

# Online Travel Service Quality: The Role of Pre-Transaction Services

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# Online Travel Service Quality: the Role of Pre-Transaction Services

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**ABSTRACT** *The Internet revolution has led to significant changes in the way travel agencies interact with customers. Travel websites are used to different degrees, and for a variety of combinations of pre-transaction, transaction and post-transaction services. A better understanding of how customers interact with online services will help providers improve service quality to levels that satisfy or even delight customers, and thus create loyalty. This article provides a comprehensive review of the literature on online service quality, applies the theory to online travel offerings, and reports on an empirical study of quality perceptions of pre-transaction services provided on three travel websites. Effects on customer responses were measured for process and outcome dimensions of online service quality. Implications for the design of online travel services and suggestions for further research are formulated.*

**KEY WORDS:** Online service quality, internet travel agencies, pre-transaction services

## Introduction

Travel agencies provide a broad range of services, largely consisting of information exchange and information processing activities. Information intended to support customers in their travel decision-making is generally provided in pre-transaction services. In addition, in transaction services the customer's personal information and payments are collected, verified and processed, and information is relayed to third party transportation and hospitality providers. Finally, in post-transaction services travel agents communicate last-minute information to the customer and provide after-sales assistance. As the travel industry is largely information-driven, the World Wide Web is considered ideally suited as a medium for these activities (Adamic & Huberman, 2000; Morgan *et al.*, 2001; Peterson *et al.*, 1997), and it is hardly surprising that online travel services have developed into one of the largest e-commerce domains (Anckar & Walden, 2000; Clemons *et al.*, 2002). There is great diversity among travel agencies' use of IT and the Web. Most traditional travel agencies have at least a basic presence on the Internet to promote their business or to exchange e-mail with customers. More

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sophisticated travel sites allow customers to search, select or arrange travel and holiday packages, and to make reservations and bookings themselves. In spite of the slowdown occurring in other e-commerce areas, the online travel business has shown sustained growth (TravelWeekly, 2001).

The Internet has increased competition among travel agents considerably. Even if price plays only a secondary role in online services (Pan *et al.*, 2002; Reichheld & Schefter, 2000; Smith, 2002), the information efficiency of the Internet still poses a substantial threat, as all online travel agencies offer similar services. Service quality may help create differentiation between providers, thereby further easing price competition (Clemons *et al.*, 2002), and may therefore be among the most important success factors of any Internet business (Zeithaml *et al.*, 2002). Excellent online service will satisfy or even delight customers and increase their patronage (Rust & Oliver, 2000), resulting in desirable behaviours such as word-of-mouth promotion, willingness to pay a price premium and repurchasing (Reichheld *et al.*, 2000; Reichheld & Schefter, 2000; Reichheld & Teal, 1996). Nonetheless, only a few sites are reported to appeal to their customers, and even fewer create significant value to the customer and the provider (Grönroos *et al.*, 2000).

The issue of quality management has become quintessential in the travel and tourism industry, which is suffering from a general slowdown since 11 September 2001, the wars in Afghanistan and Iraq, and the outbreak of the SARS virus in Asia. Despite the increased importance of quality, satisfaction and loyalty in the travel industry (Augustyn, 1998; Augustyn & Ho, 1998), and the increasingly important role of the Internet in the service encounter, surprisingly few research articles have been dedicated to the issue of online (self-) service quality in the travel domain. Research in the field of customer evaluations of self-service technology (Dabholkar, 1996; Meuter *et al.*, 2000) and online services is generally considered to be in an early stage. Developing general insight in the determinants of perceived e-service quality, and the influence of e-service quality perceptions on satisfaction and loyalty is of great academic interest, but insufficient to help service managers make adequate decisions, since the dimensionality of service quality is dependent on the type of services offered (Babakus & Boller, 1992). Therefore, what is currently needed is research focusing on specific service categories. For travel agencies desiring to survive and thrive on the Internet, and willing to invest in online services, it is critical to know precisely how customers will evaluate their full service offer and which service categories and quality dimensions are valued most (Jeong & Lambert, 2001; Jeong *et al.*, 2003). Hence, the problem statement of the present study reads:

Which factors play a role in customer evaluations of online travel service quality?

Three sub-questions were formulated.

- (1) How do customers perceive and use online travel services?
- (2) To what extent can traditional measures be used for online service quality?
- (3) Which quality dimensions do customers of online travel services consider important?

The study aims to explore the issue of customer quality perceptions of travel websites. First, differences in the way consumers perceive and use traditional and

online services will be identified, and the consequences of these differences for the conceptualization of online travel service quality will be discussed. A model of online travel service quality will be developed, which will be validated in an empirical study. In the conclusion, implications and directions for future research are presented.

### **Review of the Literature and Development of Propositions**

Loyal customers are important to companies because they contribute directly and sustainably to the profitability and viability of the firm. Online customers express their loyalty to a service provider in various ways (Reichheld, 1994; Reichheld *et al.*, 2000; Reichheld & Teal, 1996; Viitanen *et al.*, 2004; Zeithaml *et al.*, 1996). Their commitment to the firm is reflected in return- and re-purchase behaviour, the willingness to pay a price premium, and favourable word-of-mouth. In an online setting, word-of-mouth can spread quickly. Online customers can easily use e-mail, often offered by the provider in the form of a web-link, to recommend their favourite web site to friends and family.

Positive and reciprocal relationships are often assumed to exist between customer loyalty, service quality, and customer satisfaction in offline and online contexts (Bowen & Clarke, 2002; Shankar *et al.*, 2003), although the precise nature of these relationships, and the validity of offline loyalty theories in an online environment are still under debate (Jeong *et al.*, 2003). Indeed, loyal customers are typically satisfied customers, but satisfaction does not universally translate into loyalty (Oliver, 1999). Service quality and customer satisfaction have been used interchangeably as antecedents of loyalty, but a feeling of consensus is growing that they are fundamentally different in terms of antecedents and outcomes (Zeithaml & Bitner, 2000). Causal links are thought to exist between service quality, satisfaction and loyalty, while nature, direction and strength of the links depend on the type of service (Dabholkar, 1996) and the position of the encounter in the customer-provider relationship lifecycle. Transaction and post-transaction service quality is considered crucial to overall loyalty (Reibstein, 2002) while, especially in the case of online travel services, satisfaction with pre-transaction services will be important, as it may lead to return behaviour and favourable word-of-mouth. Positive service quality perceptions are assumed to lead to increased satisfaction, '*the perception of pleasurable fulfillment*' (Oliver, 1999: p. 34) and value attributions (Zeithaml & Bitner, 2000). On the other hand, Dabholkar (1996) found that satisfaction with the use of technology has a substantial effect on service quality evaluations. It appears very difficult, if not impossible, to influence satisfaction, loyalty or patronizing behaviour of online customers directly. However, online service quality *can* be assessed, managed and controlled. In the following we will therefore focus on online service quality.

#### *A Conceptualization of Online Travel Services*

In analogy with other services, online travel services can be viewed as a composite offer, consisting of core services and peripheral or auxiliary services (Grönroos,

1994; Grönroos *et al.*, 2000). In a traditional service context, the reason for the provider to be in the market is generally seen as the core service (e.g. selling travel packages for a traditional travel agent), while the auxiliary services are considered to exist in order to facilitate the use of the core service or to enhance the value of the offer. The situation is considerably different in an online context. Whereas it may be obvious to customers of traditional providers what their core services are, this is not the case in an online environment. What customers *perceive* as the core service of an online service offer will depend on their momentary needs and preferences regarding Internet usage. To leisure customers, who may prefer making actual transactions in the travel agency, pre-transaction services could comprise the core service of a travel website, while transaction services may constitute the core service for business customers. Building on Grönroos' (1994) theory, and mindful of the idea of 'customerization' (Wind & Rangaswamy, 2001), we propose an adapted—genuinely customer-based—conceptualization of online services: the online core service will be the customer's reason for using the website, whether this core service be making the transaction, or making use of pre- or post-transaction services.

This adaptation has consequences for the conceptualization of online auxiliary services. Auxiliary services have been subdivided into facilitating and supporting services. Facilitating services are considered essential for making the service accessible (Grönroos *et al.*, 2000). In the case of an online travel agency, facilitating services would, for example, consist of search engines, reservation systems and secure paying methods. Although facilitating services are essential—and thus common to all competing service offers—they can still be designed in a distinctive fashion, adding value for the customer (Grönroos *et al.*, 2000).

Supporting services have been considered non-essential, added to the website mainly to differentiate the service package (Grönroos *et al.*, 2000). For online travel agencies, supporting services could for example be currency calculators, weather forecasts, information about health issues, general country information, chat-rooms, traveller storybooks, or links to other websites. As explained in the above, it is conceivable that customers view certain supporting services as the core service or as an indiscernible part of the core service. This is the case when a customer uses a travel agent's website uniquely for checking the local weather forecast, typically a pre- or post transaction service. In an online context, the role of supporting services must therefore be reconsidered: while they may not seem essential to the provider, supporting services are often crucial to the customer, and therefore potentially very important in distinguishing the service offer from those of competitors, provided they are tailored to the needs of the customer.

#### *Modelling and Measuring Service Quality*

Parasuraman *et al.* (1985, 1988) were among the first to introduce a formal service quality model. The model was based on the disconfirmation paradigm, introduced to consumer behaviour research by Oliver (1977). A combination of theoretical and empirical research resulted in the 22-item SERVQUAL scale (Parasuraman *et al.*, 1985, 1988), which has become widely accepted and used: The quality of traditional services is now generally measured along five

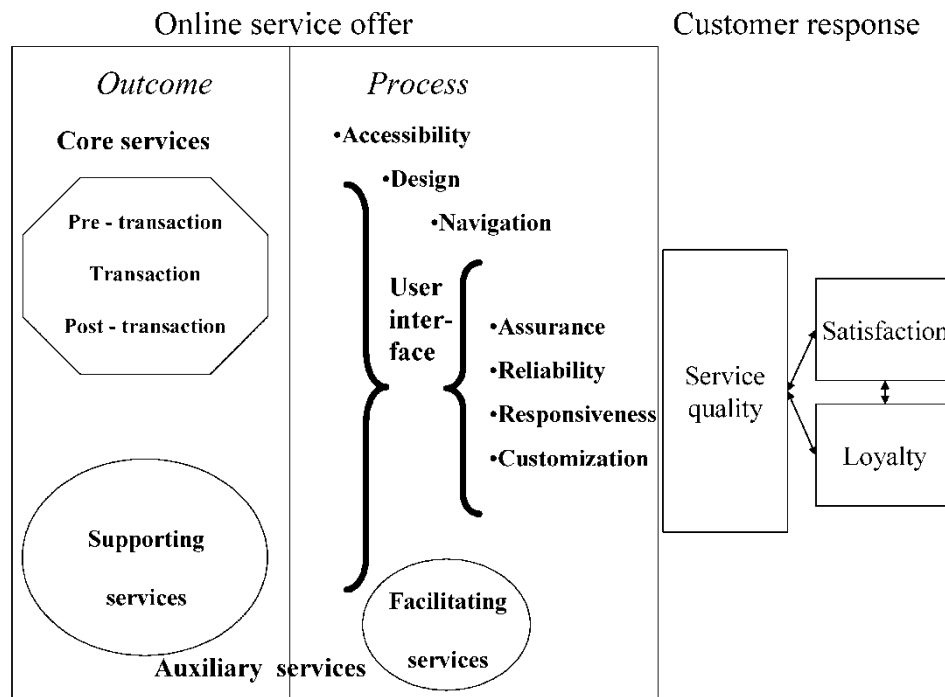
fundamental quality dimensions: *tangibles* (the appearance of physical facilities, equipment, personnel, and communication materials), *reliability* (the ability of the firm to perform the promised service dependably and accurately), *responsiveness* (willingness to help customers and provide prompt service), *assurance* (knowledge and courtesy of employees and their ability to convey trust and confidence), and *empathy* (the caring and individualized attention provided to the customer).

The dimensionality of the SERVQUAL model has often been questioned (Brown *et al.*, 2002; Caruana, 2000). The five-component factor structure is indeed confirmed in few if any of the research samples (Caruana, 2000; Cronin & Taylor, 1992). This lack of confirmation has been explained by suggesting that the dimensionality is strongly dependent on the type of service being offered (Babakus & Boller, 1992). How well the SERVQUAL model can be used for online services is also under debate. Several authors have proposed to use traditional service quality theory as a basis for further empirical research regarding online services (Grönroos *et al.*, 2000; Kaynama & Black, 2000; Zeithaml *et al.*, 2000). Zeithaml *et al.* (2000) for example developed 11 SERVQUAL-related dimensions, based on focus group research. According to Liljander *et al.* (2002) the original dimensions can be adapted to online services, and some additional dimensions should be constructed. With the objective of adapting and extending traditional service quality dimensions, viewing online services as a Self Service Technology (SST), which enables customers to service themselves without the involvement of employees, can be very helpful (Dabholkar, 1996, 2000; Dabholkar & Bagozzi, 2002; Meuter & Bitner, 1998; Meuter *et al.*, 2000, 2001).

Viewing online services as a SST has consequences for the conceptualization of the online *service encounter*. The service encounter can be considered to lie on the basis of the traditional SERVQUAL model. In a traditional service setting, customers are often thought to base their quality judgements mainly on evaluations of physical aspects of the service provider on the one hand (Bitner, 1992), and their interactions with service employees on the other (Bitner, 1990; Bitner *et al.*, 1990). In much service quality research, the so-called service encounter (Solomon *et al.*, 1985) is identified with the service itself (Groth *et al.*, 2001). In particular, the quality and perceived value of human interaction between customer and service staff during the encounter (Bolton & Drew, 1992) are considered critical in determining future patronage behaviour. In many online service encounters, however, customers interact exclusively with technology and will only deal with employees when special help is needed. Furthermore, a visit to the provider's premises is generally unnecessary, or secondary. The traditional service encounter is thus replaced by an interaction with technology and it can be expected that online service quality perceptions will be based largely on evaluations of this interaction. Therefore, a key determinant of online service quality appears to be the user interface, which represents the service provider (Grönroos *et al.*, 2000).

### *The User Interface*

Technology can enable and facilitate the exchange of information between customers and the service provider (Parasuraman & Grewal, 2000). In the case



**Figure 1.** The role of the user interface in online services, adapted from Liljander *et al.* (2002)

of online services, the role of information technology (IT) is most clearly observable in the user interface (Grönroos *et al.*, 2000). Therefore, an important quality dimension customers encounter when visiting a website is its functionality as an interface between themselves and the firm. Making a distinction between the *process* or technical, and *outcome* or functional aspects of service quality (Grönroos, 1994; Grönroos *et al.*, 2000; Parasuraman *et al.*, 1985; Parasuraman *et al.*, 1991) the role of the user interface and the relationships between the various components the online service offer and customer responses can be visualized as depicted in Figure 1.

The technical functionality of the user interface determines *how* services are delivered to customers, and therefore affects functional quality perceptions of the core, facilitating and supporting services (Liljander *et al.*, 2002) in pre-, post- and transaction stages. Since the user interface replaces the physical service encounter, it substitutes the *tangibles* dimension of the SERVQUAL model (Kaynama & Black, 2000; Szymanski & Hise, 2000). How well the website succeeds as an interface between customer and provider will likely depend on two broad characteristics: the design of the pages as they appear on screen, and the ease with which customers can access and navigate between pages inside the website. The structure of travel websites is highly complicated, because they must allow the customer to retrieve and select detailed information chunks from many different databases and combine them into the desired information (Barnett &

Standing, 2001). The complexity and required amount of detail of the travel offer also make it difficult to display all required information efficiently and effectively. It is therefore expected, that the quality of the user interface will play a major role in the case of Internet travel agencies (Jeong *et al.*, 2003). Propositions will now be formulated with respect to the role and importance of each of the dimensions for the case of online travel agencies. Zeithaml *et al.* (2000) suggest measuring user interface quality in three dimensions, namely accessibility, navigation and aesthetics. Based on the above reasoning we follow this approach in formulating three propositions relating to the user interface, which precede propositions with respect to the other four modified SERVQUAL dimensions.

#### *Accessibility*

High levels of interface quality would imply easy access to the site itself, to company staff, and to the different services when needed (Bell & Tang, 1998; Cox & Dale, 2001; Zeithaml *et al.*, 2000). Therefore we propose:

- P<sub>1</sub>: In the case of Internet travel agencies, accessibility of the website, the services and staff will be positively related to overall quality perceptions.

#### *Navigation*

Good navigation quality entails that the site (1) provides functions helping customers to find what they need without difficulty, (2) offers user-friendly and high performance search engines, and (3) allows the customer to manoeuvre easily, logically and quickly back and forth through the pages (Jeong & Lambert, 2001; Liljander *et al.*, 2002; Zeithaml *et al.*, 2000). Customers could be offered different ways of searching. For travel sites, high quality navigation would mean that the customers could easily perform complex searches on, for example, type of holiday, type of transportation, country, date and price. This appears crucial to online travel service quality. We therefore expect:

- P<sub>2</sub>: In the case of Internet travel agencies, perceived quality of navigation between pages will be positively related to overall quality perceptions.

#### *Design*

Website design quality is referred to as 'site aesthetics' by Zeithaml *et al.* (2000), or 'e-scape' (Van Riel *et al.*, 2004; Viitanen *et al.*, 2004). The way information is presented, in terms of colour use, layout, number, relevance and quality of pictures, font size and style, will affect the way customers respond to the service. The *tangibles* dimension of traditional SERVQUAL is strongly reflected in the *design* aspect of the user interface. It is thus expected that:

- P<sub>3</sub>: In the case of Internet travel agencies, perceived quality of the design of web pages and the presentation of information will be positively related to overall quality perceptions.

*Reliability*

The next SERVQUAL dimension to be discussed and modified for online services is *reliability*. Parallel to the case of offline services, customers expect search engines, payment facilities etc to function reliably, and the information presented on the website to be dependable. Two aspects of online service reliability can be distinguished (Cox & Dale, 2001). The process aspect of reliability perceptions is driven by the correct technical functioning of the site, or the technical aspects of the *user interface*, while the outcome aspect is defined by the accuracy of service promises, billing and product information (Zeithaml *et al.*, 2000). For instance, online travel agencies are required to reserve and offer the correct number of seats in an aeroplane, offer the packages at the advertised prices, and reserve the correct type of hotel room for the number of nights requested by the customer. It can therefore be expected that:

- P<sub>4</sub>: In the case of Internet travel agencies, perceived reliability of the online services will be positively related to overall quality perceptions.

*Assurance*

In the classical SERVQUAL model an important quality dimension is *assurance*, or the degree to which service staff and premises instigate trust in the customer. Online customers generally cannot scrutinize the employees, or the physical facilities of the firm they are dealing with (Reichheld & Schefter, 2000), so trust must be established in other ways. It is the impression of assurance the website makes on the customer that will lead to trust. The *security and privacy* dimension used by Zeithaml *et al.* (2000), which ‘involves the degree to which the customer believes the site is safe from intrusion and personal information is protected’ (Zeithaml *et al.*, 2000: p. 16) is part of the assurance dimension. Trust is often claimed to be the most important online service quality dimension (Papadopoulos *et al.*, 2001; Petersen, 2001; Roy *et al.*, 2001; Urban *et al.*, 2000). It is expected, that:

- P<sub>5</sub>: In the case of Internet travel agencies, perceived assurance of the online services will be positively related to overall quality perceptions.

*Responsiveness*

The quality of support customers receive when faced with questions or running into problems, and the speed with which this support is provided, largely determine customer evaluations of post transaction services. Customer support is also appreciated during the pre-transaction stage, particularly for online services: the online customer is relatively powerless in enforcing help, having to rely on the willingness of the firm to provide support. The faster and more accurately a provider responds to requests, the better the service will be evaluated. We therefore expect:

- P<sub>6</sub>: In the case of Internet travel agencies, a positive relationship will exist between perceived responsiveness and overall quality perceptions.

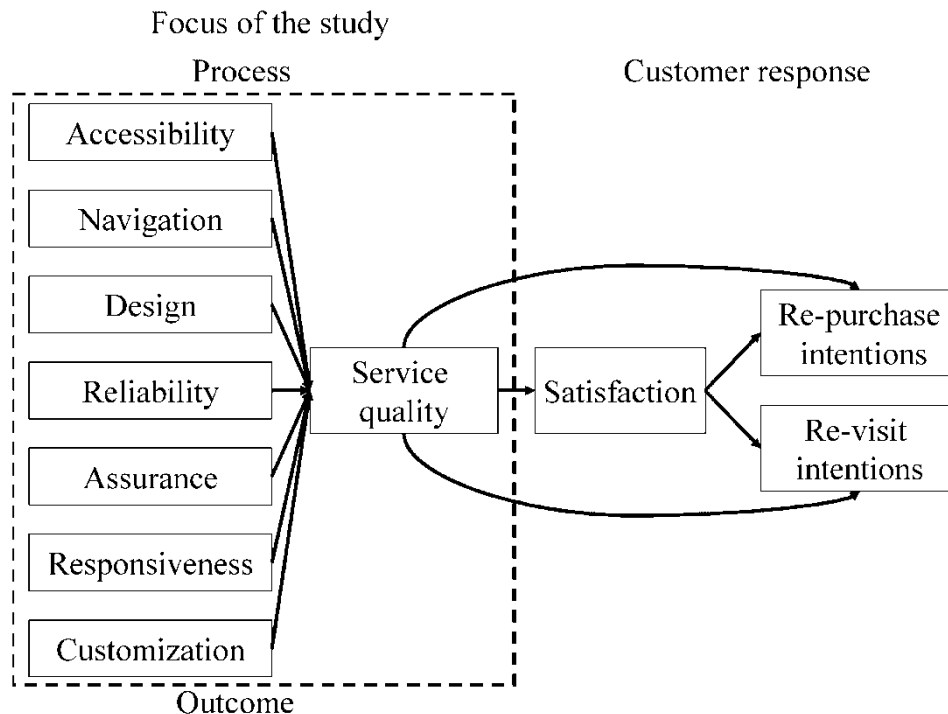


Figure 2. Research model

#### Customization

It has been argued that customizability is one of the key benefits of applying technology to the delivery process of services. Online services are, in principle, highly customizable. Customers may therefore expect online services to respond to their individual needs (Bitner *et al.*, 2000). Customization is strongly related to the *empathy* dimension in SERVQUAL, as the online firm shows its appreciation of the customer's unique needs and preferences by making the site adaptable. However, companies often track customers' movements and decisions through interactions with the visited websites and use this database of client data for further customization (Kaynama & Black, 2000). As a result, customization can easily involve privacy issues: To what extent customers will tolerate the prying behaviour of online providers remains to be seen. It can be expected, that:

- P<sub>7</sub>: In the case of Internet travel agencies, an inverted U-shaped relationship will exist between perceived customization and overall quality perceptions.

The expected relationships are summarized in the model in Figure 2.

#### Research Design and Methodology

A comparison of three existing travel sites in The Netherlands serves to validate the model by testing the propositions that were developed. After a short

description of the travel industry in the Netherlands and of the three travel firms studied, the research methodology and the operationalization of the variables will be discussed.

### *The Travel Industry in the Netherlands*

The Netherlands is a small country with 15 million inhabitants. It has one of the highest levels of personal computer and Internet penetration (Forrester, 2001) in households (after the US and Finland). The travel market can be divided into online, hybrid and traditional agencies. Furthermore, a distinction can be made between direct sellers and intermediaries. *Direct sellers* exclusively offer their own products. Examples are De Jong Intra ([www.dejongintra.com](http://www.dejongintra.com)), KrasSterVakanties ([www.kras.nl](http://www.kras.nl)), and ATPonline ([www.atponline.nl](http://www.atponline.nl)). Direct sellers have direct insight in the availability of products, and can rapidly adapt the products to current demand. A disadvantage is the limited product offering on this type of site (Jungle Rating, 2001). For this reason, direct sellers tend to transform themselves into intermediaries (Barnett & Standing, 2001). *Intermediaries* provide sites that sell products from a range of tour-operators. E-Bookers ([www.ebookers.com](http://www.ebookers.com)), Elmar-reizen ([www.elmar.nl](http://www.elmar.nl)), Travelplanet ([www.travelplanet.nl](http://www.travelplanet.nl)), Happytravel ([www.happytravel.nl](http://www.happytravel.nl)), D-reizen ([www.d-reizen.nl](http://www.d-reizen.nl)) and Travel24 ([www.travel24.com](http://www.travel24.com)) are examples of this category. Intermediaries tend to have the most attractive website design: 'When booking through an intermediary you really land in a virtual travel-world, where you can feel, compare and easily book, while sites of direct sellers are often without fantasy and atmosphere' (Jungle Rating, 2001).

### *Three Travel Websites*

Three travel agencies, representing different categories, were used for this study: D-reizen (hybrid intermediary), Travel24 (online intermediary), and De Jong Intra (hybrid direct seller).

- (1) *D-reizen* is the largest independent travel agency in the Netherlands. They sell bookings for nearly all Dutch tour operators (55 tour-operators, among others De Jong Intra) and airline companies.
- (2) *Travel24* is one of the most prominent travel agencies on the Internet. Travel24 is active in the Dutch-speaking Benelux-market, but also in Germany and other European countries and has agreements with many international tour-operators. Most offerings can be booked online.
- (3) *De Jong Intra* is a tour operator that caters to over 250,000 leisure travellers on a yearly basis. De Jong Intra sells their vacations via their website and through intermediaries (such as D-reizen).

### *Questionnaire Design and Measurement*

A structured undisguised questionnaire was developed, containing 37 closed questions and five open questions. The questionnaire was sent by e-mail to a

convenient sample of about 400 contacts on 7 May 2002, with the invitation to complete the questionnaire for at least one travel website. Links were provided to the three websites, and respondents were invited to visit and explore the sites before filling out the survey. Ninety-one respondents completed the questionnaire, 44 respondents for D-reizen, 20 respondents for De Jong Intra, and 27 respondents for Travel24.

In the original SERVQUAL model, service quality is defined as the difference between customers' expectations or anticipations and their perceptions of actual performance (Parasuraman *et al.*, 1991). It has been suggested that service quality can be measured more appropriately as performance (Cronin & Taylor, 1992, 1994). Service quality, measured as perceived performance, has been demonstrated to affect customer satisfaction and patronage behaviour directly and to a high degree (Cronin *et al.*, 2000; Liljander & Strandvik, 1995). It was therefore decided to measure service quality as respondents' self-reported agreement or disagreement with statements about the performance of the service on the previously discussed dimensions. Performance perceptions were measured on seven point Likert-scales.

## Results

In a separate part of the survey, respondents were asked about the importance of various service categories offered by travel websites in general. Table 1 shows the means and standard deviations of the responses by age group.

Services directly related to transactions show an importance rating of at least 6 out of 7 in all categories and age groups. A notable difference between age groups was observed for *responsiveness*. Online customers in the 20–24 years old age group appear more impatient than the people in the other age groups. The various facilitating and supporting services show lower ratings, except for direct access, which reflects the desire to access the provider by phone or visit the premises if needed.

A factor analysis was used to assess the one-dimensional nature of the different variables. Cronbach's alpha was calculated for all constructs to obtain an

**Table 1.** Importance of online travel service categories by age group: Means (Std. dev.)

Age	N	Transaction related services			Facilitating services		Supporting services		
		Fast Response	Billing	Confirmation	Direct access	E-mail	Country	Stories	Chat room
Early 20s	39	6.6 (0.54)	6.7 (0.44)	6.8 (0.43)	6.1 (1.17)	3.4 (1.63)	5.6 (0.99)	3.1 (1.53)	1.7 (0.80)
Late 20s	23	6.4 (1.24)	6.4 (1.47)	6.2 (1.87)	5.8 (1.65)	3.5 (1.80)	5.0 (1.58)	4.0 (2.12)	2.2 (1.35)
30s and above	29	6.0 (0.98)	6.6 (0.88)	6.7 (0.81)	5.4 (1.52)	4.0 (1.66)	5.28 (1.28)	3.6 (1.40)	2.4 (1.48)

indication of the composite reliability of the measures. Three separate factor analyses were conducted, one on the customer responses, one on the three user interface dimensions, and one on the other service quality dimensions. Scree tests were used to determine the number of factors. A value of 1 for the initial Eigenvalues was used as a threshold. Items measuring *overall quality*, satisfaction and behavioural intentions were loaded on one factor, explaining 65.2% of the total variance, with an initial Eigenvalue of 3.262. A three-factor solution was found for the *user interface* dimensions, explaining 74.6% of the total variance. *Navigation* (initial Eigenvalue 4.878) explained 49% of the variance, *design* (initial Eigenvalue 1.521) explained 15.2%, and *accessibility* (initial Eigenvalue 1.043) explained 10.4%. A three factor solution best described the remaining SERVQUAL dimensions, where *customization* (initial Eigenvalue 4.552) explained 50%, *assurance* (initial Eigenvalue 1.197) explained 13.3% and *reliability* (initial Eigenvalue 1.004) explained 11.15% of the total variance. *Responsiveness* was measured with a single item. Commonalities were all above 0.5; standardized factor loadings for most individual questions, relating to the user interface and the other service quality dimensions were high, whereas most of the factor analyses yielded acceptable values on the Kaiser–Meyer–Olkin measure of sampling adequacy (see Table 2), so these constructs can be considered reliable and one dimensional.

Means and standard deviations for service quality dimensions and overall rating of each site are reported in Table 3. For De Jong Intra, these values are consistently lower than for the other two sites (except site design).

To further explore the data, we calculated correlations between all main constructs. Table 4 presents bivariate correlations between core constructs. Correlation coefficients of respectively 0.10, 0.30 and 0.50 are typically interpreted as small, medium and large (Green *et al.*, 1997).

Regression analysis was used to test the propositions. The expected relationships between the seven online service quality dimensions and customer responses are represented in the equation:

$$SQ = \alpha + \beta_1 \times ACC + \beta_2 \times NAV + \beta_3 \times DES + \beta_4 \times REL + \beta_5 \times ASS + \beta_6 \times RES + \beta_7 \times CUS + E \quad (1)$$

where  $\alpha$  is the intercept,  $\beta_1$ – $\beta_7$  are regression coefficients of the independent variables and  $E$  represents the error term. Because of considerable correlations among the independent variables (see Table 4), high levels of multicollinearity were expected. The variance inflation factors (VIF) were calculated and found to be in the range of 1.5–3.5. In order to separate better the effects of the different independent variables a Ridge-regression was therefore conducted. In the case of multicollinearity, least squares estimates themselves are unbiased, but their variances are very large and possibly far from the true values. By adding a small bias ( $k$ ) to the regression estimates, more reliable estimates can be obtained. A value of 0.6 for  $k$  was chosen, as this produced the best results. The regression results are reported in Table 5. From Table 5 it can be concluded that highly significant relationships exist between the two major user interface dimensions, navigation (Proposition 2) and design (Proposition 3), as well as the adapted

**Table 2.** Factor analysis for the constructs

Construct/measures (composite reliability/sampling adequacy)	Standardized loadings	Mean	Std. dev.
Overall service quality ( $\alpha=0.86/\text{KMO}=0.847$ )			
The quality of services on the travel agency's website is very good	0.75	4.75	1.29
On a scale between 1 (very bad) and 7 (very good) I would grade the travel agency's website:	0.80	4.78	1.25
I am very satisfied with the service on this website	0.85	4.53	1.59
In the future I will certainly make use of the website to search for travel information	0.86	4.41	1.78
In the future I will certainly make use of the website to book travel	0.78	3.46	1.64
Accessibility ( $\alpha=0.81/\text{KMO}=0.500$ )			
The website makes it easy to get into touch with the travel agency	0.78	4.77	1.53
I can easily find e-mail address and telephone number of the travel agency	0.92	4.69	1.79
Navigation ( $\alpha=0.90/\text{KMO}=0.822$ )			
Browsing between pages is easy	0.87	4.96	1.56
The structure of the site is logical	0.91	4.89	1.62
A good search engine is present	0.86	4.39	1.72
Categorization of topics is helpful in finding what I search	0.88	4.81	1.63
Design ( $\alpha=0.78/\text{KMO}=0.778$ )			
The site is pleasant to look at	0.63	4.90	1.57
The site is original	0.63	4.20	1.56
There are too many pictures (recoded)	0.86	4.37	1.66
The use of colours on the site is good	0.71	4.57	1.69
Reliability ( $\alpha=0.81/\text{KMO}=0.852$ )			
The information provided by the travel agency is up-to date	0.86	5.26	1.33
I can rely on the information provided on the website	0.75	5.30	1.33
Product information (travel description) is accurate	0.73	4.71	1.34
Assurance ( $\alpha=0.80/\text{KMO}=0.700$ )			
The purpose of the site is entirely clear to me	0.82	5.46	1.39
I trust this site in terms of confidentiality of private information	0.84	4.85	1.38
The website looks professional	0.87	5.08	1.51
Responsiveness			
Imagine having a problem, it is easy finding help on the site	0.84	4.17	1.34
Customization ( $\alpha=0.85/\text{KMO}=0.708$ )			
The site helps to find exactly what I want	0.64	4.54	1.56
The site is easy to customize (by offering the possibility to search on date, destination and price)	0.88	4.36	1.75
I can quickly and easily see if they offer something that suits me	0.83	4.64	1.57

**Table 3.** Descriptives for three travel websites: Means (Std. dev.)

	De Jong Intra	Travel 24	D-reizen
Customer response (SQ)	3.36 (1.32)	4.51 (0.79)	4.77 (1.15)
Access (ACC)	4.10 (1.64)	5.13 (1.35)	4.88 (1.34)
Navigation (NAV)	3.74 (1.59)	5.18 (1.12)	5.09 (1.12)
Design (DES)	4.31 (1.48)	4.26 (0.68)	4.87 (1.23)
Reliability (REL)	4.30 (1.40)	5.04 (1.11)	5.49 (0.79)
Assurance (ASS)	4.87 (1.16)	4.85 (1.29)	5.54 (0.76)
Responsiveness (RES)	3.95 (1.47)	4.11 (1.31)	4.40 (1.16)
Customization (CUS)	3.42 (1.48)	4.64 (1.05)	5.05 (1.16)

**Table 4.** Correlation matrix of main constructs

	SQ	ACC	NAV	DES	REL	ASS	RES
ACC	0.452**						
NAV	0.830**	0.443**					
DES	0.549**	0.503**	0.474**				
REL	0.553**	0.232*	0.515**	0.432**			
ASS	0.533**	0.470**	0.576**	0.678**	0.554**		
RES	0.534**	0.555**	0.530**	0.442**	0.420**	0.515**	
CUS	0.806**	0.388**	0.818**	0.448**	0.496**	0.525**	0.570**

\*\*Correlation is significant at the 0.01 level (2-tailed).

\*Correlation is significant at the 0.05 level (2-tailed).

**Table 5.** Ridge regression ( $k=0.6$ )

Dependent variable: SQ	B	<i>t</i>	$\beta$
Intercept	0.177	1.898*	
NAV		8.578**	0.272
CUS		7.891**	0.252
REL		3.301**	0.116
DES		3.302**	0.113
ACC		1.873*	0.065
RES		1.784*	0.025
ASS		0.752	0.025
$N=91$ Adjusted $R^2$ : 0.71			
F-value: 32.540 significance			
0.000**			

SERVQUAL dimensions reliability (Proposition 4) and customization (Proposition 7), and customer responses.

Weaker, but significant effects exist between *accessibility* (Proposition 1) and *responsiveness* (Proposition 6) and customer responses, while, surprisingly, no significant relationship could be found between *assurance* and customer responses (Proposition 5). A large proportion of the variance in customer responses was

explained by the six significant constructs (adjusted  $R^2=0.71$ ), while the model has a relatively good and highly significant fit to the data ( $F=32.540$ ). This implies that the data support all propositions, except Proposition 5.

### Discussion and Conclusions

As a result of the rapid development of information and communication technologies, customers have gained access to a wide range of new services on the Internet (Porter, 2001). The present study focused on online travel services as one of the largest e-commerce domains (Anckar & Walden, 2000; Clemons *et al.*, 2002). The aim was to investigate the dimensions of online travel service quality by adapting and extending the SERVQUAL model. We investigated the impact of accessibility, navigation, design, reliability, responsiveness and customization on online service quality perceptions. Where traditional service quality perceptions are based on an evaluation of encounters between service provider and customers, online service quality perceptions appear to be generally based on evaluations of the interaction between the customer and a user interface. Each online service provider employs standardized interfaces and technology for its customers. Delivering online services right the first time every time is crucial. Imperfections in technology or user interface design have immediate consequences for online service quality perceptions in all dimensions. Furthermore, customers' zones of tolerance are likely to be smaller for online services, because a multitude of providers are available on the Web (Parasuraman *et al.*, 1991; Van Riel *et al.*, 2003).

The present study found that all factors, except assurance, had a significant impact. Our model explained 71% of the variance in perceived online service quality. As we found a weak antecedent role of assurance, the observation of substantial correlation between assurance and customer responses may point at reverse causality. This observation warrants further investigations. The impact of accessibility and responsiveness on online service quality perceptions was weaker, yet significant. The true importance of accessibility may be revealed to its full extent when the customers really need to contact the company, which may not have been the case in the sample used for the research. A similar observation can be made with respect to responsiveness. Customers expect companies to react quickly and accurately to questions, complaints and orders.

### Managerial Implications and Recommendations

Some recommendations for managers of online travel services can be made. Providers often consider supporting and pre- and post-transaction online services non-essential and mainly use them to differentiate the service package. We argue that pre- and post-transaction service delivery, which is typically built around supporting services, may significantly impact overall quality perceptions. In the context of travel e-commerce, pre- as well as post-transaction services should arguably be considered potential core services, paving the way for future transactions.

The results of our study indicate that both process and outcome dimensions

significantly impact service quality perceptions in an online travel context. It is often argued that customer expectations can more easily be exceeded in process than in outcome dimensions (Parasuraman *et al.*, 1991). This is important in relation to online travel services, because the interaction between the customer and the website is a process dimension (user interface), and therefore online providers should ensure quality in this area at least as much as in their outcome dimensions (Cox & Dale, 2001). The design of the user interface acts as a business card for the travel agency. User interface quality should be high, because it affects the overall image of the service provider. The navigation aspect of the user interface appears to be essential: Travel sites would gain much by extremely user-friendly navigation toolbars. Decisions to book a vacation through a travel website seem to depend on the presence of fast and reliable navigation tools and of an easy-to-use but functional search engine. Cumbersome navigation and search facilities, or processes that are constantly blocked by irrelevant pop-ups and banners, are likely to be detrimental to re-visiting and re-use of the website and thus to customer loyalty. The proper use of technology in all aspects of the user interface can be a significant asset of the service provider. Furthermore, technology can contribute to continuous improvement of the online service by studying patterns in the surfing behaviour of customers.

#### *Limitations and Suggestions for Further Research*

The distinction between pre-transaction, transaction and post-transaction service quality warrants further research. For instance, what is the relative effect of pre- and post-transaction service quality on the perceived overall service quality? The present study largely deals with pre-transaction service quality. Investigating the same customers during the transaction and post-transaction phases would yield new insights into the relative impact of pre-transaction service quality.

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