

Successfully selling accommodation packages at online auctions – The case of eBay Austria

Matthias Fuchs^{a,*}, Alexander Eybl^{b,1}, Wolfram Höpken^{b,1}

^aEuropean Tourism Research Institute (ETOUR), Mid-Sweden University, Kunskapsväg 1, Östersund, Sweden

^beTourism Competence Center Austria, Technikerstr. 21a, 6020 Innsbruck, Austria

ARTICLE INFO

Article history:

Received 23 December 2009

Accepted 19 October 2010

Keywords:

Online auctions
Accommodation packages
eBay
Price determinants
SEM

ABSTRACT

In this era of e-commerce online auctions have emerged as a valuable distribution channel (Nissanoff, 2006; Werthner & Ricci, 2004). Displaying low entry and exit barriers but also vast coverage rates, online auctions may effectively augment the distribution potential of hotel businesses. This paper identifies those factors that positively affect the final price level obtained in online auctions for hotel room vouchers. Based on data gathered at eBay comprising 53,406 auctions, linear structural equation modelling (SEM) was conducted to identify significant relationships between auction characteristics and the obtained final price for hotel room vouchers. By drawing on these results and through an example of the Austrian eBay platform, selling strategies for successfully listing accommodation packages at online auctions are proposed.

© 2010 Elsevier Ltd. All rights reserved.

1. Introduction

Sharpened competitive dynamics and shortened product life cycles provoke firms to quickly adjust to changes in their economic environment, thus, disadvantages of static pricing mechanisms become more and more apparent. As a valuable alternative for the electronic business era, economic literature highlights online auctions as the central dynamic pricing instrument (Bapna et al., 2004; Elmaghraby, 2004; Heck, 2000; Turban, Lee, King, & Chung, 2000). Already one decade ago, Sahlman (1999) ascertained “the Free Market’s auction is being rolled out in essentially every sector of the economy, from the beanie babies at eBay to steel at Metal-Site.com” (Sahlman, 1999: 101). Similarly, Klein (1997) summarized the advantages of online auctions: “Among the different market mechanisms, electronic auctions have gained the most attention. Maybe this is due to the fact that most people are intrigued by the dynamics of real time price determination or perhaps by the glamour of auctions in the fine art or even by the opportunity to gain a bargain. It maybe it is just this amount of attention which is so critical for a medium like the Web that is governed by the competition of attention, that continually attracts auctioneers and vendors to the World-Wide-Web” (Klein, 1997: 1). Indeed, online

auctions have tremendously gained popularity in the past years (Ghani, 2005; Ho, 2008). eBay, one of the most successful electronic marketplaces, has become synonymous with online auctions, growing at a high rate, both, in sales volume and usage rates. For instance, in 2008 the value of sold items stood at \$59.6 billion (eBay Facts, 2009). Previously intended as a pure C2C marketplace, more and more professional sellers are using the eBay platform to sell their items (B2C). Thus, bidders are typically end-consumers, something that is also shown by a clear predominance of bidders’ private membership accounts. Moreover, with 150 000 professional sellers in Germany, eBay showed a trading volume of \$3.1 billion in 2008 (eBay Business Barometer, 2009).

Due to the high market potential, a growing number of tourism suppliers have recently started to sell tourism and travel services through eBay. More precisely, on eBay Germany in 2008 the item category ‘Travel’ – which also lists accommodation packages from Austria – had about 53 000 listings at any given time, an increase of 112% since 2004 (eBay Germany, 2009). Moreover, with 5 million visitors per month, eBay Germany lists more than 14 000 items in the ‘short-term lodging category’ (eBay Facts, 2009). Understandably, for a growing number of hotel businesses, eBay becomes a valuable additional distribution channel displaying both low entry and exit barriers (Fuchs, Höpken, Eybl, & Ulrich, 2008: 291).

In economic terms, online auctions have the ability to flexibly set prices based on the dynamic concurrence of supply and demand subject to specific market and competitive conditions. As an effect, online auctions coordinate demand and supply through market clearing prices, so that a maximum number of products can be sold

* Corresponding author. Tel.: +46 6319 5812; fax: +46 6319 5810.

E-mail address: matthias.fuchs@miun.se (M. Fuchs).

URL: <http://www.etourism-austria.at>.

¹ Tel.: +43 512 507 36957; fax: +43 512 507 36998.

(i.e. coordination function). Especially for complex commodities, such as tourism and travel services, online auctions allow pricing without prior price estimates (i.e. price setting function). Furthermore, online auctions serve as an effective selling mechanism for products that are difficult to sell, such as residual seats of an airplane (i.e. allocation function). Finally, online auctions attract a huge number of visitors and bidders, thus, representing an effective additional distribution channel for reaching new customers (i.e. distribution function) (Klein, 1997: 3).

Prior research devoted to the success factors of online auctions has particularly focused on the various determinants affecting the price building process (Bapna, Jank, & Shmueli, 2004; Hayne, Smith, & Vijayasathy, 2003; Wan & Teo, 2001). Final prices obtained with auction type markets are usually characterized by huge variations (Ghani & Simmons, 2004; Lee, Im, & Lee, 2000). These are even stronger for perishable (i.e. non storable) tourism service products since prices immediately react to demand variations. Thus, when business is low, professional tourism suppliers (e.g. airlines) typically offer a limited number of service products at a low rate to attract additional demand in the short-term (Burger & Fuchs, 2005). Moreover, tourism service products are characterized by high heterogeneity and complexity. Thus, online auctions, even in the same tourism category (e.g. accommodation packages) differ with regards to many attributes (e.g. number of persons, nights, category, etc.). Finally, since tourism service products show a high individualization potential, bidders usually have no clear market price in mind. Thus, economists would ascertain that tourism services show a relatively large share of so called 'private value components' (Clerides, Nearchou, & Pashardes, 2004).

The aim of this research study is to empirically identify those factors that positively affect the final price level obtained in online auctions for hotel room vouchers. More precisely, one objective is to identify specific accommodation packages (i.e. hotel category, number of nights and beds, respectively) that are most suitable for being auctioned off at online auctions. The second objective is to give tourism sellers (i.e. hoteliers and online intermediaries) adequate advice on how to increase their expected online auction performance (Buhalis & Licata, 2002; O'Connor & Frew, 2002). While the first objective is achieved through descriptive/exploratory analyses, the second objective is achieved through falsifying hypothesized relationships between particular auction characteristics and the obtained auction's final price for accommodation packages by employing linear structural equation modelling (SEM).

Compared to multiple regression analysis SEM allows one to decipher empirical relationships within complex causal chains (Reisinger & Turner, 1999). In our case, this leads to significant improvements to existing online auction research. Firstly, both direct and indirect empirical effects with differing directions and magnitudes can be simultaneously identified. Secondly, effects from variables that cannot be directly observed, such as "seller's reputation", can be considered (i.e. latent constructs). Finally, and most important, the multi-layer structure of SEM allows the inclusion of mediator variables. Thus, in our study, the number of visits and its predecessors (i.e. listing enhancement features) can also be empirically considered when determining the performance of online auctions in tourism.

Based on data gathered from 53 406 auctions on eBay, SEM was conducted in order to detect significant relationships between the various auction characteristics and the obtained final price levels for hotel room vouchers. By drawing on these results and through an example of the Austrian eBay sub-platform, selling strategies for successfully listing accommodation packages at online auctions are proposed.

This paper is structured as follows: the literature review in section 2 provides an overview of previous studies concerning price

determinants in online auctions. Subsection 2.1 summarizes the results obtained in these studies. Subsection 2.2 briefly describes both, the use and bidding scenarios as they are typically perceived by bidders at eBay's auction platform. Based on the insights from the literature review and the assumed bidders' behaviour at eBay, 11 hypotheses are set up in section 3.1, while the data collection process via eBay's Application Programming Interface (API) is sketched in section 3.2. Moreover, section 4 discusses both, descriptive results and results from linear structural equation modelling. By drawing on these results, selling strategies based on optimized auction design settings are deduced. The conclusion section summarizes the study results and critically evaluates the applied method. Finally, future veins of online auction research in the tourism domain are sketched.

2. Literature review

Erlenkaemper (2005) identified price determinants for memory cards ($N=602$) and show-tickets ($N=415$) sold on the German eBay platform. He defined three endogenous variables: the auction's final price, the number of bids and the share of snipers participating in an auction. Sniping is a bidding strategy where bidders place their bids in the last seconds of an auction in order to prevent other bidders from reacting with subsequent bids. Erlenkaemper (2005) identified significant relationships between the item's final price and the following variables: starting price, number of bids, share of snipers, number of pictures used and the quality of the product description. At the same time, the starting price, the auction's duration, the number of pictures used and the number of competitors within the same product category significantly affected the number of bids. Finally, with respect to the auction's share of snipers, Erlenkaemper (2005) found out that the less private value components the sold product showed, the higher was the share of snipers (Clerides et al., 2004). If bidders are generally aware of the market price of a specific product, the product is considered to have little private value components. By contrast, if bidders do not share a common price estimation of a product, as typical for most offered services, the product is considered to have more private value components.

Another recent research study focussing on the factors determining the item's final price in online auctions was done by Lucking-Reiley, Doug, Naghy, and Reeves (2007). They analyzed 461 auctions on the eBay.com platform with respect to collectible coins. In line with previous research, the seller's reputation proved to have a significant impact on the auction's final price (Khopkar, Li, & Resnick, 2005; Ottaway, Bruneau, & Evans, 2003). Particularly negative customer feedback affected the final price level. In contrast, both the level of the starting price and the reservation price had a positive influence on the final price. The reservation price limit is an auxiliary eBay option allowing the seller to reject selling his item if the reservation price is not met (Tucker & Massad, 2003). As far as auction duration was concerned, Lucking-Reiley et al. (2007) but also Bajari and Hortacsu (2003) and Erlenkaemper (2005) found out that the longer an auction lasts, the higher final price levels will be. Finally, the number of bids was affected by the going market price and the starting price. More precisely, it was noticed that the lower the starting price and the larger the difference between market price and starting price, the higher the number of observed bids was Lucking-Reiley et al. (2007).

A further auction study on eBay.com was conducted by Wan and Teo (2001). Similarly to Lucking-Reiley et al. (2007) they gathered 1251 auctions with respect to collectible coins to explore the impact of five independent variables on the auction's final price. Interestingly, in their study the auction's duration proved to have no impact on the final price level. Similarly, the seller's reputation was not

identified as a significant influence on final prices. However, the starting price proved to affect the final price level. On average, a 1% increase of the starting price would yield a 0.83% higher final price. Moreover, the final price was positively influenced by the number of bids. More precisely, a 1% increase of the number of bids would marginally raise the final price level at 0.48% (Wan & Teo, 2001).

Bajari and Hortacsu (2003) focused their online auction study on collectible items, analyzing the relationship between the number of bids, starting price and seller's reputation. They found out that a higher starting price would decrease the number of bids. However, both, starting price as well as the number of bids are positively related to the final price of the sold items. Finally, Lee et al. (2000) and Houser and Wooders (2006) concentrated their studies on the relationship between seller's reputation and the final price. Although they ascertained a basically positive relationship, both groups of authors identified a relatively stronger impact of negative feedback on the final price level obtained with the observed auctions.

2.1. Synthesis from past studies

The findings from previous research studies that have been conducted to discover the determinants of price formation in online auctions are synthesized in Table 1.

Interestingly enough, with regard to price determinants in online auctions, the only consistent results from past studies are the impact of the number of bids on the final price level and the impact of the starting price on the number of bids (Table 1). Due to this low generalisation potential, there is a need for business sector specific auction research, such as online auction studies focussing on accommodation packages (Buhalis & Licata, 2002; Fuchs et al., 2008; Hayne, Smith, & Vijayasathy, 2003; Ho, 2008; Wan & Teo, 2001; Young-Hoon & Bradlow, 2005).

2.2. The bidding process

In order to illustrate those interaction points on the eBay platform that are responsible for eventual significant relationships between auction features, bidding behaviour and the auction's final price level, the typical use and bidding scenario as perceived by bidders is displayed in Fig. 1 (eBay Austria, 2009).

Table 1
Price determinants according previous auction research.

Dependent variable	Independent variable	Measured effect	Author(s)
Final price	Starting price	Positive	Lucking-Reiley et al., 2007 Wan and Teo, 2001 Erlenkaemper, 2005 Bajari and Hortacsu, 2003
Final price	Number of bids	Negative Positive	Tucker and Massad, 2003 Lucking-Reiley et al., 2007 Erlenkaemper, 2005 Wan and Teo, 2001 Bajari and Hortacsu, 2003
Final price	Seller's reputation	Positive	Lucking-Reiley et al., 2007 Bajari and Hortacsu, 2003 Houser and Wooders, 2006 Lee et al., 2000
Final price	Auction duration	None Positive	Wan and Teo, 2001 Erlenkaemper, 2005 Lucking-Reiley et al., 2007 Bajari and Hortacsu, 2003 Wan and Teo, 2001
Number of bids Number of bids	Auction duration Starting price	None Positive Negative	Erlenkaemper, 2005 Erlenkaemper, 2005 Lucking-Reiley et al., 2007 Bajari and Hortacsu, 2003

An interested user enters the auction platform via eBay's homepage (e.g. www.ebay.at). Afterwards, the user may find items by entering keywords into the search box or by browsing through eBay's category list. Either approach leads the bidder to a result list on which she may apply various filters (e.g. hotel category, region, price ranges, etc.). The user may also change the sorting of the items (e.g. best match, auction time remaining, current price, etc.). Subsequently, the user will visit the desired auction and decides if she would like to place a bid. Thus, in order to generate a high number of visits, an online auction at eBay must fulfill three preconditions: (i) it must be part of the result lists of as many users as possible, (ii) it should appear among the first results of the result page and, (iii) it should, finally, be perceived as attractive by the user.

In order to positively influence the ranking position in the result list as well as the attractiveness of the offer, the seller can set a low starting price, choose longer auction duration and may activate one or several of eBay's listing enhancement features (Bajari & Hortacsu, 2003; Erlenkaemper, 2005). For instance, the 'gallery picture' feature adds a thumbnail preview into the item list. Choosing the 'border' feature, the auction is enhanced by a surrounding border within the item list. Using the 'bold' feature, the auction title is displayed in bold style within the result list, while the 'highlight' feature adds a coloured background. The feature 'subtitle' gives the seller the opportunity to describe the item with 50 additional characters. A 'featured' item is displayed among the top results of the item list. Finally, the 'secondary category' feature gives the seller the option to put the auction into two distinct eBay categories.

Once the user has become a visitor, she finally has to decide if and which amount she will bid. This bidding decision is positively influenced by trust building mechanisms, such as seller reputation (Houser & Wooders, 2006; Lucking-Reiley et al., 2007). However, the current price level of the auction may also have a significant impact on bidding behaviour (Bajari & Hortacsu, 2003).

3. Hypotheses and data collection

3.1. Hypotheses

According to the discussed literature and the described bidding process on eBay, the following hypotheses with regard to the endogenous variable auction's final price and the two mediating variables 'number of bids' and 'number of visits' are formulated. Results from previous studies basically attest to a direct positive influence of the starting price, number of bids, seller's reputation and auction duration on the auction's final price level (Bajari & Hortacsu, 2003; Erlenkaemper, 2005; Lucking-Reiley et al., 2007). In this study, seller's reputation is operationalized as a latent construct (Reisinger & Turner, 1999) and is measured by the variables membership duration (i.e. period of time a seller is active on eBay), Powerseller status (i.e. an award assigned by eBay to highly active and successful sellers) and feedback score percentage (i.e. the ratio of positive and total feedback). Thus, with respect to the final price level of accommodation packages sold on eBay's online auction platform, the following hypotheses are formulated:

- H₁: The starting price positively influences the auction's final price level;
- H₂: The number of bids positively influences the auction's final price level;
- H₃: The seller's reputation positively influences the auction's final price level;
- H₄: The auction duration positively influences the auction's final price level;

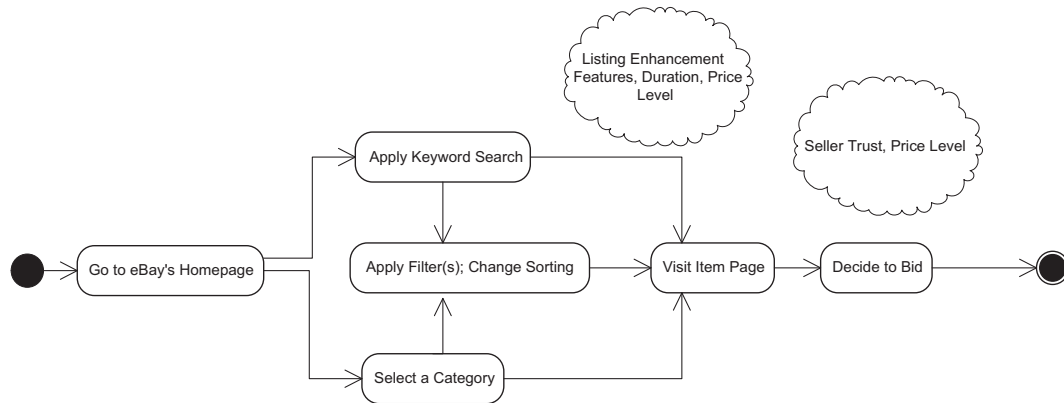


Fig. 1. Bidding process at eBay.

Moreover, Lucking-Reiley et al. (2007) show that a higher starting price decreases the number of bids. By contrast and according to the described bidding scenario, both, the seller's reputation and the number of visits should positively impact the number of bids. Thus, the following relationships between the number of bids and their various determinants are hypothesized:

- H₅: The auction duration positively affects the number of bids;
- H₆: The starting price negatively affects the number of bids;
- H₇: The seller's reputation positively affects the number of bids;
- H₈: The number of visits positively affects the number of bids;

Since, to our knowledge, the number of visits has not yet been part of any previous empirical research concerning price determinants in online auctions, the hypotheses regarding the number of visits are solely derived from the modelled bidding scenario and the general recommendations for buyers at online auctions (eBay Austria, 2009).

- H₉: The starting price negatively influences the number of visits;
- H₁₀: The auction duration positively affects the number of visits;
- H₁₁: The listing enhancement features positively affect the number of visits;

To sum up, the deduced hypotheses are graphically displayed as a chain of interlinked causal relationships in Fig. 2.

3.2. Data collection

eBay proves to be a highly convenient data source for the accomplishment of empirical analyses because of the huge number of automatically recorded auction data (Cohen, 2002; Lerg, 2006). However, prior to data collection, we defined the variables of the explanation model according to the above presented hypotheses. Although no auction study so far considered the number of visits, this variable has been integrated into our model. More precisely, it is assumed that eBay's listing enhancement features would positively affect the number of visits, while the latter would, subsequently, increase the number of bids.

The recorded variables are classified into four groups (Bajari & Hortacsu, 2003; Erlenkaemper, 2005). To start with, *action features* are settings made by the seller or are attributes assigned by the auction system. They include the title and the description of the auction, start time, end time, start price, auction duration, number of bids, number of visits, the listing format (auction or fixed price), the final price and listing enhancement features. *Product features* describe the product being sold (i.e. the accommodation package). They include the accommodation type and the category, the validity of the voucher and eventual validity restrictions, number of persons and nights as well as whether or not additional services, such as breakfast or full board, are provided. In order to deduce specific recommendations for selling accommodation packages at eBay, product features are used to classify eBay listings into

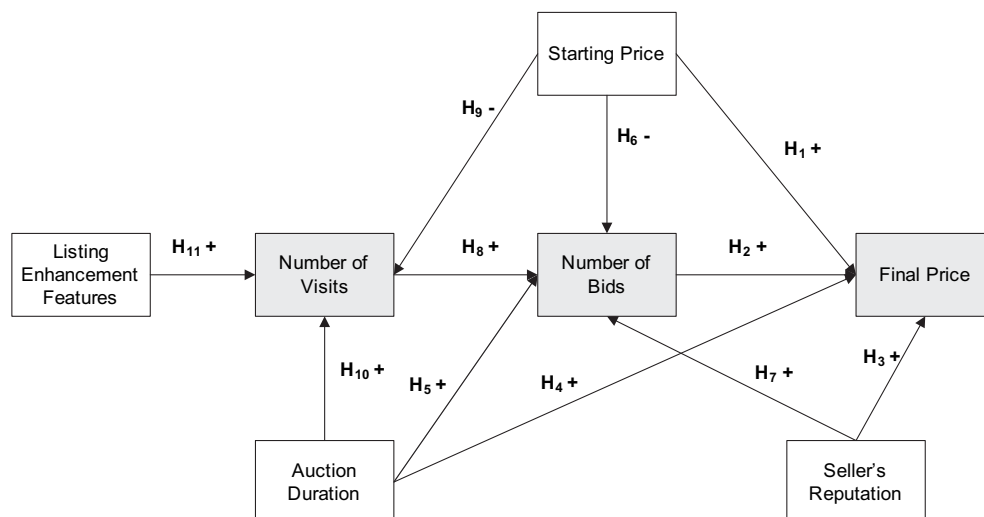


Fig. 2. Hypothesized determinants affecting final price formation in online auctions.

homogeneous product groups (i.e. 4 stars, 2 persons, 2 overnights). *Seller features* describe the seller's eBay username, seller's origin and seller's reputation (i.e. number of positive and negative feedbacks from past auctions) as well as the time period the seller has been active on eBay and the Powerseller status. Finally, *bid histories* show the temporal sequence of biddings represented by logs placed during an auction session including the bidder's name, bid amount, time of bid, bidder's origin and the bidder's feedback score (number of positive feedback minus number of negative feedback).

Table 2 summarizes the recorded variables.

In order to systematically collect the necessary data, a software application which extracts auction features through eBay's Application Programming Interface (API) was developed. eBay's API is an interface that enables third party applications to communicate with the eBay platform (Cohen, 2002; Lerg, 2006). The API maybe used to display eBay listings or to automate listing processes and related transactions. While end-users typically utilize their web browser to communicate with the eBay platform, API-based software applications are mainly employed to conduct test runs or to gather auction data for the purpose of statistical analyses. Indeed, eBay's API is an excellent and convenient way of retrieving auction data for research purposes since unbiased auction data can be inexpensively gathered and stored in databases (Werthner & Ricci, 2004). For the purpose of this study, the application collected auction data for an 18 month period from January 2008 to June 2009 from the eBay's 'short-term lodging category'. More precisely, the application extracted auction, product and seller features, as well as bid histories concerning accommodation packages from the Austrian eBay platform. Finally, the number of visits has also been integrated based on the actual counter available for each auction on eBay.

4. Empirical results

The first objective of the empirical analyses is to apply descriptive statistics to our auction data in order to identify specific

Table 2
Classification of collected data.

Variable group	Variables	
Auction features	Title	
	Item description	
	Start price	
	Start time	
	Final price	
	End time	
	Duration	
	Number of bids	
	Number of visits	
	Listing enhancement features	
	Listing type (auction vs. fixed price)	
	Product features	Accommodation type
		Accommodation category
Number of persons		
Number of nights		
Additional services		
Validity of voucher		
Seller features	Restrictions	
	eBay username	
	City and country	
	Number of positive feedback	
	Number of negative feedback	
	Active days at eBay	
Bid histories	Powerseller status	
	Bidder's username	
	Bid amount	
	Time of bid	
	Bidder's country	
	Bidder's feedback score	

accommodation packages (i.e. hotel category, number of nights and beds, respectively) that are most suitable for being auctioned off at online auctions. Secondly, the falsification of the hypothesized relationships between particular auction characteristics and the obtained auction's final price for accommodation packages directly supports the second aim of the paper, namely that of giving tourism sellers (i.e. hoteliers and online intermediaries) adequate advice on how to increase their expected online auction performance (O'Connor & Frew, 2002). As mentioned, data comprising a total of 53 406 auctions was gathered from the Austrian eBay's short-term lodging category during the period between January 2008 and June 2009. The auction data also included a total of 293 075 corresponding bid histories representing unique bidders.

4.1. Descriptive results

From a descriptive point of view, 86% of the items were listed in the auction format while the remaining 14% were listed as fixed-priced items. This result reflects the fact that online auctions in tourism are dominated by vouchers for accommodation packages with a validity of one year, thus, focussing on current hotel inventory. By contrast, distressed inventory, such as last minute-offers, are mainly sold in the fixed-priced format. On average, 105 auctions were offered per day. Interestingly, in 4 out of 5 cases (i.e. 80%) the online auction ended successfully (i.e. the voucher was sold). Moreover, one auction which sold accommodation packages received, on average, 12 bids and was visited by 122 unique users.

The auctions in this study were sold by 857 different sellers comprising both, online intermediaries (64%) but also hotels (36%). Interestingly, the large majority (i.e. 846 sellers) held less than 1% of the total market share, while 10 sellers showed a market share between 1% and 10% and one big seller held more than 10% market share. Put differently, 80% of the total market share was held by the 48 biggest sellers. Thus, 'seller diversity' can be considered to be relatively high, although the market is dominated by a relatively small number of sellers (Ho, 2008: 21). As far as 'seller experience' (Ho, 2008: 22) is concerned, almost every second seller (i.e. 47%) has received buyer feedback in excess of 100 times, whereas about 11% of the sellers can be classified as 'beginners' (i.e. having received buyer feedback less than 6 times). As previously mentioned eBay awards particularly active sellers with the 'Powerseller' status. More precisely, eBay assigns the Powerseller status to sellers who sustain a trading volume above a set level and meet certain feedback criteria. Interestingly, only 4.3% of the observed tourism sellers obtained the Powerseller status and showed an average feedback percentage score (i.e. ratio between positive feedbacks and total feedbacks) of 99.82%, whereas non-Powersellers had a notably lower average feedback percentage amounting at 97.89%.

The auction protocol at eBay is a combination of the English and the Vickrey auction type. At the former, bidders place open bids until no further bid is placed, while at the latter, bidders place sealed bids and the highest bidder will pay the amount of the second highest bid. At eBay, all bids with the exception of the highest bid are open. Moreover, the highest bidder only pays the amount of the second highest bid (plus one bid increment; in most cases 1 Euro). Obviously, if all bidders placed their bids a few seconds before the auction's end, the auction would be of the Vickrey type. As mentioned in the literature review, the latter bidding strategy is called sniping (Erlenkaemper, 2005; Ockenfels, 2002). The reason for this behaviour is to prevent other bidders from responding to the last placed bid. On average, the share of bids placed at all eBay auctions in the last minute amounts at 19% (Auctionsoftwarereview, 2005). Interestingly enough, in the short-term lodging category, on average only 14.3% of the bids were

placed in the last minute. Thus, according to literature (Ariely & Simonson, 2003; Roth & Ockenfels, 2002) and typical for service products (Clerides et al., 2004; Ho, 2008), the share of snipers at online auctions for accommodation packages can be considered as relatively low (Table 3).

Auction data was classified by hotel category (i.e. number of hotel stars), number of persons, number of nights, services included, and by the auction duration. In four out of five auctions (i.e. 83%) a voucher for a 4 star hotel was sold, about 94% of the sold vouchers were for two persons and only 4% for a single person. The remaining 2% were distributed among tourist groups consisting of more than two persons. In 54% of the recorded auction sessions, vouchers for two overnights were sold, 25% of the cases involved three nights and only 4% one night. As far as additional services were concerned, 51% of the analyzed accommodation packages offered 'breakfast only', 37% offered 'half board', 1% 'full board' and 11% offered 'no additional service' (Table 4).

In Table 5, next to the relative sample share, the average auction final price and corresponding success rates (i.e. share of vouchers sold) among various accommodation packages are displayed.

Interestingly, compared to the average success rate on eBay of only 46%, the obtained results concerning accommodation packages proved to be extremely high (i.e. 81% on average). For instance, the quantitatively most prominent accommodation package, namely vouchers for 2 persons and 2 nights in a 4 star hotel (i.e. 48.23% of the sample), shows also the highest potential for being sold on online auction platforms, such as eBay (i.e. success rate at 91.80%).

Furthermore, the majority of sellers chose a starting price of 1 Euro (i.e. 74%) and auction duration of 7 days. As could be expected, online auctions with a starting price of 1 Euro received on average more bids and attracted a relatively larger number of visits than those auctions with a relatively higher starting price (Table 6).

A listing duration of 7 days was chosen in more than 50% of all observed auctions. In addition to that, these auctions also received on average more bids than those with other listing durations (Table 7).

Finally, the 'gallery picture' was the most popular listing enhancement feature (i.e. 96%), followed by 'subtitle' (i.e. 40%) and 'secondary category' (i.e. 12%). Interestingly, the combination of the 'gallery picture' and a 'subtitle' was applied in 39% of all auctions. However, the remaining listing enhancement features (i.e. 'highlight', 'bold', 'border' and 'featured') were only chosen in about 3% of the analyzed online auctions.

4.2. Results from SEM

The factors positively affecting the auction final price level will act as valuable knowledge base to deduce potentially successful online selling strategies within certain branches of economic activity, such as the hotel industry (Jiménez-Zarco, Martínez-Ruiz, & González-Benito, 2006; Vokurka & Zank, 2001). We conducted linear structural equation modelling (SEM) to empirically test the hypotheses formulated in subsection 3.1 assuming significant relationships between product and auction characteristics (i.e. start price, listing enhancement features and auction duration), the number of visits, bids and corresponding final price levels,

Table 3
Bids over auction time in the short-term lodging category.

Time interval	Share of bids
Last day	54.3%
Last hour	24.9%
Last 5 min	17.7%
Last minute	14.3%

Table 4
Additional services offered.

Time interval	Share of auctions
Breakfast	51%
Half board	37%
Full board	1%
No additional service	11%

respectively (Byrne, 2001; Reisinger & Turner, 1999). In contrast to the sample used to gather the previously discussed descriptive results, SEM was conducted on a sub-sample with a size of 2689 auctions. First of all, only items that were listed as auctions (i.e. no fixed-priced items) have been considered. Secondly, only auctions without missing data have been used (Steenkamp & Baumgartner, 2000). Thirdly, the sample size was reduced randomly to avoid statistically significant results for only small effects (Hair, Black, Babin, Anderson, & Tatham, 2006). Finally, in our proposed model, seller reputation was measured as the unique latent construct by using the ratio between the number of positive feedbacks and the number of total feedbacks (Cohen, 2002), the Powerseller status, and the period of time a seller is active on eBay (i.e. membership duration).

Empirical model validation revealed an excellent overall fit: χ^2 value stands at 7.596 with 9 *df* ($p = 0.575$), the comparative fit index (i.e. CFI at .98), normalized fit index (i.e. NFI at .99) and the root mean square error of approximation (i.e. RMSEA at .01) ranked well above the recommended thresholds (Hair et al., 2006).

According to prior research, the starting price proved to have a strong and significant negative impact on the number of bids (Erlenkaemper, 2005; Lucking-Reiley et al. 2007). Consequently, a higher starting price would lead to a decreasing number of bids which, in turn, would lead to a lower final price. However, the starting price also has a direct positive influence on the final price. Furthermore, the number of bids and the seller's reputation also proved to have a significant positive impact on the final price level. To summarize, for this part of the model, hypothesis 1 (i.e. the starting price positively affects the final price), 2 (i.e. the number of bids positively affects the final price), 3 (i.e. the seller's reputation positively affects the final price) and the related hypothesis 6 (i.e. the starting price negatively affects the number of bids) are supported by the data and were, thus, not rejected (Fig. 3). With regard to the endogenous variable final price, the model shows a satisfactory coefficient of determination (i.e. SMC) standing at 49% (Hair et al., 2006).

Similarly to Lee et al. (2000), Standifird (2001), Melnik and Alm (2002) but also to Houser and Wooders (2006), the seller's reputation turned out showing a strong and significant relationship with the number of bids. Interestingly, although not previously tested in the literature, the number of visits also proved to have a strong and significantly positive impact on the number of bids (Fig. 3). However, as far as auction duration is concerned, the result should be interpreted with caution, since auctions with duration of

Table 5
Success rate and auction price level for accommodation packages at eBay.

Accommodation package	Sample share	Success rate	Average final price
4 Star, 2 persons, 2 nights	48.23%	91.80%	153.84€
4 Star, 2 persons, 3 nights	19.95%	79.86%	234.63€
4 Star, 2 persons, 4 nights	4.26%	71.89%	348.52€
3 Star, 2 persons, 3 nights	3.62%	83.28%	130.60€
3 Star, 2 persons, 2 nights	3.28%	85.79%	75.60€
4 Star, 2 persons, 1 night	3.25%	89.75%	73.62€
4 Star, 2 persons, 7 nights	2.79%	73.50%	561.07€
5 Star, 2 persons, 2 nights	1.72%	84.11%	226.21€

Table 6
Starting price levels, bids and visits.

Starting price	# Auctions	Share	Avg. bids	Avg. visits
€1	34 067	74.46%	14.90	132.24
€1.01–€49.99	713	1.56%	8.46	130.60
€50–€99.99	4568	9.99%	4.30	89.21
€100+	6398	13.99%	2.10	90.57
Any	45 746	100%	11.95	122.09

7 days received significantly more bids on average than those with duration of 10 days (see again Table 7). Nevertheless, hypothesis 4 (i.e. auction duration positively affects the final price), 5 (i.e. auction duration positively affects the number of bids), 7 (i.e. the seller's reputation positively affects the number of bids) and 8 (i.e. the number of visits positively affects the number of bids) were supported by the data and, thus, not rejected. Similarly to the final price level, the share of explained variance pertaining to the number of bids can also be considered to be relatively high (i.e. SMC = 48%).

Interestingly, it can be shown that the seller reputation construct is mainly formed by the Powerseller status. This result can be explained by the fact that the variance in the feedback score percentage (Feedback Score Pct.) is extremely low. For instance, 98% of all observed auctions show a seller's feedback score percentage of 100%. However, due to the fact that seller reputation is only visible to a bidder after visiting a specific auction page, the seller reputation construct only influences the number of bids (hypothesis 7) as well as the final price level (hypothesis 3) (see Fig. 3).

Finally, with the exception of the feature 'subtitle', which showed a very low significance level, all of eBay's listing enhancement features (empirically considered in the form of binary variables) turned out to have a significant positive impact on the number of visits (Fig. 3). Similarly, the auction duration had a significant impact on the number of bids, while the starting price negatively influenced the level of obtained bids. Thus, hypothesis 9 (i.e. the starting price negatively affects the number of visits), 10 (i.e. auction duration positively affects the number of visits) and 11_{b-g} (i.e. listing enhancement features positively affect the number of visits) are supported by the data, while hypothesis 11_a (i.e. the impact of the listing enhancement feature 'subtitle' on the number of visits) was rejected. However, the determination coefficient (i.e. SMC) for the number of visits is relatively small, standing at 25% (Hair et al., 2006).

The results from SEM can be summarized as follows: All of the tested hypotheses, with the only exception of H_{11a} (i.e. the listing enhancement feature 'subtitle' positively affects the number of visits), were empirically supported by the collected auction data and were, thus, not rejected.

Furthermore, results from SEM can be interpreted with regard to indirect, direct and total effects, respectively (Hair et al., 2006; Steenkamp & Baumgartner, 2000). As far as listing enhancement features are concerned, total effects clearly state that, for instance,

Table 7
Auction duration, bids and visits.

Duration	# Auctions	Share	Avg. bids	Avg. visits
1 day	909	1.99%	6.02	62.53
3 days	10 048	21.96%	10.44	90.27
5 days	7055	15.42%	8.30	92.63
7 days	23 491	51.35%	14.26	141.46
10 days	4243	9.28%	10.71	153.56
Any	45 746	100%	11.95	122.09

the use of the option 'featured' would raise the number of visits on average by about 210, the number of bids by almost 10 and the final price by more than 59 Euro (Table 8). Interestingly, all of the other options (except insignificant 'subtitle') similarly raise the final price by a higher marginal value than the option would cost. Additionally, SEM results state that the marginal bid raises the final price by 6 Euro, whereas one additional visit raises the final price level on average by 0.28 Euro (Table 8).

5. Managerial implications

The proposed SEM approach satisfactorily showed how the variables of managerial interest, namely number of visits and bids, and in particular the auction's final price are determined by the various auction settings, like listing enhancement features, starting price and auction duration (Pinker, Seidmann, & Vakrat, 2003). Thus, the obtained results can now be applied to optimize auction design settings in order to sell accommodation packages at a more successful rate (Buhalis & Law, 2008; Fesenmaier, Gretzel, Hwang, & Wang, 2004).

Although the validated SEM emphasizes a positive total net effect of a high starting price on final price levels, a mono-causal interpretation of this result (i.e. the suggestion to simply increase the starting price) would not be feasible (Table 8). Rather, an eBay seller is interested to maximize her revenues defined as the auction's final price minus the total amount of fees eBay charges. Thus, a successful tourism seller would only choose those combinations of listing enhancement features that push the final price to a marginally higher level than the total cost of these listing options. More concretely, the sum of eBay fees consists of an insertion fee (i.e. varies depending on the chosen starting price level), fees for listing enhancement features and a final value fee (eBay Austria, 2009). The latter fee is calculated as a proportion of the final price, and, therefore, does not affect the objective function (Table 9).

We detected those auction design settings that are used for best selling accommodation packages within the two nights, two persons and the 4-star hotel segment. For this aim, we examined all possible combinations of (i) starting price steps (i.e. 1 Euro, 1.01 to 48.99 Euros, 49 to 98.99 Euros, 99 to 189.99 Euros, 199 Euros and above), (ii) auction durations at eBay (i.e. 1, 3, 5, 7 or 10 days) and, (iii) the 6 significant listing enhancement features (i.e. based on SEM results). Finally, we evaluated all combinations with respect to the revenue's objective function (i.e. final price minus eBay fees) by cross validating the obtained results for both, the upper (i.e. best) percentile (10%) and the upper quartile (i.e. 25%) of the corresponding auction data.

Interestingly enough, only two auction design strategies emerged, which lead to particularly high revenues. First of all, auctions with the relatively highest starting price of 199 Euro and above and a listing duration of 7 days showed the highest revenue level, followed by auctions starting at 1 Euro and a listing duration of 7 days. As far as listing enhancement features are concerned, the most successful sellers typically chose the feature 'gallery picture'. Thus, this option should be chosen in any case. For auctions starting at 1 Euro, the feature 'highlight' should additionally be chosen. Moreover, SEM results lead to the recommendation of purchasing the listing enhancement option 'featured' at a price of 14.95 Euros, since this feature has an extraordinary positive influence on the number of visits and on the final price (Table 8). However, the impact of this feature on the final price will vary according to the number of competitive auctions that also use this feature (Erlenkaemper, 2005). Thus, the recommendation of purchasing this listing enhancement feature cannot be generalized. Nevertheless, we recommend this feature for multi-auctions (i.e. 2 or more vouchers are sold), since the fee (i.e. 14.95 Euro) is charged

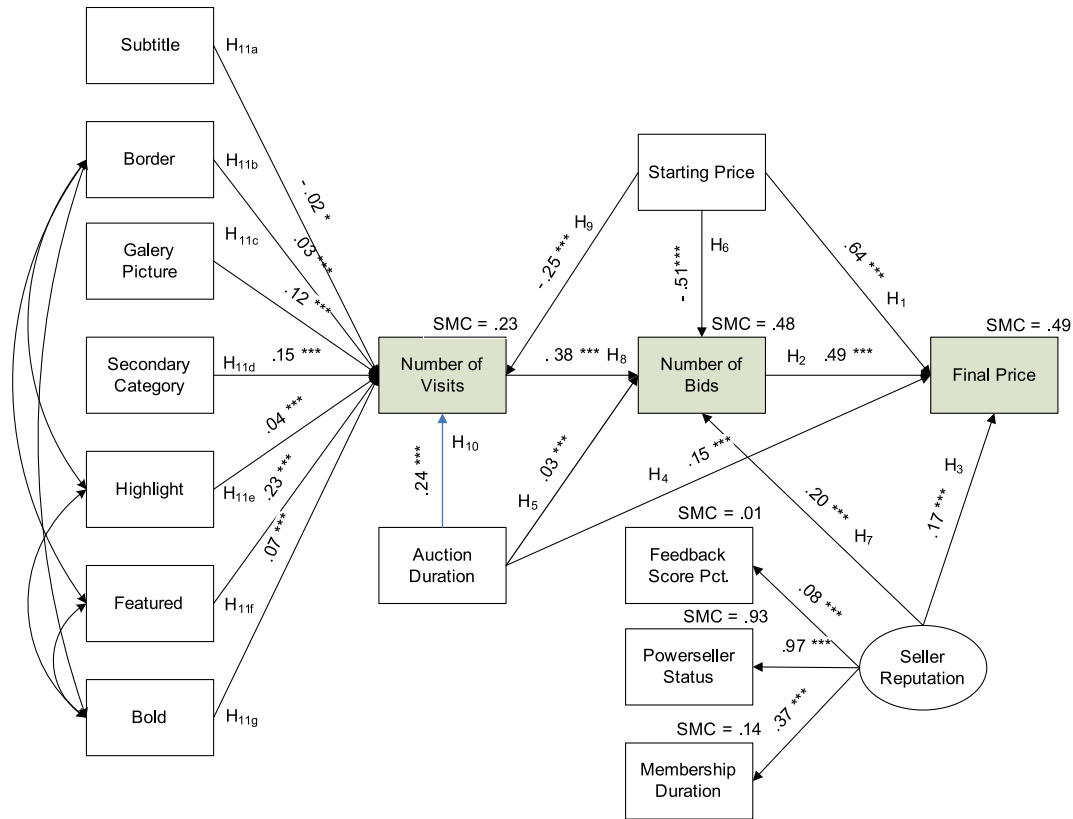


Fig. 3. Global linear structural equation model: determinants affecting auction's final price. Note: (SMC) = Squared Multiple Correlation; 2-way-arrows mark inter-correlations with $r > .3$. Model Fit Statistics: $\chi^2 = 7.596$, $df = 9$, $p = 0.575$, Comparative Fit Index (CFI) = .981; Normed Fit Index (NFI) = .990; Root Mean Square Error of Approximation (RMSEA) = .01.

Table 8
Total effects.

	Listing enhancement features										
	Subtitle	Border	Bold	Featured	Highlight	Sec_cat	Galery	Duration	Start.price	Visits	Bids
Visits	-3.047	20.001	51.064	210.856	20.973	33.943	51.795	8.474	-0.176	-	-
Bids	-0.142	0.933	2.381	9.831	0.978	1.583	2.415	0.498	-0.052	0.047	-
Endprice	-0.861	5.65	14.424	59.561	5.924	9.588	14.631	10.711	0.364	0.282	6.058

only once (i.e. regardless of the number of items sold within one multi-auction).

Putting it all together, for the 2 persons, 2 nights, and the 4-star segment, the following listing strategies can be recommended:

Strategy A (i.e. for auctions with expected revenues of 200 Euro or more): starting price at 199 Euro or above, a duration of 7 days and the activated listing enhancement feature 'gallery picture'. This auction setting causes eBay to list fees of 3.95 Euro. If several

identical vouchers are sold within one auction, the option 'featured' should also be chosen. In total, this multi-auction setting would cause eBay to list fees of 20.50 Euro.

Strategy B (i.e. for auctions with expected revenues below 200 Euro): starting price at 1 Euro with a duration of 7 days and the listing enhancement features 'gallery' and 'highlight'; This auction setting causes eBay to list fees of 2.30 Euro.

6. Conclusion and outlook

We demonstrated that successfully selling accommodation items on eBay is a process requiring a relatively large amount of knowledge. For instance, tourism sellers have to optimally set the starting price, the auction duration and must specify the various listing enhancement features (Cohen, 2002). As a valuable base for this type of knowledge, the empirically tested linear structural equation model showed mostly significant and expected causal relationships.

As partly identified by previous auction research in the non-tourism domain (Bapna et al., 2004; Elmaghraby, 2004; Erlenkaemper, 2005; Ghani & Simmons, 2004; Lucking-Reiley et al., 2007), significant relationships between the economically

Table 9
eBay fees.

Insertion fees		Fees for listing enhancement features	
Starting price	Fee	Feature	Fee
€1–€1.99	€0.25	Subtitle	€0.50
€2–€9.99	€0.45	Border	€1.50
€10–€24.99	€0.80	Bold	€1.10
€25–€99.99	€1.60	Featured	€14.95
€100–€249.99	€3.20	Highlight	€1.80
€250+	€4.80	Secondary category	Doubles fees ^a
		Gallery picture	€0.75 ^b

^a Doubles the insertion fees plus the listing enhancement fees (except 'featured').

^b For a starting price of €1 the fee is only €0.25.

relevant variables listing enhancement features, number of visits, starting price, auction duration, number of bids and final price were found in our study. The variance of the endogenous variable final price was statistically explained at a satisfactory level of 49% (Hair et al., 2006). More precisely, a high starting price directly leads to a higher final price. However, by decreasing the number of bids, a high starting price will also induce a lower final price. Thus, two starting price ranges which are optimally balancing these opposite trends were deduced in subsection 5. Furthermore, a significant impact of the seller's reputation was identified with respect to the number of bids and the auction's final price (Melnik & Alm, 2002). Finally, at least to our knowledge, no other auction study so far considered the number of visits in their models. As shown, the majority of eBay's listing enhancement features has a significant impact on the number of visits although these options are used by a minority of eBay sellers only. For the best selling product (i.e. a four star accommodation package offered for two persons and two nights) either a starting price standing at 1 Euro or at 199 Euro and above as well as the seven day auction duration is recommended. As far as listing enhancement features are concerned, the options 'gallery picture' and 'highlight' (and in multi-auctions also the 'featured' option) are suggested.

The proposed model could, however, be improved by adding further potential influence factors as discussed in the literature, like weather conditions (Erlenkaemper, 2005) or the current competitive situation on the auction platform (Ariely & Simonson, 2003; Erlenkaemper, 2005). Moreover, some by nature high-dimensional factors, like bidders' feedback, are so far described only by a few proxy indicators. For instance, feedback was measured in our study as a latent construct through the ratio between the number of positive feedbacks and the number of total feedbacks (Cohen, 2002), the Powerseller status, and the period of time a seller is active on eBay. However, by quantifying these multi-dimensional factors more adequately, the explanation power of our proposed model could be further improved and, more importantly, the relative impact of the various quality dimensions of sold tourism products on the auction's performance could be identified (David, Azoulay-Schwartz, & Kruas, 2003; Khopkar et al., 2005). Moreover, through consideration of auction dynamics, especially bidding behaviours, the explanation power of our proposed model could be further improved. For instance, auto-bidding (i.e. bids are placed automatically by eBay's bidding agent up to a certain amount) or sniping (i.e. bids are placed within the last seconds of an auction in order to prevent other bidders from reacting to the bid placed) can greatly influence the outcome of an auction (Hu & Bolivar, 2008; Rogers, David, Jennings, & Schiff, 2007).

Another vein of future research should focus on the identification of thresholds values for minimal membership duration, bidders' feedback and seller activity, particularly relevant to new sellers entering the online auction market to outweigh eventual disadvantages from an initially low seller reputation. A further issue not yet considered in online auction research is the fact that non-winning bidders will be automatically notified by eBay (e.g. via email) about other equivalent items offered by the same seller. This is particularly interesting for those auctions with a relatively high number of involved bidders (i.e. potential customers). As empirically shown in this paper, the number of visitors becoming active bidders is positively influenced by a relatively low starting price and seller's reputation.

An interesting future vein of online auction research in tourism is to conduct surveys targeting high bidders to find out their typical search patterns and bid behaviour (Pinker et al., 2003; Ward & Clark, 2002; Young-Hoon & Bradlow, 2005). The results obtained from such studies can be used to predict expected returns from auctions targeted to particular customer segments (Ghani, 2005).

Finally, however, with a stronger view on the future, software applications could be developed to continuously analyse eBay's travel categories. Based on gathered time series data, indices could be generated in order to determine the actual market capacity and, thus, to dynamically deduce even better listing recommendations (Ho, 2008; Koukopoulos, 2005; Young-Hoon & Bradlow, 2005). By integrating such intelligent mechanisms, innovative software agents could be designed to automatically list the most adequate accommodation package at the right time and at the right starting price on online auction platforms, like eBay.

To conclude, due to their ability to flexibly set prices based on the dynamic concurrence of supply and demand and competitive conditions (Burger & Fuchs, 2005; Chiang et al., 2007), online auctions might be the central dynamic pricing instrument in the era of electronic tourism in the future.

Acknowledgments

The research was kindly financed by the Austrian Research Promotion Agency (FFG) and the Tiroler Zukunftsstiftung. The authors wish to thank Prof. Dimitri Ioannides, European Tourism Research Institute (ETOUR, Mid-Sweden University) for useful comments.

References

- Ariely, D., & Simonson, I. (2003). Buying, bidding, playing or competing? Value assessment and decision dynamics in online auctions. *Journal of Consumer Psychology*, 13(1/2), 113–123.
- Auctionsoftwarereview. (2005). <http://www.auctionsoftwarereview.com/article-ebay-statistics> Accessed 01.12.05.
- Bajari, P., & Hortacsu, A. (2003). The winner's curse, reserve prices and endogenous entry: empirical insights from eBay auctions. *RAND Journal of Economics*, 34(2), 329–335.
- Bapna, R., Jank, W., & Shmueli, G. (2004). *Price formation and its dynamics in online auctions*. Working paper, #RHS-06-003. Smith School of Business, University of Maryland.
- Buhalis, D., & Licata, M. C. (2002). The future of e-tourism intermediaries. *Tourism Management*, 23(3), 207–220.
- Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet – the state of e-tourism research. *Tourism Management*, 29(6), 609–623.
- Burger, B., & Fuchs, M. (2005). Dynamic pricing – a future airline business model. *Journal of Revenue and Pricing Management*, 4(1), 39–53.
- Byrne, B. M. (2001). Structural equation modelling with AMOS, EQS and LISREL – comparative approaches to testing for the factorial validity of measurement instruments. *International Journal of Testing*, 1(1), 55–86.
- Chiang, W.-C., Chen, J. C. H., & Xu, X. (2007). An overview of research on revenue management: current issues and future research. *International Journal of Revenue Management*, 1(1), 97–128.
- Cohen, A. (2002). *The perfect store: Inside eBay*. Boston: Little Brown & Co.
- Clerides, S., Nearchou, P., & Pashardes, P. (2004). *Intermediaries as quality assessors in markets with asymmetric information: Evidence from UK package tourism*. Discussion paper #2004-3. Department of Economics, University of Cyprus.
- David, E., Azoulay-Schwartz, R., & Kruas, S. (2003). Bidders' strategy for multi-attribute auctions with deadline. In J. Rosenschein, & M. Wooldridge (Eds.), *2nd International conference on autonomous agents* (pp. 457–464). Melbourne.
- Elmaghraby, W. (2004). Auctions and pricing in e-marketplaces. In D. Simchi-Levi, D. Wu, & Z. J. Shen (Eds.), *Handbook of quantitative supply chain analysis: Modelling in the e-business era* (pp. 213–246). Norwell, MA: Kluwer Academic Press.
- eBay Austria. (2009). <http://pages.ebay.at/help/sell/businessfees.html> Accessed 20.11.09.
- eBay Germany. (2009). <http://pages.ebay.com/help/buy/questions/buy-item.html> Accessed 20.11.09.
- eBay Facts. (2009). <http://presse.ebay.de/news.exe?content=FD> Accessed 20.11.09.
- eBay Business Barometer. (2009). <http://presse.ebay.de/data/attachments/101965.pdf> Accessed 20.11.09.
- Erlenkaemper, S. (2005). *Preis determinanten von Online-Auktionen*. Hamburg: Kovac.
- Fesenmaier, D. R., Gretzel, U., Hwang, Y. H., & Wang, R. (2004). Applications of Internet technology in travel and tourism. In H. Bidgoli (Ed.), *The internet encyclopedia*, Vol. 3 (pp. 459–467). Bakersfield, CA: Wiley.
- Fuchs, M., Höpken, W., Eybl, A., & Ulrich, J. (2008). Selling accommodation packages in online auctions – the case of eBay. In P. O'Connor, W. Höpken, & U. Gretzel (Eds.), *Information and communication technologies in tourism* (pp. 291–302). New York: Springer.

- Ghani, R. (2005). Price prediction and insurance for online auctions. In R. Grossmann, R. Bayardo, J. Bennet, & J. Vaidya (Eds.), *11th ACM SIG-KDD conference on knowledge discovery in data mining* (pp. 411–418), Chicago, Illinois.
- Ghani, R., & Simmons, H. (2004). Predicting the end-price of online auctions. In J. F. Boulicaut, F. Esposito, F. Giannotti, & D. Pedreschi (Eds.), *International workshop on data mining on the 15th European conference on machine learning, Pisa, Italy*. Available at: <http://www.accenture.com/xdoc/en/services/technology/publications/priceprediction.pdf> Accessed 20.11.09.
- Hair, J., Black, W., Babin, B., Anderson, R., & Tatham, R. (2006). *Multivariate data analysis* (6th ed.). New Jersey: Prentice Hall.
- Hayne, S. C., Smith, C. A., & Vijayasathary, L. (2003). Who wins on eBay? An analysis of bidders and their bid behaviours. *Electronic Markets*, 13(4), 281–293.
- Heck, E. (2000). The cutting edge in auctions. *Harvard Business Review*, 78(2), 18–19.
- Ho, J. K. (2008). Online auction markets in tourism. *Information Technology & Tourism*, 10(1), 19–29.
- Houser, D., & Wooders, J. (2006). Reputation in auctions: theory and evidence from eBay. *Journal of Economics & Management Strategy*, 15(2), 353–369.
- Hu, W., & Bolivar, A. (2008). Online auctions efficiency: a survey of eBay auctions. In J. Huasi, R. Chen, H. Hon, Y. Liu, W. Ma, A. Tomkins, & X. Zhang (Eds.), *Proceedings of the 17th international conference on world wide web* (pp. 925–934), Beijing, China.
- Jiménez-Zarco, A., Martínez-Ruiz, M., & González-Benito, Ó (2006). Success factors in new services performance: a research agenda. *The Marketing Review*, 6(3), 265–284.
- Khopkar, T., Li, X., & Resnick, P. (2005). Self-selection, slipping, salvaging, slacking, and stoning: the impacts of negative feedback at eBay. In J. Riedl, M. Kearns, & M. Reiter (Eds.), *ACM conference on electronic commerce* (pp. 223–231), Vancouver.
- Klein, S. (1997). Introduction to electronic auctions. *Electronic Markets*, 7(4), 3–6.
- Koukopoulos, D. K. (2005). Auction scenarios of cultural products over the WWW. In P. Bozaris, & E. N. Houstis (Eds.), *Lecture notes in computer science (LNCS)* (pp. 166–176). Berlin, Heidelberg: Springer.
- Lee, Z., Im, I., & Lee, S. (2000). The effect of negative buyer feedback on prices in Internet auctions. In W. Orlikowski, S. Ang, P. Weill, H. Krcmar, & J. DeGross (Eds.), *21st International conference on information systems* (pp. 286–287), Brisbane.
- Lerg, A. (2006). *eBay Marktforschung. Methodische Marktanalyse als Grundlage zur Verkaufsoptimierung auf dem größten Online-Marktplatz der Welt*. Berlin: Lerg Media.
- Lucking-Reiley, D., Doug, B., Naghy, P., & Reeves, D. (2007). Pennies from eBay – the determinants of price in online auctions. *Journal of Industrial Economics*, 55(2), 223–233.
- Melnik, M., & Alm, J. (2002). Does a seller's e-commerce reputation matter? Evidence from eBay auctions. *The Journal of Industrial Economics*, 50(3), 337–350.
- Nissanoff, D. (2006). *Future shop. How the new auction culture will revolutionize the way we buy, sell, and get things we really want*. New York: The Penguin Press.
- O'Connor, P., & Frew, A. (2002). The future of hotel electronic distribution: expert and industry perspectives. *Cornell Hotel & Restaurant Administration Quarterly*, 43(3), 33–45.
- Ockenfels, A. (2002). Timing of bids in Internet auctions: market design, bidder behaviour and artificial agents. *AI Magazine*, 23(3), 79–87.
- Ottaway, T., Bruneau, C., & Evans, G. (2003). The impact of auctions' item image and buyer/seller feedback rating on electronic auctions. *Journal of Computer Information Systems*, 43(1), 56–60.
- Pinker, E., Seidmann, A., & Vakrat, Y. (2003). Managing online auctions: current business and research issues. *Management Science*, 49(11), 1460–1484.
- Reisinger, Y., & Turner, L. (1999). Structural equation modelling with LISREL: application in tourism. *Tourism Management*, 20(2), 71–88.
- Rogers, A., David, E., Jennings, N., & Schiff, J. (2007). The effects of proxy bidding and minimum bid increments within eBay auctions. *ACM Transactions on the Web*, 1(2), 1–28.
- Roth, A. E., & Ockenfels, A. (2002). Last minute bidding and the rules for ending second-price auctions: evidence from eBay and Amazon auctions on the Internet. *American Economic Review*, 92(4), 1093–1103.
- Sahlman, W. A. (1999). The new economy is stronger than you think. *Harvard Business Review*, 77(6), 99–106.
- Standifird, S. (2001). Reputation and e-commerce: eBay auctions and the asymmetrical impact of positive and negative ratings. *Journal of Management*, 27(2), 279–295.
- Steenkamp, J.-B., & Baumgartner, H. (2000). On the use of structural equation models for marketing modelling. *International Journal of Research in Marketing*, 17(2), 195–202.
- Tucker, J., & Massad, V. (2003). *An examination of seller pricing options at online auctions*. Working paper #2003-01. Shippensburg University.
- Turban, E., Lee, J., King, D., & Chung, M. (2000). *Electronic commerce: A managerial perspective*. New Jersey: Prentice-Hall.
- Vokurka, R., & Zank, G. (2001). Critical success factors in e-business. In *Proceedings to the 30th annual meeting of Western Decision Sciences Institute* (pp. 425–427). Wellington, NZ: Victoria University.
- Wan, W., & Teo, H. (2001). An examination of auction price determinants on eBay. In S. Smithson, J. Gricar, M. Podlogar, & S. Avgerinou (Eds.), *Nineth European conference on information systems* (pp. 898–908), Bled, Slovenia.
- Ward, S. G., & Clark, J. M. (2002). Bidding behavior in online auctions: an examination of the eBay pokemon card market. *International Journal of Electronic Commerce*, 6(4), 139–155.
- Werthner, H., & Ricci, F. (2004). E-commerce and tourism. *Communications of the ACM*, 47(12), 101–105.
- Young-Hoon, P., & Bradlow, E. (2005). An integrated model for bidding behaviour in Internet auctions: whether, who, when, and how much. *Journal of Marketing Research*, 42(4), 470–482.