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# The digitalisation of market relationships in the airline business: the impact and prospects of e-business

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## Abstract

In today's hypercompetitive environment, new sources of product and process innovation are continually being sought to reinforce companies' competitive advantages. In the recent past, the digital revolution inspired new managerial applications to strengthen positions within market arenas. In the case of airlines, early web applications were in the form of asynchronous sites, where customers could get little more than the same information on timetables and fares provided by travel agents albeit in new formats. Later, carriers started selling tickets on the web to make use of the cheaper distribution channel than the standard computer reservation systems (CRSs). Today, Internet potentially permits carriers to get significant economic and competitive benefits beyond those simply coming from e-commerce. A wider e-business perspective may assure a one-to-one relationship with target customers, with a consequential fine-tuning of a firm's system offer. At the same time, carriers may exploit the significant cost savings from their procurement processes. © 2002 Elsevier Science Ltd. All rights reserved.

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## 1. Introduction

As a general market trend, the substantial growth in the output in the recent years has moved firms beyond traditional focus on efficiency and, in particular, to look for potential market segmentation and product differentiation. What is now of importance for many firms is the adoption of 'customer responsive' through the reengineering of the value proposition of the desires and expectations declared by customers. The challenge for firms is, therefore, linked to a focus on applications that allow further increases in the customer-supplier interface so that it is possible to generate new forms of competitive advantage at the lowest possible marginal costs.

In this sense, the so-called Digital Revolution (Shapiro and Varian, 2000), namely the diffusion of Internet on a pervasive scale, may create new strategic patterns of action for proactive firms (Valdani, 1995, 1997). These goals may, on the one hand, be reached through the design and development of 'really new' and innovative value propositions. In this case, firms offer their products and services through the digital channel

alone and give life to virtual companies such as Amazon.com and Ebay.com. On the other hand, 'occasions for change' may be implemented on an incremental basis, and by working on an existent product and service portfolio. This can embody the case of existing firms that initially open a web site to establish complementary communication and distribution channels but eventually offer new ancillary services. This alternative may be suitable for those industries generally included in what is often considered the old economy. Air transport falls is considered to fall into this category. Table 1 shows evidence of the weight of online retail sales in the main sectors in the US. Its importance in travel is clearly seen.

In simplified terms, the appeal of doing business on the Internet comes from the possibility of contacting consumers and producers in a highly flexible way. The web interface multiplies the range of choices for buyers, while giving sellers access to new demand clusters at normally much lower transaction and operating costs. This is especially so in the context of transactions involving less tangible items and services (Valdani, 2000).

The impact of Internet on a firm's value management is just confined within a narrow e-commerce approach. e-Commerce is increasingly only a first step within a

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Table 1  
The weight of online sales by sector in the American economy<sup>a</sup>

By category	By sales (\$)	By growth rate
Software PC	Hardware PC	Travel
Hardware PC	Travel	Music
Books	Books	Clothing
Travel	Accessories	Cars
Music	Gifts	Mass consumption electronics

<sup>a</sup>Source: *Airline Business*, July 1999.

wider goal of digitalisation of the firm's entire front-line and back-office applications. In this sense, the passage from e-commerce to an enriched e-business perspective suggests a change not only in the way outputs are sold (e-commerce), but also in a redefinition of offer types and procurement practices together with a one-to-one consolidation of the links with the target customers or suppliers. Fig. 1 shows those that are often seen as the four main drivers of the impact of e-business within a firm's value stream.

As seen in Table 1, the implementation of new digital technologies has been most intense in the macro-environments of tourism and travel. The impact has been particularly significant in the tourism pipeline (Jarach, 2001) and for air travel. Air carriers, for example, have enjoyed exponential growths in online ticket sales for the past two years and there are forecasts suggesting that this new distribution channel would amount to \$12 billion dollar for airlines by 2002.<sup>1</sup>

## 2. Applying Internet to airlines' processes

The first examples of digital usage by airlines in the early 1990s saw the implementation of essentially asynchronous applications, with low degrees of interactivity between the sender and the receiver of messages. These early systems were used mainly by carriers to obtain the dominance on a new medium platform. Carriers' web sites were simply offering travellers, details about the range of the carrier's offer system: on-board services, destinations offered, flight frequencies, and timetables. They were duplicating through a different medium of information already provided by travel agents.

More recently, airlines' web applications have been aimed at developing a new distribution channel for bookings and sales. The application of e-commerce solutions have had a considerable positive impact on containing carriers' costs by smoothing their dependence on computer reservation system (CRS) interfaces and on travel agents' commercial practices. The data on the US market show that web sales are four times

cheaper than distribution<sup>2</sup> through travel agencies and CRSs. Table 2 illustrates the importance of the single distribution channels for airline services.

Today, however, it appears that the digital revolution may offer carriers much greater opportunities than just widespread use in online sales. For instance, the impact on the productive side of services and opportunity to optimise relationships with suppliers is potentially considerable. Again, a chance of raising the standards of service that are being offered while reducing the costs of service delivery is available through the Internet. Fig. 2 shows the wider potential impacts of e-business on airlines.

## 3. Four areas of impact for the e-business-oriented airline

### 3.1. Redefining the relationship with the customer

A pervasive use of Internet solutions may result in significant improvements in the processes dealing with acquisition, management, and maintenance of loyalty levels of customers. The basic online connection can be seen as a first step within a wider range of Customer Relationship Management (CRM) applications. CRM is intended to develop a continuous interface between the firm and its potential clientele before, during, and after a purchase and during the consumption experience. The approach is to develop highly personalised solutions. This concept differs from what was adopted by airlines before the digital revolution regarding their loyalty schemes in the form of frequent flyer programmes (FFPs) (Valdani and Jarach, 1997).

Evidence from FFP's implementation<sup>3</sup> has shown that these are only the second-best devices for an effective management of the entire loyalty cycle. In fact, the construction of a database of customers such as those enrolled in an FFP only allows for modest interaction between the airline and the consumer. This interaction has in the past been typically implemented by the use of newsletters or other traditional direct mail-based methods. Moreover, the enrollment in an FFP does not automatically imply that the subscriber is genuinely loyal to the airline, especially since virtually all major airlines use them. On the contrary, the 'hard' aspects of service, such as destinations served, flight frequencies and timetables, tend to remain dominant in most frequent flyers' purchase choice. FFPs are also often not very efficient from a cost perspective given the potentially high opportunity-costs that come from the

<sup>2</sup>Delta Airlines estimate published by *Airline Business* and *Flight International*.

<sup>3</sup>The experiments in loyalty programmes were developed in the airline business as American Airlines introduced the first frequent flyer programme in 1981. This was called Advantage and it was later copied by other airlines.

<sup>1</sup>From *Airline Business*.

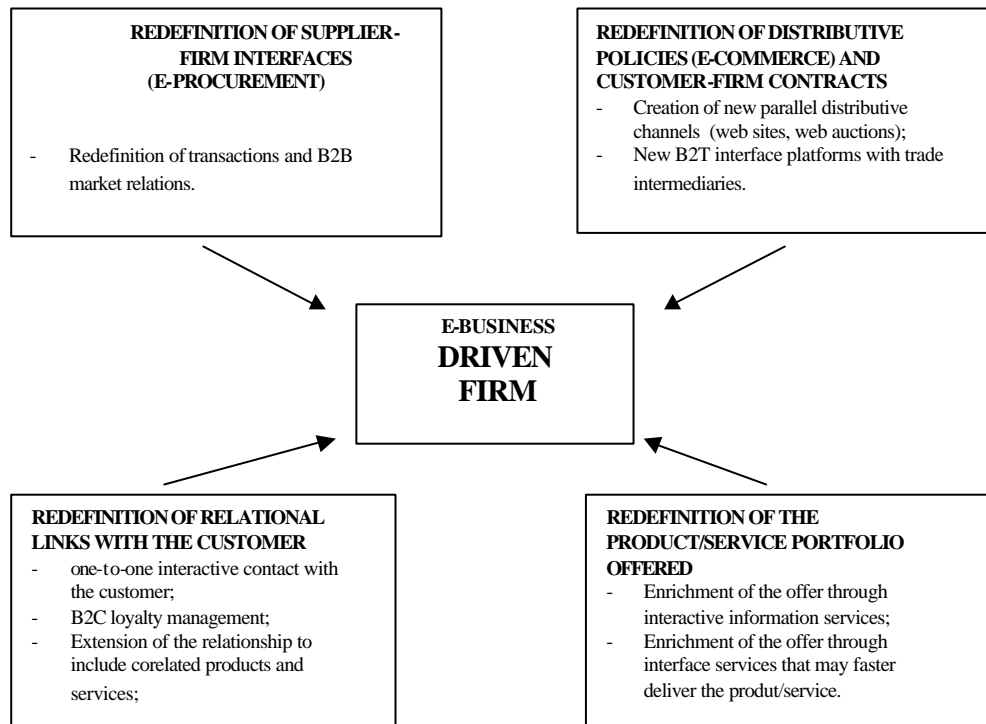


Fig. 1. The drivers of change for e-business-oriented firms.

Table 2  
Percentage distribution of airline service distribution methods<sup>a</sup>

1998		2003	
<i>Leisure market (60% of bookings)</i>			
Travel agencies	75	Travel agencies	58
Traditional direct sales <sup>b</sup>	22	Traditional direct sales	18
e-Agencies <sup>c</sup>	2	e-Agencies	15
e-Direct	1	e-Direct	9
<i>Business market (40% of bookings)</i>			
Travel agencies	80	Travel agencies	76
Traditional direct sales	17	Traditional direct sales	12
e-Agencies	2	e-Agencies	5
e-Direct	1	e-Direct	7

<sup>a</sup> Source: Andersen Consulting, 2000 with reference to the American market.

<sup>b</sup> This refers to sales under the direct management of the airline company, through its call centres or sales points on the main shopping centres served by the network.

<sup>c</sup> This refers to the tourist service 'infomediaries' that were discussed above.

grant to the passenger of a free service that would otherwise be tradable on the market (Valdani and Jarach, 1997).

On-line producer–customer connections can allow carriers to provide unique value offers not only for 'clustering' of demand, but also for single customers. CRM interfaces may, for instance, apply for personalised offers to recognise highly profitable customers who use a target set of strategic routes. In this context, it seems possible to develop more significant discount sales in, for example, the case of a North Atlantic frequent

flyer, where the airline considers these relationships sufficiently strategic to emphasise them for competitive reasons. This one-to-one marketing strategy can have a significant impact on the airline's ability to increase its long-term profitability.

Strengthening consumer trust through online ties may also produce a significant market opportunity for airlines to sell their ancillary products and services. Air carriers may, for example, develop new forms of profit centres by tying their web sites to other aspects of the 'travel experience', such as hotel chains, car rentals,

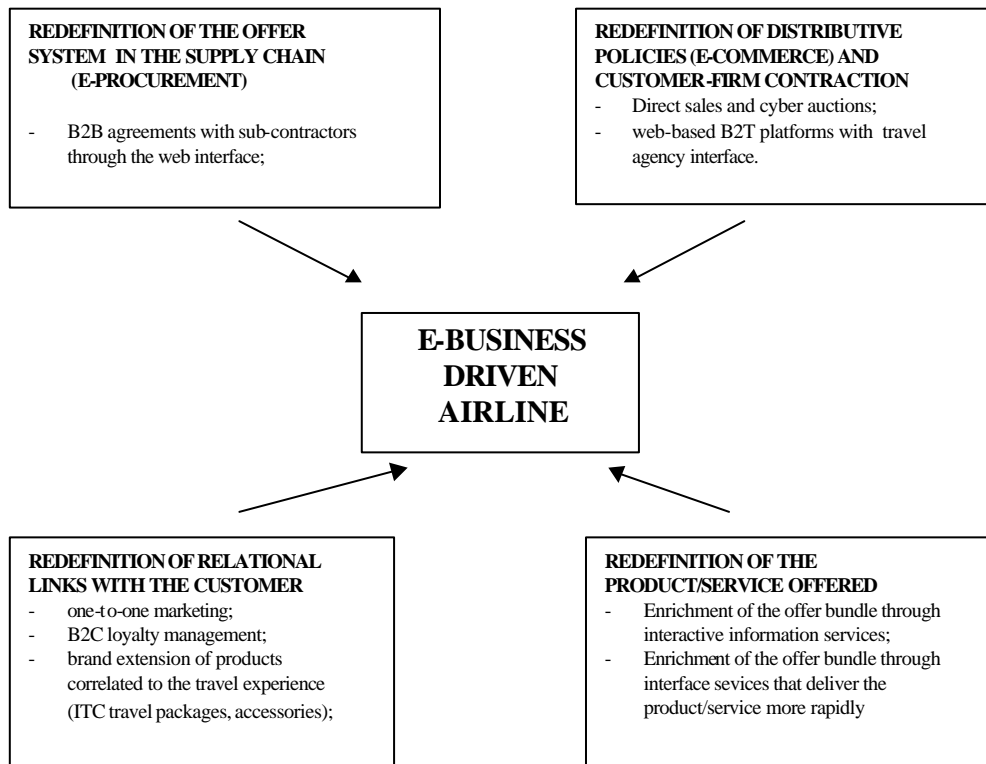


Fig. 2. The adoption of e-business in airline management.

credit card companies, or merchandised items. Some carriers have already begun to implement this strategy at a more basic level through communications in their frequent flyer newsletters. The use of Internet applications could increase the fine-tuning of their offers and stimulate consumer interest while improving the airlines' rates of return on sales. A carrier could, for instance, increase commissions on partners' transactions developed through the carrier's web sites. Airline business would thus move from an almost exclusive focus on transport service to become a multi-point and multi-service virtual providers.

There are already strong contenders for this enlarged business. Sabre Travelocity, Microsoft Expedia and Preview Travel have all developed popular sites that offer a bundle of services tied to the travel experience (e.g., flight, land transportation, and residence). Travelocity and Expedia both have annual bookings equivalent to >\$250 million in sales, while Preview obtained >\$200 million by being connected to 6 million registered subscribers. Despite this competition, recent market growth suggests there are still many opportunities for airlines that decide to look to enlargement and diversification of their positioning. With high brand value recognition and the ability to attract traffic to their sites, there would still seem to be space for airlines to consider the creation and opportunities for entering the 'infomediary' travel space. (Mandelli, 1998).

### 3.2. Redefining the product/service profile

Traditionally, it was argued that airline customers simply bought a ticket and not, as happens in reality, a bundle of services within a complex consumption experience (Pine and Gilmore, 2000). This narrow view seems to be linked with an old-fashioned sales orientation towards the market. This scenario tends to change dramatically when dealing with the development of online web-interface systems that internalise a customer-responsive approach. If airlines can get significant cost economies from direct sales through their web site, it is also true that the virtual purchase option will be chosen by the consumer only when it is of real value for them compared with other purchase methods. In economic terms, it allows the airlines to convert consumer surplus into a producer surplus.

In this sense, the web platform gives life to new opportunities for the development of airlines' value propositions. The exploitation of technological features may actually be helpful not only in providing ancillary information for customers planning their journeys, but also to additional core services that may be perceived as highly important.

These objectives seem attainable first through e-ticketing, namely the issue of a booking code at the conclusion of an online transaction that replaces the traditional airline ticket. e-Ticketing seems to be a win-win solution for the airline business (Brandenburger and

Nalebuff, 1996). It offers airlines the chance to make considerable savings in both trade terms as well as in invoicing and internal accountancy procedures. Moreover, it helps to fight the downward profit spiral that cyclically afflicts the industry. It works because it is also very attractive for customers, who benefit from a service that can offer reduced booking times and shorten check-in procedures.

### 3.3. Redefining the distribution policies and firm–customer contraction

Until recently, most airlines focused their Internet activities on the development of solutions that were easy to access and made airline ticket purchases cheap. However, new forms of exploitation of e-commerce have been in the form of the so-called ‘cyber auctions’. These devices allow consumers to formulate their own price offers for a given route operated by the airline, but at the same time cyber auctions are flexible tools for airlines. They give carriers the chance to accept or reject the consumer’s offer according to the place of bookings.

Some airline operators are still convinced that cyber auctions are only going to be a short-term phenomenon. They believe that they are bound to disappear relatively quickly because a travel market based on the auction system is too distant to become a reality. Others emphasise the inevitability of success and diffusion of the auction system. However, they also point out that a pervasive implementation of cyber auctions might reduce profits significantly because the connectivity of airlines’ services to the market will result in a gravitation to very low prices.

A fairly limited application of cyber auctions has, however, been shown to be a good marketing tool. Cyber auctions are able to create interest among passengers, given the new method of ticket purchase, and in certain cases, they can make a significant increase in brand perception on the market. The leisure market seems in this sense particularly suitable for cyber auctions because of its relatively high price elasticity and low sensitivity to tickets’ flexibility issues.

The emphasis that is sometimes placed on the growing role of direct intermediation on the sales of airline services should not lead, however, to the conclusion that the new digital platform will completely revolutionise the distribution system of the airline business, at least in the short term.

There is also a parallel introduction by major airlines of web solutions with business-to-trade (B2B) aims intended to develop a direct and simplified interface between the airlines and travel agencies, with specific reference to large international groups that increasingly control business travel. KLM and Alitalia, for example, were in an advanced phase of experimentation of a system of this kind, before their partnership broke up.

This technique goes towards strengthening the market strategy of airlines that view Internet as providing the chance to generate new forms of business, which are neither necessarily radically new channels nor intermediations that would nullify existing channel relationships in the supply chain.

### 3.4. The impact on processes within the supply chain: redefining the e-procurement system

The digital platform may eventually bring about changes in the transaction dynamics between trade partners. It can provide greater integration among networks and increase flexibility and response to market needs. More specifically, a web interface can generate two types of advantages. There is a greater effectiveness, thanks to the chance of reducing supplier response times to the needs and, thus, simplifying the planning stage for the airline offer. Secondly, greater efficiency, such as B2B online negotiations, can allow other actors that are not a part of the usual supplier network to participate and tender. This can result in economies of variety, and considerable savings in procurement costs.

Sophisticated e-procurement applications essentially change the rules of the game. They generate competitive improvements for firms because of the sharing of information and the planning of joint activities that are possible with other actors at the top end of the supply chain. In other market environments, firms such as Cisco have already achieved significant savings thanks to the creative use of the Internet in B2B supplier relationships, with operating costs falling by 6% in 1997. Similarly, this reengineering was responsible for 11% savings for FedEx.

In the airline business, however, only 30% of airlines have created B2B applications with suppliers, most of which are limited to the traditional areas of engineering—i.e., links with spare parts manufacturers or maintenance firms. However, it has been estimated that, by 2005, the airline sector could have earnings of \$20 billion from B2B applications through an extensive involvement of actors such as catering and handling operators in on-line procurement practices. In percentage terms, this would be a saving of 5–20% of operating costs for each firm and with an average figure close to 13%.

## 4. Concluding thoughts

The possible implementation of new web-based solutions to carriers’ value generating activities has implications for air transport industry’s management. Only a short time ago, firms operating on the web were regarded as pioneers. Nowadays, the spread of the web even in relatively backward markets means that virtually

no actor can wait to redesign a unique entrepreneurial formula around a web platform. This includes carriers that traditionally have been active only in niche markets, or markets still partly protected by restrictive legislation, such as airlines. The immediate access to the global market provided by Internet rapidly destroys product (or position)-based competitive advantage but it does give innovators a chance to increase their market power.

To take advantage, there is, thus, a need to adopt a new market philosophy. This cannot be limited to the simple creation of new distributive channels designed for the narrower aim of cost-saving. e-Business implies a substantial redefinition of the 'old' business models, with the purpose of introducing something completely new to the consumer experience. This means satisfying the needs of consumers, as well as attracting, fascinating and tying the consumer to the airline in a creative and entertaining way. It means using technology not just to develop the product, but also to innovate and improve the whole consumption experience that surrounds the choice of a product, from selection and order to post-sale management. The availability of new technological solutions, and a willingness to restructure systems to achieve new competitive advantages helps in explaining why 87%<sup>4</sup> of airlines have moved towards Internet systems in pools and consortiums.

Internet is an extraordinary infrastructure that is in continuous development. In the 1980s, the answer of incumbent airlines to low-cost entrants was the design of new forms of offer (such as the FFP) and services aimed at retaining high-spending customers. Megacarriers

chose to partly abandon price competition on elastic segments because of cost disadvantages that made it impossible to match low-cost carriers' fares. Recently, Internet, has offered a potentially a 'win-win' technology for all types of air carriers. Megacarriers can use it as an innovative tool for CRM applications while low-cost providers can exploit the web for distributing their services at fares approaching their marginal costs whilst covering their procurement costs. Carriers that pursue the traditional business model will face a risk of marginalisation and exit from the competitive arena, while e-business-centred operators have the opportunity to survive in a hypercompetitive environment.

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<sup>4</sup>Source: *Airline Business*, IT Survey, August 2000.