Emerging Pricing Strategies on the Web: Lessons from the Airline Industry

STEFAN KLEIN AND CLAUDIA LOEBBECKE

SETTING THE STAGE: RESEARCH TOPIC AND RELEVANCE

The Web has been heralded as a medium that enables and requires companies to develop new or modified business models. Literature acknowledges a wide range of innovative eBusiness models (Tapscott et al. 2000, Timmers 1998). However, the main value propositions of most eBusiness models are lower prices or better service. Hence emerging pricing strategies, which have so far drawn relatively little attention (e.g., Ulph and Vulkan 2000), warrant our attention. Two phenomena on the Web suggest that companies are actively pursuing pricing strategies: increasing price transparency and differential pricing.

As the Web lowers information cost and facilitates comparison shopping, it fosters price transparency. Hence the Web is expected to increase price competition and to reduce price dispersion (Bakos 1997). However, empirical evidence for lower prices on the Web is scarce, some even points towards higher online prices (Lee 1998). Price dispersion in online markets has been found to prevail (Clemons et al. 2002; Pan et al. 2001; Smith et al. 2000; Vakrat and Seidmann 1999).

Online suppliers and vendors are looking for innovative ways for differential pricing in order to be able to offer lower prices on the Web without undermining their overall price policy and their traditional distribution channels. Several innovative pricing models such as demand collection or demand aggregation are intermediated models. Recently Kannan and Kopalle (2001) noted that the pricing of products and services sold over the Internet is becoming more dynamic and that marketers are resorting to flexible prices even for goods and services previously sold at posted prices. The proliferation of flexible pricing models in consumer markets has been highlighted by Cortese and Stepanek (1998) who have used ‘Good bye to fixed pricing’ as the headline for their Business Week special on Electronic Commerce. Their message is that consumers increasingly will be confronted with models for flexible pricing and product differentiation (see also OECD 1998).

These phenomena raise two important questions:

- What is the impact of the Web on the design and implementation of pricing strategies? In particular, what will be the role of flexible pricing models that give customers an extended role – and probably power – in negotiations with suppliers?

Abstract

The advent of the digital economy has provided unprecedented opportunities for suppliers and intermediaries to experiment with new pricing strategies. New information technologies not only enable businesses to charge flexible prices on the Web, but also allow for new price setting mechanisms in which consumers specify their interests and requirements. Economic appropriateness, technical feasibility, and purposes of such pricing strategies depend mainly on product characteristics, customer groups, sales volume, and eventually the division of labour and power among suppliers, intermediaries, and consumers. This paper compares online and offline pricing strategies. It puts a particular focus on airline ticket sales based in a setting of structural changes in the airline industry and changing customer behaviour. It takes a critical look at predictions about the proliferation and success of flexible pricing schemes that were made at the end of the 1990s. Interpretative analysis and empirical evidence of Web-based pricing mechanisms, which aim at giving customers access to lower prices, lead to envision a scheme for developing pricing strategies that reflect the competitive environment of the online market space.

Keywords: price discrimination, tourism, strategy, consumer behaviour, intermediaries

Authors

Stefan Klein (Stefan.Klein@ucd.ie) is John E. Sharkey Professor for E-Commerce at the University College Dublin, Ireland. His research focuses on IT impact on industry structures and interorganizational arrangements, IT enabled coordination mechanisms and information management.

Claudia Loebbecke (www.mm.uni-koeln.de) holds the Chair for Media Management and Information Technology at the University of Cologne, Germany. Her research focuses on media companies and ICT/media applications in management and corporate education. Recently, she was Visiting Scholar at INSEAD and the MIT.
EMERGING PRICING STRATEGIES ON THE WEB

Microeconomic theory states that pricing depends on the market structure for a certain product. In competitive markets with many economic agents on each side, sellers are price takers and cannot influence prices (for a detailed discussion, see, for example, Mansfield 1996). The underlying assumption is the existence of perfect competition as a set of market conditions, namely homogeneous products, perfect market knowledge of each participant, atomistic nature of market participants, and mobility of resources (e.g., Browning and Zupan 1999). In a monopolistic market, the monopolist has three options for price discrimination in order to extract consumer surplus: first-degree (personalized pricing), second-degree (non-linear pricing, e.g., volume discounts) and third-degree price discrimination (group pricing) (Pigou 1920).

In the real world, however, few sellers act under conditions of either perfect competition or monopolistic markets. Instead of having to accept the market price, sellers have to develop their own pricing strategies and yield management. Strategies that try to optimally match various customers’ desires are based on market research insights (Dolan and Simon 1996). Empirical data shows that differential pricing is already widespread in industries that exhibit large fixed costs like airlines, telecommunications or publishing (Varian 1996). Some market segments could not be served without differential pricing, and it can even be shown that differential pricing contributes to economic efficiency (Dolan and Simon 1996; Pompl 1991). According to the OECD (1998) the trend towards differential pricing is enhanced in online markets: ‘(m)ore and more products will be subject to differential pricing associated with customized products, fine market segmentation and auctions as it becomes easier to change prices.’

Companies pursue two main goals with their pricing strategies. First, they aim at capturing a part of the consumer surplus by setting the price close to the consumers’ willingness to pay (WTP). Second, they are trying to gain and maintain a competitive advantage. That is, pricing mechanisms – often in combination with product or service policies such as versioning or bundling – are strategically targeted, e.g. to build a brand or to set incentives for efficient consumer behaviour. Companies are trying to lower their distribution costs by using electronic distribution channels. Differential pricing and price incentives for using the online channel are set to increase the volume of online transactions. Hence the Web facilitates price discrimination and apparently price discrimination is also used (and needed) to attract consumers to online channels.

Price Discrimination Strategies

When classifying pricing strategies on the Web, Shapiro and Varian (1999) refer to Pigou’s (1920) distinction of first, second and third-degree of price discrimination, but use more descriptive terms: personalized pricing; versioning and volume discounts; group pricing. We will use a similar distinction which is also in line with marketing literature (e.g., Kotler and Armstrong 1999) based on:

- customer characteristics (personalized and group pricing);
sales volume; and
product features (versioning and bundling).

In addition, we will look into flexible pricing mechanisms in which buyers and sellers interact to determine a price.

**Price discrimination based on customer characteristics: personalized and group pricing.** In most markets, an individual customer’s willingness to pay varies considerably. Thus, it is advantageous to charge different users different prices. A common strategy is to distinguish prices based on customer characteristics, which are fairly simple to identify. People who have certain personal characteristics, purchase histories, zip codes, or behaviour patterns are offered different prices. For example, it is often thought that business users have a higher WTP than educational users; hence many suppliers of books and journals offer educational discounts. Similarly, prices often depend on categories like ‘domestic or foreign citizenship’, ‘age’ or ‘club membership’. So called group pricing (Shapiro and Varian 1999) is probably the most common practice of differential pricing on customer characteristics.

Grouping approaches based on predefined customer characteristics such as ‘age’, ‘student status’ or ‘nationality’ lose importance in the era of the Web mainly for two reasons: the characteristics are difficult to verify in an online environment and they do not offer a sufficient amount of customer differentiation. Student status and even age can barely be proven in cyberspace. Instead, we see a drastically increasing trend towards one-to-one marketing or at least towards customized marketing. As the Web has been identified as an efficient tool to collect enormous amounts of customer information, companies have started to pursue much more differentiated approaches for group pricing (Shapiro and Varian 1999).

**Personalization,** a familiar concept in marketing, is gaining importance in electronic markets. It aims at identifying potential customers and offering them the required products and services at the ‘right’ time, price and conditions. Theoretically, personalization assumes that suppliers know their customers’ individual WTP and extract from each consumer the full value of his or her consumer surplus. Currently, comprehensive personalization is still rare. It can occur only in few cases in which a firm has a small number of buyers and is able to guess the maximum prices those buyers are willing to accept (Luedi 1997). However, technologies to gather and develop customer profiles or even to give customers the instruments to personalize suppliers’ offerings are becoming increasingly available (Bichler and Loebbecke 2000).

An example of such an approach to pricing is Weblining. Weblining, a combination of the Web and Redlining (i.e., the differentiation of offers based on customer profiles), denotes a pricing strategy, which automatically differentiates Web-based offerings (Stepanek 2000). It encompasses two elements. First, based on detailed information about the customers mostly transaction profiles, companies evaluate and forecast the individual customer’s (present and/or future) value (micro-segmentation). Second, the customer’s value is used to automatically differentiate a company’s offerings on the Web. As soon as customers identify themselves, the presentation of Web offerings will be adapted according to the company’s policy.

Both steps described have become easier and more widely used as a result of the proliferation of the Web. Companies use their websites to collect customer information and to build detailed customer profiles either in a traditional way or online. Based on those profiles, offerings are distinguished. Such a segmentation and differentiation is powerful and efficient when it is applied to online transactions.

Two problems occur with differential pricing if one assumes that customers are generally anonymous. First, a seller has to determine the WTP of different buyers. Second, the seller has to prevent customers with a high WTP to purchase the product intended for customers with a lower WTP. This means that market and services have to be separable, may it be based on natural or imputed characteristics or by imposing boundaries. Also, trading or communication between market segments must be restricted.

**Price discrimination based on sales volume.** On the Web, individual buyers can get access to volume discounts by efficiently pooling their demand. The precondition of demand pooling is that the coordination costs can be kept considerably lower than the price advantage. Demand pooling systems are an application of volume discounts for a heterogeneous group of customers who decide to pool their demand within a limited period of time. Different kinds of buyer cartels have existed in traditional markets. The range of demand pooling, however, has been limited by the cost of coordinating multiple customers. While individual buyers could look for peers who have the same need, the Web has emerged as a platform for intermediaries who negotiate volume discounts with suppliers and advertise these offers efficiently in order to aggregate a high number of buyers. In addition to coordinating between buyers and sellers, demand pooling systems typically organize order fulfilment, i.e. payment and logistics services (Klein and Loebbecke 2000).

Letsbuyit (http://www.letsbuyit.com) tries to initiate virtual customer pools so that individual customers can benefit from volume discounts offered by suppliers. Discounts are thus not the result of negotiations, but of Web-enabled pooling and aggregation of demand. Letsbuyit contributes to shifting bargaining power to customers while at the same time provides safeguards.
against frictions in the service delivery. For ongoing pooling processes, the time limit for joining is made transparent on the Web. Email notification is offered. The business model of Letsbuyit is not restricted to particular product features, but rather to markets where suppliers are offering volume discounts and where customer preferences can be pooled. Letsbuyit is negotiating with suppliers to identify and get volume discounts on popular products.

Price discrimination based on product characteristics (versioning and bundling). Versioning is another strategy to differentiate prices based on product variations (e.g., customized products) or product and service bundles expressed via variation of contractual terms regarding logistics, payments, warranties etc. (Shapiro and Varian 1998, 1999). With different versions of a product offered, customers position themselves into different groups according to their WTP for certain product attributes. In cases where observable exogenous customer characteristics have little to do with their WTP, versioning can be a good strategy. In such a situation, the seller provides at least two versions of a product and determines associated prices. A specific form of versioning results from aggregation or product bundling, where products are sold together as a package (Soman and Gourville 2001). Many software packages (e.g., Microsoft Office) are bundles of individual components. Academic journals or newspapers are bundles of articles sold as a package and also subscriptions to magazines can be seen as product bundles of several issues (Loebbecke 1999). Even flight tickets can be considered as bundles of various product features such as ‘on-board service’, ‘right to change booking’, ‘total travel time’, and the like. The pricing advantage of bundling goods can easily be illustrated (Bakos and Brynjolfsson 1998). It has also been demonstrated (Bhargava et al. 2000) that intermediary’s profits increase the more the service quality levels being offered are differentiated. Amazon is offering customers’ looking for a book an additional book in the same domain at a discount, i.e. a customized bundle. The Web has lowered the costs for product variations and bundling as well as related menu costs and has thus led to a proliferation of product-related price discrimination (Loebbecke, 2002).

Dynamic or flexible pricing (auctions, reverse auctions, private markets). Price negotiations are an alternative to price setting by suppliers. In this case, negotiations take place according to certain rules, which might have been defined or chosen by the trading partners or a third player like the provider of a marketplace. Prominent examples of price negotiations are price haggling in the bazaar (Brandtweiner and Scharl 1999; Geertz 1978) or auctions. The latter are mechanisms for determining prices in markets and are thus not considered as instruments for price discrimination. Even if we consider supplier auctions, the supplier is relinquishing control over the price beyond setting the minimum bid or reserve price and defining the auction parameters (auction rules, bidding increments, lot size etc.). The Web has led to an expansion of auctions in their traditional domain (e.g., commodities, fine arts) as well as to an extension of auctions into new areas of application (e.g., consumer goods at Ricardo.de) (Klein 1997).

The Changing Competitive Environment

The well-known forms of competition via different pricing regimes, e.g. special offers versus every-day-low-price (EDLP) in retailing, have been transferred to the online market space: companies command a higher level of pricing instruments, which are often used in combination. However, most of their manoeuvres are visible and regularly lead to countermoves by competitors. In order to be favourably listed on comparison pages (e.g., http://www.dealpilot.com), vendors regularly omit taxes, fees or typical components or price their goods a fraction lower than major competitors.

A number of specialized cybermediaries (Sarkar et al. 1995) have been set up. They have implemented eBusiness models that specifically address pricing mechanisms. Typical examples are comparison shopping, bundling, personalization, demand pooling, (reverse) auctions or demand collection. By balancing the interests of buyers and sellers they have achieved innovative ways to establish or discriminate prices. Leveraging the benefits of the Web, these intermediaries have established communication platforms to enable signalling of price preferences with (i) varying degrees of product specification; (ii) extending the negotiation to complex bundles of attributes; and/or (iii) shifting power to the customer by pooling demand. In sum, they:

- provide additional information for price and product comparisons;
- reduce coordination and communication cost for buyers and sellers;
- generate volume for the suppliers;
- pool homogeneous demand in order to give individual customers access to suppliers’ volume discounts;
- improve the likelihood of order fulfilment for the customers;
- separate or even isolate the coordination mechanism from other sales and distribution channels, e.g., by creating a private market, and thereby limit spillover effects of price discounts; and
- operate with varying levels of transparency.

However, in order to benefit from those services, consumers have to adjust their (online) behaviour,
extend their search space, plan and coordinate their purchases and accept the risk of delayed purchases in return for potentially lower prices.

The Role of Consumer Behaviour

The immediate consequence of the electronic market space for consumers is more choice. New distribution outlets have emerged, cybermediaries are offering their services, a wealth of pricing and negotiation models has proliferated. Consumers can easily search globally if they accept the challenges to find out about foreign vendors, conditions of payment and delivery and the uncertainty whether the other party will fulfil its promises as expected.

Empirical comparisons of different pricing mechanisms, such as fixed price, auction and demand collection, at times run by the same vendors for the same items have shown that customers' preferences regarding the trade-offs between price, convenience and uncertainty vary considerably (Vakrat and Seidmann 1999). While bargain hunters may be ready to incur delayed delivery, if they can achieve a significantly lower purchase price, gamblers may have a preference for competitive bidding, even up to the point where they have to accept the winner's curse, i.e. having succeeded in the auction at an unreasonably high price (Kambil and van Heck 2002).

Assessment: The Impact of the Web on Pricing Strategies

Table 1 gives a synopsis of the generic pricing strategies, online examples and the impact of the Web on pricing strategies. The propositions summarize current trends with respect to (i) pricing mechanisms, (ii) the changing competitive environment and (iii) consumer behaviour.

- **Proposition 1a**: Traditional pricing strategies can be used more efficiently as costs for versioning and customizing as well as menu costs are reduced once the respective information systems are in place.
- **Proposition 1b**: The Web facilitates dynamic or flexible pricing. However, the proliferation of flexible pricing in consumer markets has been mainly limited to a few successful examples (such as Ebay) and numerous auction sites have gone out of business.
- **Proposition 1c**: Companies pursue their goals with combinations of pricing strategies, e.g. customized bundles or several pricing models next to each other.
- **Proposition 2a**: Preliminary evidence suggests that the successful implementation of pricing strategies is contingent on the product or service characteristics (e.g., personalization cost, innovation cycles, shelf life) and the market structure (level of supplier concentration, role of intermediaries, intensity of competition).
- **Proposition 2b**: Most suppliers have moved cautiously into innovative pricing schemes, in particular dynamic pricing, on the Web. Hence the most prominent examples of innovative pricing are promoted by intermediaries or cybermediaries.
- **Proposition 2c**: Numerous cybermediaries whose business models have been focused on pricing, among them once prominent examples such as Travelbids.com or Accompany.com, have gone out of business. While a detailed analysis of the causes is necessary, a preliminary conclusion is that arbitrage opportunities were not sufficient to sustain their operations in a highly competitive environment. Consequently, necessary growth in business volume has become more difficult and costly for the individual company. Moreover, suppliers often fought back once the cybermediaries had succeeded to build their business (e.g., in the auto industry see Klein and Selz 2000).
- **Proposition 3**: Customer acceptance of different pricing models depends on their personality and preference structure (e.g., trade-offs between price, convenience, uncertainty) and varies depending on situational parameter as well as on products and services.

Table 1. Transformation of pricing strategies

<table>
<thead>
<tr>
<th>Differential pricing based on ...</th>
<th>Online examples</th>
<th>Notable changes and innovations ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer characteristics</td>
<td>Weblining</td>
<td><em>Micro-segmentation is based on customer profiling, differential pricing is usually opaque for customers.</em></td>
</tr>
<tr>
<td>Sales volume</td>
<td>Letsbuyit</td>
<td><em>Initiative and responsibility for demand pooling are shifting from suppliers or vendors to intermediaries or customers.</em></td>
</tr>
<tr>
<td>Product characteristics (versioning and bundling)</td>
<td>Amazon</td>
<td><em>Customized bundling of items, i.e. bundling based on customer characteristics.</em></td>
</tr>
<tr>
<td>Flexible pricing with active role of consumer</td>
<td>Ricardo</td>
<td><em>Online auctions expand auction mechanisms into new application domains.</em></td>
</tr>
</tbody>
</table>
PRICING STRATEGIES IN THE AIR TRAVEL INDUSTRY

In order to gain more specific insights into pricing strategies, changing competitive environments and consumer behaviour, we will take a closer look into one outstanding industry example which is renowned for highly elaborated pricing strategies and yield management: the air travel industry (e.g., Desiraju and Shugan 1999; Dutta and Segev, 2001; Dutta et al. 1998).

Industry and Product Characteristics

Before exploring pricing strategies, basic industry and product features are summarized (Harrell Assoc. 2002; Klein and Loebbecke 2001; Pompl 1991; Werthner and Klein 1999). The main players are illustrated in Figure 1. Online players are represented in the shaded area. Next to the airlines, Priceline and airline online alliances are the players who pursue the most active pricing strategies. Among the airlines two groups of companies have to be distinguished:

1. The incumbents: full service, international airlines (e.g., American Airlines, United Airlines, British Airways, Lufthansa, Singapore Airlines), which offer a dense network of domestic and international connections, often provided by an alliance. They list their flights on CRS/GDS and rely on price discrimination and yield management.

2. The challengers: no-frills airlines (e.g., Southwest Airlines, easyJet, Ryan Air), which operate a limited number of direct connections, typically between smaller, less frequented airports. Often they have one class and demand-oriented price discrimination. They regularly advertise special offers.

Table 2 provides a summary of the main product characteristics, i.e. airline tickets for scheduled flights, as they pertain to differential pricing and yield management.

As a result of the product characteristics and the incumbents’ business model, differential pricing has a long tradition in the air travel industry. The airlines are employing a range of coordinated pricing strategies (Table 3), which are designed to optimize the airlines’ yield and to allocate excess capacity. They support enhanced customer relations and customer loyalty. Given the intense price competition in the industry as well as numerous initiatives of Web-based intermediaries, the airlines’ Web-based pricing measures are positioned to primarily facilitate their own online direct sales activities, i.e. channel specific incentives (e.g. bonus points for online booking, e-tickets), and fit into the overall strategy.

Examples of Emerging Pricing Schemes

While the airlines’ Web-based pricing schemes are predominantly conservative, the Web has nevertheless yielded numerous innovative schemes and has led to an intense positioning competition among incumbent and challenger airlines, CRS/GDS and cybermediaries. The following examples give evidence of various players’ pricing strategies (for a current listing of sites for discount tickets and their policies see also http://www.flightauction.com/).

Price leadership: the example of no-frills airlines. The challenger airlines are pursuing a low-cost/low-price air transportation model, comparable to the retailers’ everyday-low-price (EDLP) model, however combined with additional special offers. They are not discriminating...
between different service classes on a single flight, however yield management is practised. Online distribution is a key part of their low-cost model, which is facilitated by the simple, point-to-point flights they are offering. They typically grant online booking discounts in order to drive up Web-based sales. Companies like Southwest Airlines, easyJet or Ryan Air have achieved the highest online booking ratios in the industry.

Ticket auction: the example of Lufthansa. Since August 1997, Lufthansa has regularly been auctioning selected flight tickets via their website InfoFlyway.

Table 2. Product characteristics of airline tickets for scheduled flights (by international airlines)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Tickets for scheduled flight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable demand and fixed production capacity</td>
<td>Demand fluctuates (sometimes higher, sometimes lower than available capacity) and inventory is sold before the date of production using reservation systems. Production resources, i.e. seat capacity, are defined by the flight schedule and aircraft allocation. They are fixed in the short term and adjusting capacity is costly.</td>
</tr>
<tr>
<td>Perishable inventory</td>
<td>The shelf life of tickets is determined by the date of production, i.e. the flight schedule (after the gate has been closed, all unoccupied seats are worthless).</td>
</tr>
<tr>
<td>Fixed production cost</td>
<td>Aircraft, crew, and fuel cause high levels of fixed costs.</td>
</tr>
<tr>
<td>Low variable unit price</td>
<td>The marginal cost for an additional passenger is about 15 to 20% of the overall cost for a flight.</td>
</tr>
<tr>
<td>Differential pricing</td>
<td>Demand/price elasticity varies across customer segments. Leisure travellers are typically price-sensitive, business travellers typically time-sensitive. The capacity of every flight is split into numerous booking classes that reflect different service classes (first, business and economy) and on top of that fare restrictions (advance purchase, length of stay, right to change or return tickets).</td>
</tr>
<tr>
<td>Individualization cost</td>
<td>Customization leads to high fixed cost for setting up yield management and booking systems. Low variable cost for price discrimination based on service level and contractual features or fare restrictions.</td>
</tr>
</tbody>
</table>

Table 3. Incumbent airlines’ pricing strategies: examples and rationale

<table>
<thead>
<tr>
<th>Differential pricing based on ...</th>
<th>Examples</th>
<th>Rationale</th>
</tr>
</thead>
</table>
| Customer characteristics         | • Time preference (business travellers)  
• Price preference (leisure travellers)  
• Student specials,  
• Value-based classification of customers (e.g. at Lufthansa Frequent Traveller, Senator status)  

Sales volume | • Loyalty programmes with volume related bonus schema.  
• Progressive bonuses for valued customers.  

Product characteristics  
(Versioning and bundling) | • Individual flight: booking classes (service levels, fare restrictions, availability),  
• Frequent price changes for identical routes depending on price competition and demand forecast (yield management)  
• Seasonal specials and last-minute offers.  
• Specials related to administrative or distribution costs (electronic customer account, e-ticket, online direct sales etc.).  

Flexible pricing with active role of consumer | – | – |  

Customer segmentation depending on preferences and WTP.  
Loyalty programmes as core elements of the marketing and CRM strategies leading to detailed knowledge about loyalty programme participants (used for group pricing, not yet, however, for personalized prising).  
Services classes are related to customer characteristics.  
Channel incentives (related to distribution)
specify or intentionally leave open. had a wide range of attributes, which they could bids for customer orders. Customers using Travelbids bids for flights, in reverse auctions, travel agents submit from the Lufthansa auction, where customers submit operated a specialized electronic market. Different Customers' requests were posted on TravelBids, which and customers who use Lufthansa’s website regularly. Buyers frequently use tickets for which they have successfully bid for an additional weekend trip or as a gift. Lufthansa has included offerings from their partners, like holiday packages, in the auctions and is exporting the auction to countries outside Germany (Klein 1997).

Cathay Pacific was the first airline in 1998 to auction off tickets. However, Lufthansa is the only airline that is currently using the auction model. Given the low level of revenues, the main goal obviously is event marketing and market research. Lufthansa is using the technology of a German auction site (Ricardo.de). The auction sites Ricardo.de and Skyauction.com are also running auctions in the travel category and in particular flight tickets.

**Reverse auctions: the example of TravelBids.** Van Heck and Vervest (1998) distinguish between sales and procurement auctions. While the Lufthansa auction is a typical case of a sales auction, calls for tenders are traditional examples for procurement auctions. Customers advertise specifications of their needs and ask potential suppliers to submit competing bids. So far procurement auctions, also referred to as reverse auctions, have been limited to business markets. Reverse auctions for consumer goods are a rather new pricing strategy that has only become operational as a result of the Internet.

TravelBids (http://www.travelbids.com) was an example of such a reverse auction (it ceased operation). Customers’ requests were posted on TravelBids, which operated a specialized electronic market. Different from the Lufthansa auction, where customers submit bids for flights, in reverse auctions, travel agents submit bids for customer orders. Customers using Travelbids had a wide range of attributes, which they could specify or intentionally leave open.

On the air travel market, all bids were visible for everyone to see; hence prospective customers could view other listings and see the results. The bidding period could be set up to 72 hours. Unsuccessful bids could be repeated. TravelBids’ fee of USD 10 for successful bids was split between the travel agent and the customer. On the supplier side, travel agents bid to fulfil the demand. They used their knowledge to identify flights that fit the customers’ preferences and gave up a part of their commission in order to gain additional orders.

**Demand collection systems: the example of Priceline.** In most markets, consumers have little opportunity to signal the amount of money they are willing to pay before they actually make a purchase. This leads either to consumers’ surplus when the actual price is below the customers’ WTP or to a dead-weight loss when it is above their WTP (Bakos and Brynjolfsson 1998). The Web, however, makes pricing strategies feasible, which combine personalization and versioning. So-called demand collection systems facilitate a platform for consumers to signal their price preferences for a class of products using certain specification criteria. Those signals are forwarded to suppliers who can decide individually whether they can and want to fulfil those limited purchase requests.

Based on the assumption that supplier-side fixed prices do not always lead to an optimal allocation of products and services, Priceline (http://www.priceline.com) has set up a market platform initially for airline tickets. The product range has been continually expanded and includes among others hotel rooms, new cars and home financing (on Priceline in general, see, among others, Dolan 2000). Customers can specify their preferences including the price. Priceline then advertises these offers to airlines, car companies, or financial services companies who can decide whether they want to honour this additional demand at the listed price. Airline customers, however, do not give a detailed specification, but only specify day, place of departure and destination, and they request a flight operated by a major airline. The specified offers are forwarded sequentially in a highly efficient and patented process to potential suppliers. In this way, airlines have sufficient scope to fulfil the demand if they wish to do so. Feedback is given to the customers within less than an hour. Priceline earns a commission for every sold ticket.

In contrast to auctions, Priceline has set-up a private market. The demand is actively advertised to airlines, but neither the offers nor the deals are made public. Suppliers can decide based on internal policies. They do not risk any kind of signalling effect on the notion that a flexible price strategy might be sent to the market. Priceline is called a demand collection system because it functions as an intermediary, which collects customers’ requests for products and services at a different than the advertised price. This demand typically is not articulated and could thus not be fulfilled. By differentiating prices based on the customers’ explicit price preferences, Priceline achieves a high level of allocation efficiency. Customers, however, face the risk of receiving products or services whose features (except for the price) do not exactly meet their expectations.
Last-minute offerings: Hotwire. Partly in response to Priceline, a consortium of US airlines has set up Hotwire as a Web-based outlet for last-minute tickets at substantially reduced, however fixed rates. Hotwire is using the ease and speed of Web-based communication in order to allocate excess capacity.

Value-based pricing: the example of Rosenbluth. Faced with increasing (price) competition from airlines, some travel agents have been looking for innovative ways to ensure their market position. Rosenbluth is one of the largest US travel agencies. They have a long tradition in providing a ‘best fare’ analysis and rebooking customers in order to secure the best deals. Moreover, they pursue a strategy of combining customer relationship management with innovative applications of information technology (Clemons and Row 1991), calling themselves ‘people-focused and technologically savvy’ (http://www.rosenbluth.com).

Their current value-based pricing strategy (Berry and Yadav 1996) reflects an overall strategic reorientation: in order to underscore the notion of comprehensive travel management and long-term customer benefits, Rosenbluth is charging their customers the net ticket price (without the travel agent’s commission) and add a service fee (Rosenbluth and McFerrin 1998). By this means the customer gains more transparency and a better insight into the cost structure. They are shown how they can influence costs. While this strategy is not restricted to the online channel, service fees reflect the underlying cost structure and are lower for online transactions. Further, customers are offered several online features, which enable them to monitor their account and integrate Rosenbluth offerings into their internal processes. While Rosenbluth focuses on the business traveller segment, also ‘consumers’ of travel services, their strategy can also be applied in the leisure travel segment.

Demand aggregation: Letsbuyit. In contrast to high-flying expectations the demand aggregation business model has only been successful in small market segments. Letsbuyit is one of the few still active players. They are advertising products in the travel and leisure category. Randomly collected evidence, however, suggests that this is not a category that draws a lot of business. Furthermore, demand for tickets for scheduled flights can only in rare cases (e.g., large trade fairs) be successfully pooled.

Analysis

The assessment of the individual pricing models and the underlying trend is based on (i) a comparison of the pricing strategies, (ii) an analysis of the competitive environment and (iii) a look into consumer behaviour.

Pricing strategies. Table 4 provides an overview of the examples discussed, with an emphasis on Web-specific activities and the underlying rationale. No-frills airlines with their simple, straightforward pricing models and additional online booking discounts have successfully drawn consumers to the Web. Lufthansa has established ticket auctions as a marketing event, as a pricing model the auction has little impact. Priceline has attracted a customer segment with a clear preference for low price offers even if the flight connection is sometimes not convenient. Demand collection is hardly working in the scheduled ticket market.

Table 5 shows the examples clustered according to the underlying pricing strategy. In comparison to the overall range of pricing strategies (see Table 3), the incumbent airlines individually make very little use of Web-specific pricing instruments. In contrast, there is sufficient evidence to suggest that inter- or cybermediaries are obviously the drivers for innovative pricing schemes from which consumers are benefitting. Probably as a result of frequent price changes driven by yield management strategies and a high level of price discrimination, the role of dynamic pricing mechanisms like auctions is limited. We have to look into the competitive environment and consumer behaviour in order to understand, why the role of cybermediaries with innovative pricing models are not more prominent in the air travel industry.

The competitive environment. The incumbent airlines’ pricing strategies are driven by three goals: (i) the attempt to capture a large share of the consumer surplus, reflected in yield management, (ii) to attract consumers to the Web, reflected in online booking incentives, and (iii) to retain control over the distribution channel. The latter goal is pursued in cooperation with other airlines through ventures such as Hotwire, Orbitz, or Opodo, which are positioned to compete with successful online players (Hotwire against Priceline, though with a last minute fixed price model, Opodo and Orbitz against Travelocity and Expedia with a best offer model).

As some of the goals may be conflicting, they have to be pursued in a carefully balanced and coordinated manner. For example, Lufthansa could theoretically yield high returns from auctioning tickets with no upper price limit for heavily booked flights (such as prior to or after major holidays). However Lufthansa fears that such auctions might have a negative reputation effect and confuse customers and hence does not pursue this option.

In response to the success of the no-frills airlines and in particular their pricing strategies, Lufthansa and British Airways have introduced low-price fixed fees for major routes in Europe. Moreover there have been skirmishes of price wars over selected routes which have even lead the German antitrust agency to intervene
Table 4. Innovative pricing models

<table>
<thead>
<tr>
<th>Pricing model</th>
<th>Traditional</th>
<th>Web</th>
<th>Strategy and Web benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price leadership</td>
<td>Product different from incumbent airlines (point-to-point connections) - no booking classes, - yield management in the low-price segment</td>
<td>easyJet/ No-frills airlines, discounts for online booking (versioning)</td>
<td>Different business model, Web is instrumental in keeping distribution costs down and supporting the allocation of capacity. Simple price structure is advantageous for online booking. Web impact: efficiency and speed.</td>
</tr>
<tr>
<td>Reverse auction</td>
<td>-</td>
<td>Travelbids (out of service) (versioning/individual pricing)</td>
<td>Allocation of excess capacity and price incentives. Web impact: efficiency, visibility and speed.</td>
</tr>
<tr>
<td>Demand collection, private market</td>
<td>-</td>
<td>Priceline (versioning/individual pricing)</td>
<td>Allocation of excess capacity and price incentives. Customers express their individual WTP for travel services. Web impact: efficiency, visibility and speed.</td>
</tr>
<tr>
<td>Last-minute offers</td>
<td>Well established</td>
<td>Hotwire (versioning)</td>
<td>Allocation of excess capacity and price incentives. Web impact: efficiency, visibility and speed.</td>
</tr>
<tr>
<td>Unbundling travel and distribution services</td>
<td>Value-based pricing for services (versioning)</td>
<td>Rosenbluth: Value-based pricing for services (versioning)</td>
<td>Focus: service differentiation. Customers are enabled to influence the price by selecting the service level (customer-initiated service customization). Technology is used to support travel management and in particular customer processes.</td>
</tr>
<tr>
<td>Demand aggregation</td>
<td>-</td>
<td>Letsbuyit: Allocation of excess capacity and price incentives</td>
<td>Web impact: efficiency and visibility. Restricted applicability in the consumer travel segment.</td>
</tr>
</tbody>
</table>

Table 5. Web-based pricing strategies

<table>
<thead>
<tr>
<th>Differential pricing based on ...</th>
<th>Online examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer characteristics</td>
<td>Demand collection (Priceline)</td>
</tr>
<tr>
<td>Sales volume</td>
<td>Demand aggregation (Letsbuyit)</td>
</tr>
<tr>
<td>Product characteristics (versioning and bundling)</td>
<td>Value based pricing (Rosenbluth), Online booking discounts (e.g. easyJet, Lufthansa)</td>
</tr>
<tr>
<td>Flexible pricing with active role of consumer</td>
<td>Demand collection (Priceline)</td>
</tr>
<tr>
<td></td>
<td>Lastminute (Hotwire)</td>
</tr>
<tr>
<td></td>
<td>Ticket auction (Lufthansa), Demand collection (Priceline)</td>
</tr>
</tbody>
</table>

and prevent Lufthansa from selectively undercutting their competitors price on individual routes while maintaining the traditional fees for other routes.

Even though the Web still has only a limited impact on the air travel industry in terms of total volumes, it has emerged beyond an experimental field into a battleground for players with competing business and pricing models. At times, the incumbent airlines have used considerable force up to the limits of anti-trust or predatory behaviour to defend their turf (Berghel 2000). As suppliers of the service they eventually have most of the control over capacities and prices. Priceline is dependent on the airlines to make low cost tickets available. Overall, in the air travel industry the
intermediaries’ influence and power is rather limited and regularly challenged by the airlines or airline alliances (Klein 2002).

The role of consumer behaviour. In particular in Europe, consumers’ response to online offers for scheduled flights has been slow and hesitant (Marcussen 1999), with the notable exception of tickets for no-frills airlines. Empirical analysis suggests that online search is still too cumbersome and consumers are uncertain whether they will succeed to find the best offer online (Anckar and Walden 2002). Despite significant improvements in the usability of online booking sites, the underlying dynamics and complexity of ticket prices is not fully transparent to the consumers and yields uncertainty.

While the incumbent airlines’ highly differentiated, one-sided fixed offers pose a considerable amount of complexity, some of the innovative pricing models imply changing roles for consumers. In a ticket auction, the consumer actually sets the price by making one or more bids. Priceline affords the consumer the opportunity to define the characteristics of the product or service required, including the price. When using Rosenbluth’s services, customers have the choice of different and separately priced service modules. Given the options and complexity these models offer, they have not reached the mass market but have rather been confined to specialized market segments.

CONCLUSIONS AND LESSONS LEARNED

The Web as a global, low-cost, information-rich, computer-mediated communication environment has lead to the emergence of pricing strategies based on differential pricing and negotiations about product attributes. It facilitates low signalling cost and time on the suppliers’ and the customers’ side and it enables last minute allocation of products and services. While pricing has traditionally been a core element of business strategy (Kotler and Armstrong 1999), we have put forward examples where not only intermediaries or even suppliers, but in particular customers gain a more active role in price setting and product or service attribute specification. Reverse auctions and so-called demand collection systems are just two examples of Web-based business models that allow customers to specify their preferences for a product or service and get the best offer. Hence, based on the experience and identified rationale of the strategies analysed, future developments can be envisioned that extend the scale by involving more customers and the scope by adding attributes or mechanisms of negotiations, such as increasing the number of cycles between customers and suppliers:

- Customer-driven specification of service attributes: In addition to specifying fixed attribute combinations, intermediaries can assist customers to specify trade-off functions (alternative parameter settings combined with different prices) which allow suppliers to respond even more flexibly.
- Customer preference signalling and response: The paper has discussed different signalling solutions with more or less fixed offers. However, the communication platforms could be used by suppliers to signal specification matching alternatives and to negotiate parameter settings.
- Customer-driven service innovation: A further step would be to facilitate customers to specify innovative attribute combinations they would cherish or to specify their preferences and requirements for future products (reverse marketing, Leenders and Blenkhorn 1988).

Even though the feasibility and the merit of these innovative pricing models have been shown, the commercial success of the respective intermediaries has been fairly limited in the air travel industry. Our analysis has indicated that the product structure, the market structure and consumer behaviour explain a split between smaller niches for intermediated pricing models and the mainstream governed by yield management and consistently low price offers.

In contrast, we expect to see a broader range of service industries that will take advantage of the new coordination and communication opportunities. First initiatives can be observed in some content industries and in particular in the telecommunications industry. The high industry dynamics and the fragmentation into different service providers (fixed line, mobile, Internet etc.) have facilitated the rise of numerous influential intermediaries, which are offering a plethora of pricing schemes. Again, we have to take into account the respective product characteristics. It remains to be seen whether and to what degree the various industry constraints will lead to a broader application of the pricing strategies laid out in this paper or whether they will trigger even different pricing strategies designed for specific industry needs.

Note

References


