internet access has been much higher in the USA than in Europe. While most companies in the USA have a website and the majority of these conduct some sort of business via that website (even if not fully automated), most of the smaller companies in Europe are still trying to figure out how to install a website and what to do with it, once they have it. Consumers are relatively unsophisticated, compared to American consumers, with a commensurately lower level of trust in Internet transactions (IBM, 2000). The travel industry in Europe has not been affected by new information technologies to anywhere near the same extent as the USA travel industry. Internet-based

travel sales constituted only $2.2 billion or 1.2 percent of the European market in the year 2000 (Marcussen, 1999, 2001). However, this figure was an increase from 0.45 percent in 1999 and even the European bricks-and-mortar travel market is beginning to be described as "beleaguered." In contrast, USA Internet-based travel bookings are booming. In 1998, 2.08 percent of the travel market (by value) was transacted over the Internet. This figure is predicted to rise to 7.5 percent by 2003 (Elias, 1999). The winnings European travel agents will; be those who respond to changes in the market environment by employing newer technologies early in the game. As with the development of SABRE and the success of the online travel agent Orbitz (see the next section), exploiting market structures opportunistically through IT innovation leads to high rewards.

CURRENT CHALLENGES/PROBLEMS FACING THE ORGANIZATION
Trends in the Travel Industry

Influences on the air travel industry include increased competition through globalization, changing customer lifestyles, and the perception of risk that consumers attach to air travel. Some market trends include increased consumer knowledge about product offerings (driven by more direct marketing and also the ease of comparison that the Internet affords), higher customer expectations of convenience, added value through the customization of offerings, increased consumer affluence and the more intense exploitation of leisure time to "get away." All of these factors tend to increase consumer power, allowing consumers to exert more leverage on the industry in terms of pricing and choice. However, they also increase the total market size: sales in the first quarter of 2002 exceeded those in the first quarter of 2001 significantly (Jupiter, 2001). In 2000, leisure travelers (55 percent) outnumbered business travelers (37 percent)—the other 8 percent of travelers were those who combined business and pleasure (Heartland, 2001).

The bundling of a variety of products and services into an attractive package is made possible by the exploitation of preferential pricing to a value-added provider (normally a travel agent). The ability to access "value added" services has recently been offered to travel agents through a variety of real-time, online reservation systems. Travel agents who exploit online reservation systems do not have to sell their packages to consumers online, although they may have to strive to compete with the convenience of those who do. Bundling gives travel agents more power, as they can present the consumer with more attractively priced product bundles than if the consumer buys these services separately and may add value with items that the consumer would not have thought to add, such as a bottle of iced champagne waiting in the room!

Air travel bookings provide US travel agents with the majority of their revenue (Heartland, 2001). On average, 54 percent of travel agents' revenues accrue from air travel bookings. Cruises account for 19 percent of revenue (margins are higher on sale of cruises, but this also may be threatened as cruise operators increasingly employ direct sales channels). Hotel bookings provide 11 percent of revenue, car rentals 8 percent and sale of rail tickets and other services provide 8 percent. Hence, direct and online sales of air tickets represent a huge threat to the survival of most travel agents. Coupled with the year-on-year cuts in airline commission payments to travel agents, as a percentage of sales value, and a similar trend in other commissions, such as hotel bookings (Heartland, 2001), travel agents

may well struggle to survive. Unless they can find a way to differentiate their products and services, the smaller travel agents will not survive for long.

Technology trends include the ever-increasing sophistication of data mining and customer relationship management software (providing detail on both patterns of purchases and hypotheses for the motivation behind purchases), increasingly seamless connectivity between systems and the ubiquitous availability of trustworthy, secure online purchasing. Such technological advances mostly benefit the airlines. Because of the amount of information that they can collect about their customers and the impact of various pricing and marketing strategies—all in real time and collated by geographical region and some demographics—airlines can leverage direct sales channels to a high degree. They can then exploit the brand recognition of their direct channel online sites and can offer differential pricing to preferred customers. Airline direct channel sales could well offer a challenge to online travel agents, in the future, particularly when catering to frequent flier consumers. This may cause tension between the preference and price structures allocated to indirect sales channels (Travel Agents) and direct sales channels (their own online reservation systems), as there is obviously more profit in disintermediation. There has been a recent trend of airline mergers, which effectively combine multiple travel routes and result in less competition on any particular route. Airlines have significantly increased their direct sales, and in some cases doubling these sales between 2000 and 2001 (Heartland, 2001). Effective customer relationship management systems may now permit airlines to lock customers into using their airlines, through frequent flier programs, an element that has been missing in the industry until now, since most frequent fliers belong to several airline schemes.

The Challenge for E-Commerce Transactions

Individual e-commerce customers are demanding and often unforgiving. They expect page downloads in less than eight seconds and expect to complete the shopping process in less than ten minutes from when they open the retailer's homepage. They demand convenience, speed and a seamless buying experience. Nearly a quarter of online shoppers stop using the site after a failed transaction. In fact, failure has a serious impact - ten percent never shop online again (BCG, 2000).

The challenge for airlines, in common with other businesses, will be to offer a consistent customer experience across channels. Customers shopping on an airline website expect the same level of service that they would get through a travel agent. Customers buying airline tickets via a third-party website, such as Travelocity, expect the same sort of treatment, including recognition of frequent flier privileges. In an increasingly connected world, online customers expect a consistent experience via Palm devices and mobile phones. There may well be a role in the future for e-commerce wireless portals, connecting consumers to online travel agents, direct channel sales and perhaps even allowing the consumer to customize their own, value-added bundle of travel products. If travel agents are proactive in their use of online technologies, they may survive and even remain competitive. However, the corporate market is more susceptible to disintermediation by the airlines, which see the development of business-to-business markets as the most significant of their long-term strategies (IBM, 2000). It is ironic that the industry that originally limited direct sales to corporate customers because the cost-overhead of dealing with individual customers could more profitably be mediated by travel agents is now returning to that position once again.

A consequence of e-commerce purchasing is the commoditization of products and services sold via e-commerce direct distribution channels (Kalakota & Whinston, 1996). With

increasing information about product and service features and pricing, consumers tend to treat direct channel products and services as interchangeable. This is particularly true for online services, such as travel bookings, where the service provider is acting as an intermediary for third-party products and services. Consumers will increasingly see both online and traditional service-providers as interchangeable, as their experience of comparing online prices increases. The theory is that consumers select their service-provider based on price. However, Gallaugher (199) argues that both product and service brands are significant in reducing the impact of commoditization. Users have difficulty locating product and service information on the Internet and so rely on known brands to reduce the effort in locating a trustworthy purchase. This presents a way for travel agents to reduce the threat from direct sales by airlines. However, the challenge for travel agents is to differentiate their offering. Some ways of achieving this are by building a strong agency brand, by identifying a less price-sensitive niche target market segment (e.g. affluent senior citizens) whose needs they anticipate better than competitors, or by reducing search time and effort. Analysts at Jupiter (2001) found that poor customer service in the travel industry disproportionately affected consumer perceptions of a travel agency or airline brand. Seventy-nine percent of consumers said they would be less likely to buy airline tickets online a second time from a company with which they had a poor experience and 54 percent said that the experience would adversely affect their future off-line relationship with that company. Most consumers appear to prioritize communication about delays and cancellations - this is a differentiated service opportunity for the right travel agent.

Increasingly, we see online travel agents attempting to differentiate their service from that of their competitors. Expedia promotes their service on the basis of a powerful information system search capability that allows users to find more combinations on pricing and schedules than their competitors; users can sort flights by price, flight duration and departure times. Travelocity has responded by revamping its information systems to provide innovative search facilities - for example, a user can select a flight based on destination and fare, and then view a three-month calendar of the flight's availability. This echoes the lesson learned from SABRE: branding is not enough to provide competitive advantage in a high-rivalry, turbulent product-market characterized by rapid technological change. However, most of the online travel agents are owned by, or have very close ties to, a major Global Distribution System company (GDS are global, computer reservation systems). The exception to the dominance of a few major GDS companies is provided by Orbitz (see Appendix 1 for ownership), who have created their own GDS software. GDS fees accounted for 4.72 percent of an air ticket's cost, in 2000 (Kasper, 2000). Orbitz created their own software in response to their perception that there are flaws in the major GDS software packages that eliminate "the overwhelming majority of itineraries from consideration before they are checked for prices" (Kasper, 2000). Coupled with the high concentration of the market between the major players (see Appendix 1 for the year 2000 online travel market share figures), the major GDS companies dominate the market and bias the competitive offerings (Kasper, 2000). Orbitz strategy is to offer access to all airfares - including the very small percentage of fares offered only by airlines directly through their own websites (as airlines pay no GDS fees on these fares, direct-booking fares may be significantly lower). In return for providing Orbitz with all fares that they offer, the airline receives a significant discount on the booking fees that a carrier pays for bookings through an online travel agent such as Travelocity or Expedia. Complaints from competitors, accusing them of giving preference to major airlines, resulted in a DOT audit of

Orbitz that concluded that they had spurred competition in the market. However, this innovative technology may not change the face of competition and lower prices for consumers in the long term. Orbitz introduced a booking fee for customers in December 2001. It is debatable whether this is because of low online sales margins (a consequence of highly price-sensitive customers) or an experiment on the part of the major airlines that own Orbitz (see Appendix 1), to test the market's willingness to pay for online bookings.

It can be seen, then, that an effective information system platform is the basis for success in this market, whether the service provider is a brick and mortar travel agent, an online agent or a direct-channel airline provider. Successful companies need to *evolve* a set of systems, developed in response to business needs and technical opportunities. Continual evolution alone is not the success factor, but continual evolution in combination with the opportunistic exploitation of opportunities offered by the industry environment. As we saw in the comparison of the European market with that of the USA, differences in the structure of the local market environment require different technical responses.

The Future of the Air Travel Industry

All is not doom and gloom: brick and mortar travel agents are beginning to exploit the new technologies, to add value and information services to their basic service package. To this factor is attributed the rise of travel agent revenues in the USA, which rose 25 percent in 1998 (Kellendar, 1999). A report by Heartland (2001) argues that smaller travel agents are becoming increasingly uncompetitive, given squeezed margins, reducing commissions and cherry picking of higher-value custom by online travel agents and by airlines. The question is, to whom is the increased business going?

In the individual consumer market, are sales going to the traditional travel agent, hampered by older technology in booking flights and tinkering at the margins? Alternatively, are they going to the new, online travel agents, establishing radical brand images and innovative ways of obtaining a low-cost, high-quality package?

In the corporate travel market, are sales going to the traditional travel agent, who reduce the search time and effort of corporate travel buyers, but whose profit margins are squeezed at both ends: by corporate rebate negotiations and by airline commission reductions? Are they going to the online travel agents, whose economies of scale can support radical discount strategies? On the other hand, are they going to the airlines, whose direct sales channels can offer dynamic bulk pricing and who have the ability to squeeze out indirect channel service providers by limiting availability and by employing differential pricing? The major airlines see corporate direct sales as their most strategic market opportunity, long-term. Given the airlines' ownership of the major online travel agencies and their ability to set commission levels for their competitors, this strategy may well be highly successful.

ENDNOTES

[1]   Year 2000 *online travel sales market* share figures, obtained from Kasper (2000).
[2]   Year 2000 *GDS bookings market* share figures, derived from Sabre investor relations section on corporate website.
[3]   American turned Sabre into an independent company in March 2000.
[4]   The market share figure given is that of CheapTickets.com, another brand used by the same company.

[5]   Terra Lycos is the world's third largest Internet portal (according to the Amadeus corporate website).

[6]   Worldspan is a key strategic business partner of Expedia.com, but not owner.

[7]   USA Networks Inc., a Microsoft business partner, acquired Expedia from Microsoft in July 2001.

[8]   Source: Priceline.com corporate website

[9]   Rosenbluth is a large bricks-and-mortar travel agent.

REFERENCES

AMR. (2002). History section from corporate website, Retrieved from the World Wide Web: http://www.amrcorp.com.

BCG. (2000). Winning the Online Consumer. Consultancy Report by *Boston Consulting Group*, March .

Clemons, E. K. & Hann, I-H. (1999). Rosenbluth international: Strategic transformation of a successful enterprise. *Journal of Management Information Systems, 16* (2) 9-28.

Elias, E. (1999). Internet commerce: Transforming the travel industry. *SRI Consulting,* Business Report.

Gallaugher, J. M. (1999). Internet commerce strategies: Challenging the new conventional wisdom. *Communications of the ACM*, *42*(7) 27-29.

Heartland. (2001). E-commerce's impact on the air travel industry. *Heartland Information Research Inc.*, Report SBAHQ-00-M-0797, prepared for US Govt. Small Business Administration, Washington DC.

Hopper, M.D. (1990). Rattling SABRE—New ways to compete on information. *Harvard Business Review*, *90*(3), May-June , 118-125.

IBM. (2000). eBusiness: Is Europe Ready? Consultancy Report commissioned jointly with *The Economist* journal.

Jupiter. (2001). Relationship management in the travel industry: Improving customer retention cost-effectively through proactive alerts. *Jupiter Media Metrix Consultancy Report*, Dec.

Kalakota, R. & Whinston, A. (1996). *Frontiers of Electronic Commerce.* Reading, MA: Addison Wesley.

Kasper, D. (2000). The Competitive Significance of Orbitz. *White Paper by LECG Consulting*, available at Orbitz corporate website.

Kellendar, P. (1999). E-Travel: The future takes flight. *Computing Japan*, *6*(1).

Marcussen, C. H. (1999). *Internet distribution of European travel and tourism services.* Report for Research Centre of Bornholm, Denmark.

Marcussen, C. H. (2001). *Quantifying trends in European Internet distribution.* Report for Research Centre of Bornholm, Denmark (March/May 2000; updated March 2001)

Porter, M.E. & Millar, V.E. (1985). How information gives you competitive advantage. *Harvard Business Review,* July-August.

SABRE. (2002). History section from corporate website. Retrieved from the World Wide Web on http://www.sabre.com

BIOGRAPHICAL SKETCH

Susan Gasson is an assistant professor in the College of Information Science and Technology at Drexel University, USA. Following a career in data communications systems design and consultancy, she earned an MBA and a PhD from Warwick Business School in the UK. Dr. Gasson's research interests include agile IS support for competitive organizations and collaboration in cross-functional IS requirements analysis and design.

APPENDIX 1
Ownership of Online Travel Agents and Major GDS

Online Agency (Market Share[i])	Owning/Partner GDS (Market Share[ii])	Part-Owners	Notes
Travelocity.com (39%)	Sabre (50%)	American (divested)[iii]	Sabre manages **US Airways** reservations systems. **Yahoo.com** is also a strategic partner.
Trip.com (4%[iv])	Galileo (24%)	United, Cendant	Also operates **cheaptickets.com**
OneTravel.com	Amadeus (8%)	Air France, Iberia, Lufthansa	Acquired **Advantage Travel**, a large Texas travel agency and have a strategic partnership with **Terra Lycos**[v].
Orbitz.com (Kasper (2000) predicts 2% share by 2004)		American, Continental, Delta, United, Northwest	Orbitz "reengineer older technologies", using their own software, to avoid Computer Reservation System fees
Expedia.com (24%)	Worldspan[vi]	USA Networks Inc.[vii]	Microsoft market Expedia through their MSN network. Ticketmaster is a strategic partner.
	Worldspan (18%)	Northwest, Delta, TWA	TWA merged with American Airlines in 2001
Priceline.com (10%)	Strategic alliance with OneTravel.com announced in 2001		Almost 20% of business comes from online partner sites such as AOL and Travelocity.com[viii]
Biztravel.com		Rosenbluth[ix]	Discontinued operations, Sept. 2001

Sources of Information: Heartland (2001), airlines' and their business partners' corporate websites.