The impact of Internet technologies on the airline industry: current strategies and future developments

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- *This paper examines the impact of Internet technologies on value creation in the airline industry and focuses on the Internet strategies of two European low-cost and two traditional operators.*
- *Four notable value drivers in the aviation context are identified, namely efficiency, complementarities, lock-in and novelty.*
- *The Internet represents a powerful technology for commerce and communication between airlines and consumers and the paper highlights the implications for corporate strategists as customer expectations increase over time and the boundaries of the airline industry become increasingly blurred.*

Summary

This paper examines how Internet technologies are impacting upon airline companies at the customer interface. The analysis focuses on a number of airline companies that have been exploiting Internet technologies. It is shown how airline operators are using the Internet to provide innovative exchange mechanisms and transaction structures with customers. The adoption of the Internet is increasing the expectations of customers as to what and how these organizations offer products and services. In fact, the Internet has become central to the strategic development of the airline companies analysed. The scope and boundaries of the airline industry have become less clear as a result of the adoption of Internet technologies at the customer interface. The offering of a range of products and services is creating industry convergence that has significant implications for the formulation of corporate strategy. Exploitation of the Internet at the customer interface has become a key catalyst in the transformation of the airline industry. Further exploitation of the Internet will lead to higher levels of sophistication that in turn will increase the expectations of the customer on what and how these organizations offer products and services. Copyright © 2003 John Wiley & Sons, Ltd.

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Introduction

The increasing importance of innovative Information Communication Technology (ICT) for economies and societies has been attracting considerable attention both from academia and practitioners. In the past two decades ICTs have deeply affected the way business is performed and the way that organizations compete (Porter, 2001; Porter and Millar, 1985). In particular, the advance of the Internet, with its vast range of potential services and applications, has led to a transformation of corporate strategy since the middle of the 1990s, as reflected in the increasingly common use of terms such as industry convergence, virtual corporations and electronic commerce (Picot *et al.*, 1997).

For example, Evans and Wurster (1997), using the private banking industry as an illustration, argue that these technology developments will lead to a convergence of industries and the unbundling of traditional value chains. In fact, traditional industry boundaries are blurring as increasingly many industries converge or overlap, especially in information technology industries (Bettis and Hitt, 1995). These trends have had a marked effect on traditional strategic thinking that considered industry structure as the primary determinant of company profitability (Porter, 1980). A significant challenge for management in exploiting the Internet is to realize that these fundamental changes are creating a situation where organizations are operating in an increasingly global, technologically interconnected and information-driven world (Sampler, 1998).

This article examines how Internet technologies are impacting upon airline companies. The airline industry was chosen because it is an area where the adoption of the Internet has been growing rapidly. This growth has major implications not only for the customer interface but also on the structure of the industry itself. There is a growing dependence on the Internet for the promotion and sales of travel services. For example, travel

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is the largest single category of online purchases by US consumers (Pappas, 2000). In 1999 it accounted for $4 billion of sales, and forecasts for 2003 range up to $29 billion.

The analysis focuses on a number of airline companies that have been exploiting Internet technologies at the customer interface. Particular attention is paid to the changes in the value chain and the integration of new value-added stages as a form of corporate strategy and their implications for corporate management. Findings are presented that emerged from analysis of a number of established and low-cost airline operators. It is shown how airline operators are using the Internet to provide innovative exchange mechanisms and transaction structures.

The adoption of the Internet is increasing the expectations of customers as to what and how these organizations offer products and services. Exploitation of the Internet at the customer interface is a key catalyst in the transformation of the airline industry. The findings highlight the importance of information as a critical resource for airlines. The scope and boundaries of the airline industry have become less clear as a result of the adoption of Internet technologies at the customer interface. The offering of a range of products and services is creating industry convergence that has serious implications for the formulation of corporate strategy. It is argued that the use of Internet technologies to integrate and leverage these resources in a more innovative and powerful way than competitors will become a significant source of value.

Theoretical background

The Internet is a public and global communication network that provides direct connectivity to anyone over a local area network (LAN) or Internet Service Provider (ISP) (Turban *et al.*, 2000). It is a public network that is connected and routed over gateways that evolved from a software convention for computer networking developed by the US Army's Advanced Research Projects Agency. This open standard, termed the Transmission Control/Internet Protocol (TCP/IP), was adopted by a wide range of research, education and public sector organizations as a means of integrating previously incompatible computer applications. In the late 1980s a point and click, hypertext interface was developed for the Internet which was called the 'World Wide Web'. This development led to the explosion of interest in Internet usage with organizations and individuals being able to easily access and use the Internet.

This explosion in connectivity has already resulted, and will continue to result, in changes in the way in which individuals and organizations interact with one another. The interaction patterns will differ significantly from those associated with other paradigms such as mass production where organizations preyed on a largely naïve consumer. In fact, the way in which many organizations meet the needs of their customers is still heavily influenced by principles associated with mass production. The earliest version of mass production targeted 'vanilla' products at large-volume markets with little attempt to further satisfy the needs of a largely ignorant consumer. The organization could afford to adopt such a strategy because the consumer was less mobile in terms of ease of access to alternative sources of supply. Although the term 'mass production' implies the manufacture of physical products, its principles have been prevalent in other areas such as travel, education and banking. For example, the majority of bricks-and-mortar opening hours — especially in the area of banking and education — remained limited to times of the day when most customers were at work.

However, gradually the principles of mass production have become redundant in many industries due to factors such as innovations in technology, globalization, greater levels of competition, and a more sophisticated customer. Organizations have become more proactive in achieving innovations that directly benefit the consumer rather than the organization.

The Internet further raises the stakes in the relationship between the organization and the consumer. In the past, consumers

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determined the value of a product or service on the basis of some combination of quality and price. Treacy and Wiersema (1993) argue that the customer of tomorrow will employ an expanded concept of value that encompasses convenience of purchase, after-sales service, uniqueness and reliability. The Internet represents a powerful mechanism for consumers to achieve this, thus becoming more powerful and increasing their leverage over organizations. In fact, in many business sectors commercial organizations are no longer dealing with a naïve consumer. With consumers becoming more sophisticated they will no longer settle for whatever companies are offering. Instead, in the relationship with organizations, consumers will assume greater control. They now tell product and service providers what they want, when they want it, how they want it, and what they are willing to pay (Hammer and Champy, 1993).

Coping with this kind of consumer requires a fundamental change in the attitude of employees and managers. Every

activity within the company and its suppliers should be aimed at delighting the end-customer. However, the benefits of the Internet — making information available; reducing procurement, marketing, and distribution costs; allowing buyers and suppliers to transact business more easily — also make it more difficult to for organizations to profit from those benefits. The Internet can alter industry structures in ways that reduce profitability, and it has a levelling effect on business practices, reducing the ability of any company to obtain a sustainable competitive advantage (Porter, 2001).

Amit and Zott (2001) contribute to theory development in the area of e-business by investigating the theoretical foundations of value creation in e-business. They draw on a wide body of literature in entrepreneurship and strategic management and use cross-case analysis of a unique data set they developed, in order to identify common patterns of value creation in e-business. Amit and Zott's model adopts Brandenburger and Stuart's (1996) view of total value created as the sum of the values appropriated by each party involved in a transaction. Therefore, 'value' refers to the total value created in e-business transactions regardless of whether it is the firm, the customer, or any other participant in the transaction who appropriates that value. Their analysis led to the development of the value-drivers model that includes four factors that enhance the value creation potential of e-business: efficiency, complementarities, lock-in, and novelty as shown in **Figure 1**.

Each of these value-drivers will be now be discussed in turn (Amit and Zott, 2001):

- *Efficiency:* Transaction efficiencies in the form of lower costs can be obtained via e-business technologies. The rapid access and transmission of information over the Internet can reduce customers' search costs and increase their bargaining power. The connectivity associated with the Internet can enhance transaction efficiency by enabling faster and more informed decision making. Also, this connectivity can provide greater variety at lower costs through reducing distribution and inventory costs, and streamlining transactions, allowing customers to achieve scale economies through demand aggregation, streamlining the supply chain, and speeding up order fulfilment.
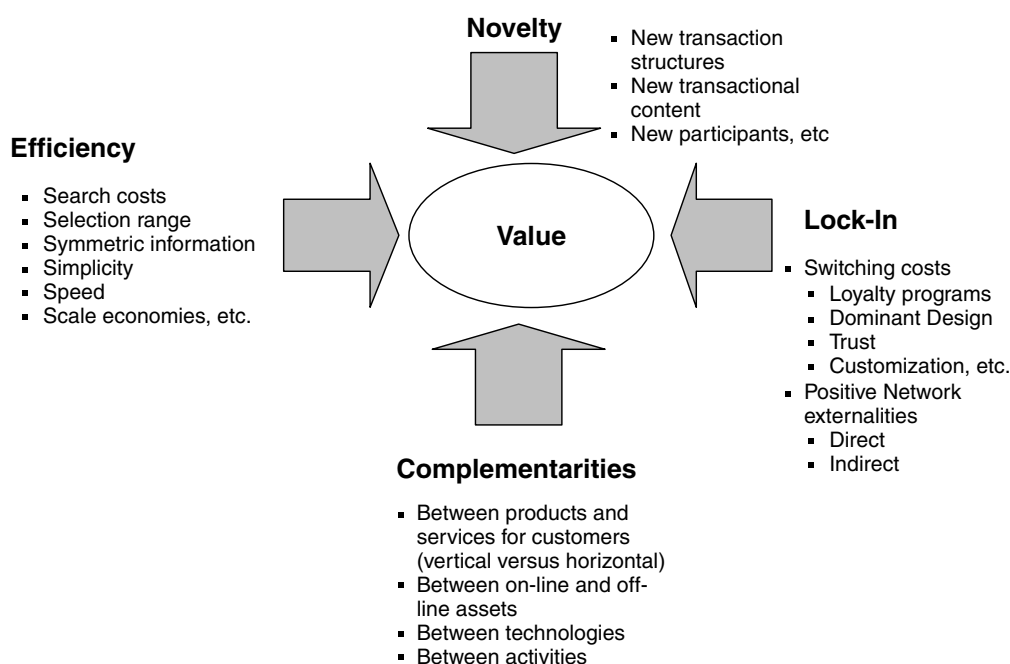

Novelty
- New transaction structures
- New transactional content
- New participants, etc

Efficiency
- Search costs
- Selection range
- Symmetric information
- Simplicity
- Speed
- Scale economies, etc.

Value

Lock-In
- Switching costs
  - Loyalty programs
  - Dominant Design
  - Trust
  - Customization, etc.
- Positive Network externalities
  - Direct
  - Indirect

Complementarities
- Between products and services for customers (vertical versus horizontal)
- Between on-line and off-line assets
- Between technologies
- Between activities

Figure 1. Sources of value creation (source: Amit and Zott, 2001: 504).

- ***Complementarities:*** These relate to a bundle of products and services provided by an organization that provide more value than the total value of having each of the products or services separately. These complementary products may be vertical (e.g. after-sales services) or horizontal (e.g. one-stop shopping) that are provided by partner organizations. This analysis can extend to the way in which an off-line presence can enhance the on-line offering. It is also possible for organizations to offer complementary products or services that are not directly related to the core transactions. There are interdependencies between each value-driver. Improvements in efficiencies via Internet technologies can create the potential for the exploitation of complementary products and services. For example, when potential customers have access to products and services that are complementary to the primary product on offer efficiency may be enhanced through reduced search costs and improved decision making.

- ***Lock-in:*** This is associated with the extent to which customers are motivated to engage in repeat transactions and by the extent to which strategic partners have incentives to maintain and improve their associations. Lock-in can be accomplished in a number of ways including loyalty programmes or building trust mechanisms into the relationship. Allowing customers to customize products, services or information to their individual requirements can enhance lock-in. Virtual communities can also enhance lock-in to a particular organization by facilitating frequent interactions on a range of topics and thereby create loyalty and facilitate repeat transactions. For example, Amazon has adopted various community features such as its 'community of interests' allowing its customers to write book reviews (Kotha, 1998). The efficiency and complementary features of an e-business can also facilitate lock-in via attracting and retaining customers. Also, the creation of lock-in can positively impact upon both efficiencies and complementarities. Amit and Zott (2001) argue that the potential value of an e-business depends upon the combined efforts of all these drivers.

- ***Novelty:*** This refers to the innovative ways in which e-business technologies can affect the structure of the transaction. For example, the development of online auction models such as eBay and Priceline has created innovative ways of conducting commercial transactions. Value is created through the connecting of previously unconnected parties, eliminating inefficiencies in the buying and selling processes through the adoption of innovative transaction methods. Again, there are inter-dependencies between novelty and the other value-drivers. For example, novelty is linked with complementarities. The primary innovation of some e-businesses resides in their complementary features such as the nature of products and services they combine. Also, there are linkages between novelty and efficiency. For example, efficiency elements of an e-business may be due to the novel resources (such as increased knowledge of the customer via transaction analysis) that can be created in a virtual context.

Methodology

Management research is often characterized as being soft, applied and divergent and is undertaken in complex organizations that exist in a dynamic environment (Tranfield and Starkey, 1997). This makes it very difficult to apply the more traditional positivist approach with its emphasis on replication to test for validity. As a consequence, a great deal of research in the management of organizations makes use of the inductive case study approach (Yin, 1994; Bourgois and Eisenhardt, 1988). The case study approach provides richness and multiple perspectives of the many managers involved with regard to the data collected and is thus largely qualitative in nature. Unlike positivist research, however, the analysis of case study data is

essentially interpretative and inductive. From the qualitative data, narratives or stories are developed which are examined for patterns. From these patterns inferences are drawn which yield propositions and can lead to specific hypotheses. Such hypotheses can then be tested in other situations and indeed if sufficiently specific can be tested via the more traditional survey methods of social science.

To obtain an understanding of how Internet technologies have been impacting the airline operators and their customers, an in-depth analysis of four airline operators — two no-frills players — Ryanair and easyJet, and two established ones — British Airways and Aer Lingus, was conducted.

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Companies from both the no-frills and established sectors were selected in order to analyse the level of value being obtained from the exploitation of Internet technologies. A research team using information gathered from multiple data sources conducted the primary analysis. Data was gathered from publicly available sources including annual reports, investment analysts' reports, and company web sites. Techniques for both within-case analysis and cross-case analysis were used (Eisenhardt, 1989; Yin, 1994). Within-case evidence was acquired by taking notes rather than by writing narratives. For this purpose, the research team conducted the analysis through integrating and triangulating facts from the aforementioned data sources. The focus of the study was on how the Internet was impacting the relationship between these airline operators and their end-customers. Also, the effects on industry structure were also analysed. Amit and Zott's

(2001) model of four potential sources of value creation in e-business was used as the framework for analysis. A structured questionnaire was developed based upon the four drivers of value creation to analyse the following issues:

- The benefits of buying the product/service on-line (e.g. price discounts, extra bonus for frequent flyer account etc.)
- The range of complementary products and services being offered.
- The extent to which complementary product and service providers have incentives to maintain and improve their associations with the airline operators.
- The range of non-complementary products and services being offered.
- How the Internet presence enhances the value of the core product (i.e. reserving the seat) by providing a bundle of supporting products and services.
- The mechanisms used by the airline operators to reduce the switching costs of customers that purchase on-line.
- Other on-line businesses that facilitate the reservation of an airline seat.
- How the Internet presence reduces information asymmetries between the passenger and the airline operator through the provision of rich information.

Findings

All four e-business value drivers proposed by Amit and Zott (2001) were apparent in the analysis: *efficiency, complementarities, novelty* and *lock-in*. While all were found to be very much interrelated, each of the key value drivers is discussed separately below for the purpose of clarity of exposition (see **Table 1**).

Efficiency

Efficiency is a fundamental component of overall service quality (Parasuraman *et al.*, 1985). Efficiency has been identified as a key value driver in the decision phase of the consumer buying process as well as being a key

Table 1. Impact of Internet technologies on the value of the air transport offering

Source of value (Amit and Zott, 2001)	Key findings in aviation context
Efficiency: (e.g. search costs; selection range; symmetric information; simplicity; speed; scale economies)	1. Real-time decision-making mechanisms 2. Up-to-date information for buyers and sellers 3. Reductions in customers' search and transaction costs 4. Reductions in the communication and transaction costs of the seller
Complementarities: (e.g. between products and services for customers; between on- and off-line assets; between technologies; between activities)	1. Bundling products and services through vertical and horizontal collaboration//partnerships/alliances to form more valuable holistic travel package 2. Offering additional services not directly related to the core travel offering (e.g. financial services) 3. Reducing communication and promotion costs 4. Taking equity stakes in on-line agencies
Lock-in: (e.g. switching costs—loyalty programmes, dominant design, trust, customization; positive network externalities—direct and indirect)	1. Offering low(er) prices/discounted fares (e.g. for on-line bookings only, or relationship-based pricing) 2. Customizing offerings to suit individual customer needs 3. Amalgamating rewards/bonuses for loyal customers within business networks 4. Building consumer trust
Novelty: (e.g. new transaction structures; new transactional content; new participants)	1. New transaction structures play integral role in lowering transaction costs for airlines and customers 2. Disintermediation and reintermediation of the travel agent 3. Emergence of novel retail partners (e.g. Internet cafés)

source of value in product or service usage (Sheth *et al.*, 1991; Holbrook, 1999). In accordance with Williamson's (1975) transaction costs economics theory, Amit and Zott (2001) proposed that the higher the transaction efficiency gains, the lower the costs, and the greater the total value of an interaction — the total value being the sum appropriated by every party involved in a transaction. The analysis of the airlines' exploitation of the Internet provided evidence to support this proposition. Since the on-line activities of airlines enable search activities (pre-purchase and usage) and remote transactions (purchase and usage) to take place, transaction efficiency was found to be a fundamental value driver of the electronic business activities of the airlines. The analysis provides evidence that the Internet yields increased

transaction cost efficiencies for both buyers and sellers of air transport, as evidenced in the following areas:

Real-time decision-making mechanisms

Real-time flight reservations can be pursued directly without reliance on bricks and mortar agents' opening hours or ability to access the Computer Reservations Systems (CRS) at the time when a customer wishes to purchase. Buyers and sellers receive instant payment details and confirmation, thus instantly appropriating mutual value symmetrically. Airlines have the potential to re-enforce their brand values and trustworthiness through this direct interface with customers. On-line customers may place more trust in their own

purchasing decisions and may be more confident that the information content of the site is up to date, and that the booking is error free. Decision making is further facilitated by access to a wealth of information on complementary travel services such as hotel accommodation and car-hire on both the airline's web site and those of on-line agents. As a result of the reduction of information asymmetries, sellers have the ability to make quick decisions and generate rapid responses to customer needs, particularly in terms of direct communications mechanisms. For example, Aer Lingus has claimed that its new online presence has enabled the airline to provide 'better value and respond more quickly to market conditions' (Anon, 2001a). Airlines can also gain rapid feedback on promotional effectiveness and demand structures, in addition to having the ability to monitor the behaviour of competitors and respond appropriately in a timely fashion. Information efficiencies further reduce transaction costs and increase total value.

Up-to-date information for buyers and sellers

All the websites evaluated contained up-to-date information on flights, schedules, promotions and complementary services. This commands a reduction of information asymmetries when compared with a printed seasonal travel brochure and has potential to eliminate travel agent bias. Customers can compare prices of individual flights with different airlines, from different airports in the same cities/towns and evaluate the components of alternative offerings relatively easily. Consequently, customers also benefit from having access to more perfect information. For example, real-time flight (e.g. schedules, flight status) and complementary information (e.g. hotel accommodation, press releases, ticket restrictions) is available to the on-line air transport customer. This in turn complements the convenience of the speed and flexibility of on-line decision making and reduces search and other significant transaction costs.

Reductions in customers' search and transaction costs

On-line buyers benefit from better selection in terms of choice (of airlines, flights, schedules, destinations, levels of service and complementary services); speed (time, convenience of access capabilities on the Internet); and reduced transaction costs (monetary, effort, mistakes). As a result of offering complementary services, customers can avail themselves of the one-stop-travel-shop facilities of airlines. In terms of speed and efficiency, there is evidence that both Aer Lingus and British Airways have expended tremendous effort in simplifying the transaction structure, and the content of their websites. For example, by removing Java applet and heavy script, British Airways managed to reduce the loading time of the airline's home page by 75% (Anon, 1998). Aer Lingus recently restructured its website to ease simplicity of navigation for the user and combined this with improved ticket structures and lower fares. This speed, simplicity and flexibility facilitate user flow and subsequently customer transaction and search costs. Ryanair and easyJet have won many awards for site simplicity and superior design.

According to Feldman (1998) ease of use was considered to be a 'big hang-up' because customers sought more than 'menu-driven text'. For example, Ryanair.com received the overall Readers Award, EsatNet Award and Best International Award in 2000 and also the Irish Transport Users Council award for the best on-line information in 2002.

All the websites analysed made provision for price-sensitive customers by enabling direct access to the lowest fares available on particular routes. This enhances transaction efficiencies by further decreasing the time, energy and effort required to be expended during the search phase of the customer buying process. All of the airlines promote 'lower fares' which are achieved as a result of the reduction of the airlines' distribution costs, the simplification of transactions, scale economies and streamlined supply chains.

There is clear evidence of the established airlines directing customers to their Internet presence. Both British Airways and Aer

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Lingus offered more attractive prices to customers using the Internet than those booking by telephone or through travel agents. However, while travel agents will be able to access the website to place bookings for customers, the low-cost fares would only be available to them on a non-commission basis. The strategy being adopted by Aer Lingus is similar to that of the low cost airlines such as Ryanair which offer low-cost fares for direct booking (*Irish Times*, 2001). The new pricing strategy of Aer Lingus is claimed to be a move towards direct booking that reduces the commission paid to travel agents and enhance the ability to retain more of the fare and cut the costs of distribution (*Irish Times*, 2001). Since 15 May 2000, Ryanair guaranteed the lowest fares on the Internet and promised to refund double the difference to customers who can find a lower rate on the Internet for travel on the same day, at similar times, dates, and the same IATA designated city airports (Anon, 2000a).

Reductions in the communication and transaction costs of the seller

On-line information enhances the efficiency value of a transaction for the customer in terms of physical search costs and time or convenience. Twenty-four-seven accessibility for on-line customers means that real-time reservations can be made at a time when the customer wants to purchase, not at the discretion of an agent or within times stipulated for reservations made direct with an airline by telephone. The seller has more control over, and enhanced efficiency in terms of sales, capacity, the quality and the quantity of information relayed to buyers.

Online tickets are a significant means of reducing transaction costs. An online ticket purchased from an airlines site typically costs an airline $1–3 in overhead, whereas distribution fees airlines pay to intermediaries or third party vendors are typically $25 per ticket (Croft, 2001). Both the low-cost and established airlines have adopted these approaches. For example, Aer Lingus promote E-ticketing on some key routes and the low-cost airlines offer a confirmation number as opposed to a ticket. Aer Lingus began phasing the introduction of the ticketless travel concept for on-line customers travelling on the Dublin to London route and plan to introduce more routes to the network, therefore offering more on-line customers the benefits of ticketless travel (Anon, 2001b).

Complementarities

Central to the transaction cost efficiency enhancement is the concept of the value bundle composed of complementary products and services. The total value of an offering can be increased through bundling products and/or services, which when put together are perceived to be of greater value. In competitive terms, the resource-based view of the firm promotes the idea that the firm is a unique bundle of value-creating capabilities and resources (Barney, 1997). Therefore, when the key capabilities and resources of several complementary firms form unique value chains which in turn generate unique value propositions, opportunities for gaining competitive advantages, differentiation, cross-selling, scale economies, market-driving behaviour and premium pricing may arise.

Value-adding complementarities can be directly related or non-related to the core offering. Analysis of both the low-cost and established airlines identified vertical, horizontal and others not related to the core offering. All the airlines analysed offer some form of travel package or bundle that

includes flight, hotel accommodation or car hire, which the customer can tailor to meet his or her individual needs or wants. Most offer financial services, up-to-date information on currency, weather or destination guides, in order to reduce search costs and build trust. For example, Ryanair provides a link to Ryanair hotels (in association with needahotel.com). Needahotel.com offers Ryanair customers a selection of more than 12,000 hotels in over 90 countries. The link enables the customer to book accommodation ranging from two-star to five-star luxury. Ryanair customers can also avail themselves of car rental deals from Hertz, Ryanair's exclusive car-rental partner. Customers can use the car-rental service provided through partnerships with Avis and Hertz. British Airways' customers can also obtain foreign currency as a result of the airline's partnership with Travelex. There was also evidence of the airlines offering non-complementary products and services via their Internet presence. Ryanair and Virgin offer a series of financial services, both related and unrelated to the core offering (such as travel insurance, home insurance) using business-to-business relationship networks and integrated value chains.

There was evidence of the alliance partners promoting each other's products and services to provide the convenience of a global seamless service. For example, Aer Lingus and British Airways provide a link to the Oneworld site, while Aer Lingus customers can trace lost baggage as a result of the airline's partnership with mylostbag.com (Anon, 2001c). After the customer has reported baggage missing to airline personnel, he or she is issued with a baggage reference number. The customer then clicks on the lost baggage link on the airline's homepage to review the status of the lost baggage.

Also, Ryanair has a partnership with simplyfx.com, the largest independent provider of foreign currency in the UK (Anon, 2000b). This service enables customers to order and pay for foreign currency on-line, which is delivered to their home or place of work within 48 hours. Reciprocal partnership promotion will also reduce communications costs for the seller. For the buyer, when access is available to complementary offerings to the primary offering of interest, search cost efficiencies and improved decision-making benefits arise.

As well as entering into partnerships and alliances the airlines have been taking equity stakes in companies in order to offer complementary products and services.

> *Airlines have been taking equity stakes in companies to offer complementary products and services*

British Airways has been particularly active in this area. It has taken a minority stake in Biztravel.com in 1999. This award-winning website specializes in facilitating booking and planning business travel (Anon, 1999). The airline was the first European carrier to buy a share in an online travel agency. Biztravel.com targets specifically the growing small-office and home-office market (SOHO) (Anon, 1999). According to the Chairman and CEO of Rosenbluth International and Rosenbluth Interactive, this relationship is purported to have contributed to Biztravel's goals to be globally utilized and recognized as the premier site for business and individual travel (Anon, 1999). In 2000, British Airways formed a partnership with GetThere.com and launched a new on-line business travel management system for SMEs in the UK. GetThere.com was the leading supplier of Internet-based b2b travel systems in the United States.

In July 2000, British Airways Executive Secretary International Club was launched on-line. This new electronic service, developed by Black Sun Plc, was claimed to be the ultimate dedicated travel website for personal

secretaries and assistants (Anon, 2000c). Previously, a newsletter was issued quarterly, but the airline's research suggested that the role of corporate travel bookers was rapidly changing and moving onto the Web. The site features news and information pages to keep customers up to date with the airline's developments; exclusive offers to esi members; a one-stop-shop for British Airways travel including access to the airline's global flight timetable, hotel accommodation and car rental; and, hotlinks to the airline's booking site (Anon, 2000c).

Lock-in

Amit and Zott (2001) argue that the value-creating potential of an e-business is enhanced by the extent to which customers are motivated to repurchase. While lock-in prevents the migration of customers or the lowering of switching costs, strategic assets such as brand image and reputation and trust between buyers and sellers can contribute to this lock-in. From the preceding analysis, it can be seen that the airlines are attempting to create lock-in through both the efficiency and complementary features of the e-business technologies.

Perhaps the most prevalent mechanism used to create lock-in has been the further exploitation of the frequent-flyer programme via the Internet. Aer Lingus and British Airways frequent flyers benefit from the ability to amalgamate their frequent-flyer mileage points as a result of horizontal airline alliances. These programmes are also linked to other product and service providers via the Internet. Customers can manage their mileage points, gain and spend them with other firms whose offerings are not directly related to the core offering.

One-to-one relationships may develop between airlines and their frequent, premium-paying customers who gain privileged access through the sites to their customized account pages; thus retention rates may guarantee long-term returns for the airlines concerned. The low-cost airlines are quite proactive in this area offering customers the opportunity to earn points from product and service providers such as car hire and hotel reservations. These mechanisms also provide incentives to booking on-line as opposed to traditional channels. Again, alliances between these collaborating companies are a key part of this mechanism.

The airlines have been using the Internet to offer a more personalized service to customers. British Airways loyalty club members have access to customized accounts, the ability to manage their mileage points, and special privileges promoted on-line, thus reducing information asymmetries, reducing search costs and simplifying the service. British Airways Executive Club members use a PIN to enable access to the newly structured site providing screens only available to these members. The personalized service includes membership details, promotions, news and account summaries detailing miles and tier points balances. The Internet has also been used as a vehicle to further reinforce the Oneworld alliance established by American Airlines, British Airways, Canadian Airlines, Cathay Pacific Airways and Quantas Airways.

The Oneworld alliance allows closer linking of frequent-flyer programmes to enable members of the five airlines' frequent-flyer programmes to earn and redeem miles on any eligible flight and fare within the alliance. Top-tier frequent-flyer cards would be reissued with new Emerald, Sapphire and Ruby symbols to ensure that the members received the appropriate recognition and privileges which they had become accustomed to with single airlines. Also, the participating airlines in the Oneworld alliance have been using the information on the specific needs of frequent flyers to enhance service levels and provide a more customized service.

Novelty

There was clear evidence of the airlines using the Internet to pursue novel approaches for serving the needs of their customers. Both the established and low-cost airlines have integrated the technological benefits

of the Internet with existing and new technologies. Aer Lingus and Ryanair have striven to reach the mobile commerce market through their partnerships with Irish telecommunications companies. Ryanair's partnership with leading Internet cafés in Dublin was an attempt to bring their offering to the high street.

Due to the ease with which these approaches can be replicated it is quite difficult to sustain the novelty dimension. For example, it is clear that the Internet has played a major role in providing these low-cost entrants with market growth and expansion opportunities. Ryanair and easyJet have invested heavily in the Internet to achieve a presence in new markets. However, such an approach can be easily replicated by competing low-cost airlines. It could be argued that the innovative use of complementary and lock-in mechanisms could create novelty that would be difficult to replicate.

Discussion

There is clear evidence that all the airlines analysed are attempting to exploit the Internet along each of the value drivers identified by Amit and Zott (2001). In fact, the Internet has become central to the strategic development of the airline companies analysed. In

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relation to the efficiency value driver both the low-cost and established airline operators were using the Internet to enhance their competitive position. In the case of the low-cost operators, the Internet was integral to their overall low-cost strategy by reducing transaction costs (including easy access to information and lower booking costs) with

customers and further reducing the cost of booking an airline seat.

The Internet was being exploited as a mechanism to fully automate the booking process with limited need for human intervention. The established airlines were employing the Internet to further undermine the travel agents that in turn positively impacted the efficiency value driver. As well as using it to reduce transaction costs, the airlines have been using the Internet to enhance the relationship with the customer through the provision of more detailed and up-to-date information. This, in turn, has shown how the capabilities of the Internet at the customer interface have been empowering the customer with greater information. For example, the customer is in a much stronger bargaining position in their relationship with both the low-cost and established airline operators via the undermining of the travel agent.

Previously, the travel agent's competitive position was based on exploiting the information asymmetries at the customer interface due to the physical constraints associated with the evaluation and selection process. However, exploitation of the Internet gives both an opportunity and a challenge to airline companies. The Internet provides a number of mechanisms to enable the airlines to build a direct and enhanced relationship with customers. In fact, for the established airlines this poses a challenge. In the past, these airlines in many cases have been selling their product (i.e. an airline seat) through travel agents.

The adoption of the Internet by the airlines may lead to the management of information at the customer interface becoming a significant source of competitive differentiation. For example, the Internet provides an opportunity for established airlines to provide a highly customized service to long-haul frequent flyers. Via sophisticated customer profile databases it is now possible to automatically inform staff of customer preferences such as aisle seats or in-flight entertainment. Previously, such information may have been collected but not used to enhance the needs of their most profitable customers.

With information now being separable from the transaction it has now become a key determinant in enabling airlines to satisfy the needs of customers. For example, customer requirements captured at a hotel in one city will affect the services the next time the customer stays with the same hotel chain in another city. Therefore, information can be captured, analysed, shared, and used to enhance the next customer experience.

Airline loyalty programmes have been the most prominent means of locking customers to a particular airline. As evident from the findings, these programmes are continuing to play an important role in locking customers into an airline in the digital era. Airline loyalty programmes provide significant value to customers. This value can be used to attract both customers and providers of both complementary products and services. Both the low-cost and established airlines are using the Internet to offer complementary products and services to the core offering — the airline seat. In fact, the airlines are attempting to create a one-stop shopping experience for the customer with all the required travel products and services available on-line. Through the provision of these products and services, airlines are attempting to enhance the value of the core product and make it possible for customers to satisfy all their needs on-line.

There was also evidence of the airlines offering complementary products and services on-line that were not related to the core product offering. For example, it has been shown that Ryanair's website offered home insurance products to potential customers. The use of complementary products and services also enhanced the efficiency value driver by reducing the search costs and enhancing the convenience of concluding the transaction.

A major challenge for the airlines is to determine the optimum bundle of complementary products and services they should offer to complement the core offering. It may be difficult to identify specific products and services offered by the airline that are perceived as crucial in the eyes of the customer

or are a source of competitive differentiation. In many cases, value for the customer resides in a combination of products and services provided by the airline rather than in a single or limited number of separable products or services such as the airline seat.

Customers may not purchase a bundle of products or services primarily on the basis of whether one or a number of these products or services are offered by the airline. No one product or service is superior by itself but when combined with a range of products and services creates a powerful value proposition for the customer. Therefore, it is extremely difficult to identify separable products and services offered by the airline as crucial in the eyes of the customer and that are also a source of competitive differentiation. In effect, it could be argued that the airline companies are using the Internet to build their brand by creating a set of experiences for customers via the provision of a bundle of complementary products and services.

The findings have emphasized the extent to which the traditional bricks-and-mortar travel agent has been disintermediated. However, there is also evidence of reintermediation in the relationship between airline operators and their customers. Already, there are on-line travel agents such as Travelocity and Expedia with product and services traditionally offered by travel agents. Evans and Wurster (1999) argue that reintermediation in some industries is likely to give rise to the development of Internet-enabled 'navigators'. Navigation can be a source of competitive advantage for many businesses. Navigators assist and influence the customer in the selection and purchase of products or services (Evans and Wurster, 1999).

In the past, organizations exercised control over the navigation function due to the physical constraints on the customer in the evaluation and selection process. Sales advisors, agents, advertising, branding and store layouts are examples of navigation functions in a physical context. The traditional travel agent in the airline industry derived much of its revenue through carrying out navigation functions. However, these new on-line

intermediaries are performing some of these roles envisaged by Evans and Wurster (1999) in their description of navigators.

It also must be emphasized that travel service intermediaries such as Travelocity and Expedia are not the only businesses offering these services. Portal businesses such as Yahoo! have been offering similar services. For example, Yahoo! focuses on attracting customers, gathering and analysing data on them, and linking them with both advertisers and vendors of products and services. These portal businesses are also in a powerful position through the possession of a rich repository of customer information that can influence the flow of commerce on the Internet.

The development of these intermediaries is likely to provide immense challenges to the airlines. It has already been shown that the management of information at the business-to-customer interface is a significant source of differentiation within the airline industry. Therefore, it is crucial that airline operators do not lose their direct interface with end-customers. However, it is quite possible in the future that these intermediaries may pose a serious threat to airline operators in this area.

With more customers purchasing travel products and services through these intermediaries, there is the potential for a shift in the balance of power. For example, these intermediaries would be in a position to access valuable customer information such as behaviour and spending patterns across a range of product and service providers. Technology developments will enable these intermediaries to perform more complex analysis in the capture of customer information and the development of detailed profiles of individual customers travel requirements. Access to this type of information is of considerable value to airline operators. These intermediaries are in a position to assist customers in obtaining maximum value from their information profiles by analysing selections they have made previously to determine which product or service would best meet their current needs, and then find the relevant product and service provider that meets these needs.

While these intermediaries have the potential to become powerful participants in the travel industry, there are still some significant inhibitors. They will have to build high degree of trust with customers and enhance their ability to create rich customer portraits of customer requirements and provide an unbiased intermediary capability. Also, these intermediaries will undermine their position with potential customers if they are affiliated with particular product and service providers.

Conclusions

The evidence presented in this article has illustrated how the Internet represents a powerful technology for commerce and communication between customers and airline companies. The Internet clearly enables the customer to move from being a passive participant to that of being proactive and more sophisticated in their relationship with airlines.

Further exploitation of the Internet will lead to higher levels of sophistication, which in turn will increase the expectations of the customer on what and how these organizations offer products and services. It must also be borne in mind that the Internet is in its infancy with the underlying infrastructure having some way to go before full development. For example, Internet search tools will become more sophisticated. Advances in the Extensible Markup Language (XML) will make it possible to identify products, features, and prices with far greater precision. Customers will be able to set much more detailed search criteria, which gives them immediate access to even richer sources of information. The implications of these trends are that airlines are dealing with a *'virtual traveller'*. These travellers have global access through the Internet to more products and services than ever before and with instant communications, typical constraints, such as time and distance, are rapidly disappearing. The greater transparency that flows from an

airline trading on the Internet will lead to a greater reluctance on the part of these customers to pay full prices. As well as expectations continuing to rise, these customers will become increasingly unpredictable.

Clearly, these trends have major implications for airline companies who are now dealing with a *'virtual traveller'*. While Internet technologies offer ways for airlines to operate more effectively, and give customers higher levels of service and sophistication, they also pose major challenges for corporate decision makers within these organizations.

> *While Internet technologies offer ways for airlines operate more effectively, they also pose major challenges for corporate decision makers*

The scope and boundaries of the airline industry have become less clear as a result of the adoption of Internet technologies at the customer interface. The airline industry is no longer the unit of analysis when airline companies are analysing the competitive landscape. The findings have shown that companies from a number of industries are involved in satisfying the needs of the traveller via the provision of a range of complementary and, in some cases, non-complementary products and services. This offering of a range of product and services is creating industry convergence that has serious implications for the formulation of corporate strategy. This trend towards industry convergence is leading to the formation of a new market with a new type of value chain. The value chain of this new market is structured through a reconfiguration of value chains from other industries such as car hire, hotels, insurance and finance.

Such a trend presents airlines with a major challenge in their attempts to define and achieve areas of sustainable competitive advantage. It has been shown that the management of information at the customer interface presents the potential for competitive differentiation. Airlines have already been exploiting Internet technologies to capture and integrate critical customer preferences across a range of products and services. This exploitation of information technology to manage information is already a key feature of the relationship between airline operators and their customers. Airline operators that deal directly with travellers will have to allocate resources towards analysing and determining their needs in order to build successful relationships. The findings have also shown the trend towards partnerships and alliances resulting from demands on the part of customers for complementary offerings rather than for individual products and services. It is extremely difficult to identify which products and services offered by the airline are a distinct source of competitive differentiation. In fact, it could be argued that the source of value creation resides in networks of product and service providers.

The adoption of Internet technologies at the customer interface to facilitate transactions requires a network of capabilities drawn from a number of sources including customers, suppliers, complementary product and service providers and, in some cases, competitors. Exploiting Internet technologies to integrate and leverage these resources in a more innovative and powerful way than competitors will become a significant source of value. Therefore, corporate decision making by airline operators must span industry and firm boundaries. However, the difficulties associated with this must be viewed in the context of the considerable complexities and dynamics of these industry changes.

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References

Amit R, Zott C. 2001. Value creation in e-business. *Strategic Management Journal* **22**: 493–520.

Anon. 1998. Airline On-line. British Airways Press Release, 12 October.

Anon. 1999. Airline Buys into Online Travel Agency. British Airways press release, 13 September.

Anon. 2000a. Ryanair.com Guarantees Lowest Fares. Ryanair press release, 10 May.

Anon. 2000b. Ryanair.com Breaks Bank of Ireland Monopoly at Dublin Airport. Ryanair Press Release, 23 November.

Anon. 2000c. One Stop E-shop for Travel Organisers. British Airways press release, 13 December.

Anon. 2001a. Aer Lingus Announces 2.5 million Low Fare Seats for Sale in 2002. Aer Lingus press release, 27 December.

Anon. 2001b. New Ticketless Service. Aer Lingus press release, 29 August.

Anon. 2001c. Review the Status of Your Lost Baggage Online. Aer Lingus press release, 27 August.

Barney JB. 1997. *Gaining and Sustaining Competitive Advantage*. Addison-Wesley: Reading, MA.

Bettis RA, Hitt MA. 1995. The new competitive landscape. *Strategic Management Journal* **16**: 7–19.

Bourgois L, Eisenhardt K. 1988. Strategic decision processes in high velocity environments: Four cases in the micro-computer industry. *Management Science* **34**: 816–835.

Brandenburger AM, Stuart H. 1996. Value-based business strategy. *Journal of Economics and Management Strategy* **5**: 5–25.

Croft J. 2001. Airlines' web portals prosper despite third-party sites. *Aviation Week and Space Technology* **154**: 86.

Eisenhardt KM. 1989. Building theories from case study research. *Academy of Management Review* **14**: 532–550.

Evans P, Wurster TS. 1997. Strategy and the new economics of information. *Harvard Business Review* **75**: 71–82.

Evans P, Wurster TS. 1999. Getting real about virtual commerce. *Harvard Business Review* **77**: 85–94.

Feldman J. 1998. Pricing and cybersales (Internet airline ticket sales and reservations). *Air Transport World* **35**: 64–66.

Hamme RM, Champy J. 1993. *Reengineering the Corporation*. HarperCollins: New York.

Holbrook M. 1999. (ed.). *Consumer Value. A Framework for Analysis and Research*. Routledge: London.

Irish Times. 2001. Cheaper Aer Lingus Fares for Bookings on Internet, 27 December.

Kotha S. 1998. Competing on the Internet: How Amazon.com is rewriting the rules of competition. In *Advances in Strategic Management*, Baum JAC (ed.). JAI Press: Greenwich, CI; 239–265.

Pappas G. 2000. The impact of the Internet on the airline industry. *Information Technology* 49–52.

Parasuraman A, Zeithaml V, Berry L. 1985. SERVQUAL: A multiple-item scale for measuring consumer perceptions of quality. *Journal of Retailing* **64**: 12–41.

Picot A, Reichwald R, Wigand R. 1997. *Information Organization and Management: Expanding Markets and Boundaries*. Wiley: New York.

Porter ME. 1980. Technology and competitive advantage. *Journal of Business Strategy* **5**: 60–70.

Porter ME. 2001. Strategy and the Internet. *Harvard Business Review* **79**: 63–78.

Porter ME, Millar VE. 1985. How information gives you competitive advantage. *Harvard Business Review* **63**: 149–160.

Sampler JL. 1998. Redefining industry structure in the information age. *Strategic Management Journal* **19**: 345–355.

Sheth JN, Newman BI, Gross BL. 1991. Why we buy what we buy: a theory of consumption values. *Journal of Business Research* **22**: 159–170.

Tranfield D, Starkey K. 1997. The nature, social organization and promotion of management research: Towards policy. *British Academy of Management Conference (Keynote Session)*, London Business School, London.

Treacy M, Wiersema F. 1993. Customer intimacy and other value disciplines. *Harvard Business Review* **71**: 84–93.

Turban E, Lee J, King D, Chung HM. 2000. *Electronic Commerce: A Managerial Perspective*. Prentice Hall: London.

Williamson OE. 1975. *Markets and Hierarchies*. Free Press: New York.

Yin RK. 1994. *Case Study Research: Design and Methods*. Sage Publications: California.