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Comfort your online customer: quality, trust and loyalty on the internet  
Dina Ribbink Allard C.R. van Riel Veronica Liljander Sandra Streukens

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# Comfort your online customer: quality, trust and loyalty on the internet

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*Dina Ribbink, Allard C.R. van Riel  
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## Keywords

Customer services quality, Customer loyalty, Trust, Electronic commerce, Customer satisfaction

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## Abstract

In e-commerce, loyal customers are considered extremely valuable. Loyalty is generally attributed to satisfaction with the quality of service. Since online transactions involve many uncertainties for the customer, trust is a condition for exchange. Trust in the electronic medium – here called “e-trust” – is believed to increase online customer loyalty, but empirical confirmations are scarce. The present study empirically investigates the roles of service quality, satisfaction and trust in an e-commerce context. In the study, e-trust is found to directly affect loyalty. The e-service quality dimension of assurance, i.e. trusting the merchant, influences loyalty via e-trust and e-satisfaction. Other e-quality dimensions, such as ease of use, e-scape, responsiveness, and customization influence e-loyalty mainly indirectly, via satisfaction. Managerial implications and suggestions for further research are provided.

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Customer loyalty is considered important because of its positive effect on long-term profitability. According to Reichheld and colleagues (Reichheld *et al.*, 2000; Reichheld and Scheffer, 2000), the high costs of acquiring new e-customers can lead to unprofitable customer relationships for up to three years. As a consequence, it is crucial for online companies to create a loyal customer base, as well as to monitor the profitability of each segment (Reinartz and Kumar, 2002). However, few companies seem to succeed in creating e-loyalty, and little is known about the mechanisms involved in generating customer loyalty on the internet. In traditional service research, as well as in emerging research on e-services (Srinivasan *et al.*, 2002; Van Riel *et al.*, 2004; Wolfenbarger and Gilly, 2003), several antecedents of customer loyalty have been proposed. Among those, satisfaction figures prominently, and is thought to be attributable to customer evaluations of service and resulting quality perceptions. Next to satisfaction, trust has been brought forward as a precondition for patronage behavior (Pavlou, 2003) and the development of long-term customer relationships (Doney and Cannon, 1997; Papadopoulou *et al.*, 2001; Singh and Sirdeshmukh, 2000). Trust generally decreases the perceived risk of using a service (Garbarino and Johnson, 1999). The role of trust could be even more important in an e-commerce setting, since e-customers do not deal directly with the company, or its staff (Papadopoulou *et al.*, 2001; Urban *et al.*, 2000). Various relationships have been proposed between trust, satisfaction and loyalty in an online context (Reichheld and Scheffer, 2000). In a recent study, for example, Corbitt *et al.* (2003) suggest a strong positive effect of trust on loyalty to online firms, but theoretical foundations as well as empirical confirmations are lacking (Anderson and Srinivasan, 2003; Grabner-Kräuter and Kalusha, 2003).

The present study deals with the question of how trust, quality and satisfaction influence customer loyalty to an e-service. An e-service is defined as “the provision of service over electronic networks such as the internet” and includes “the service product, service environment, and service delivery that comprise any business model, whether it belongs to a goods manufacturer or a pure service provider” (Rust and Kannan, 2002, p. 4f).

In a review of the literature, hypotheses are developed with respect to the relationships between service quality, satisfaction, trust and loyalty in an online context. A conceptual model summarizing the hypotheses is subsequently

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validated in an empirical study. Managerial implications are provided, as well as suggestions for further research.

## Literature review and model development

Customer loyalty has been defined as “a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behavior” (Oliver, 1999, p. 34). This general definition appears to apply to e-loyalty as well. Another, briefer and more specific definition is provided by Anderson and Srinivasan (2003, p. 125), who define e-loyalty as “the customer’s favorable attitude toward an electronic business, resulting in repeat purchasing behavior”. Preference and favorable attitudes presume customer satisfaction, which is generally considered a major driver of loyalty (Anderson *et al.*, 1994; Ellinger *et al.*, 1999; Oliver, 1999), also in online settings (Cho *et al.*, 2002; Gummerus *et al.*, 2004). Since it is considered difficult to gain loyal customers on the internet (Gommans *et al.*, 2001), satisfaction with the merchant and their services may be even more important online than offline (Shankar *et al.*, 2003; Van Riel *et al.*, 2001). Therefore, it is expected that:

*H1.* E-satisfaction directly and positively affects e-loyalty.

Trust is proposed as another important antecedent of loyalty (Reichheld *et al.*, 2000). The trust concept has been studied in a number of disciplines, and various definitions have been proposed (Lewicki *et al.*, 1998). Trust is consistently related to the vulnerability of the trustor (Bigley and Pearce, 1998; Singh and Sirdeshmukh, 2000), because without vulnerability of the trustor upon the trustee, trust becomes irrelevant. In business studies, trust has been found to be important for building and maintaining long-term relationships (e.g. Geyskens *et al.*, 1996; Rousseau *et al.*, 1998; Singh and Sirdeshmukh, 2000). A commonly used definition of trust is that of Moorman *et al.* (1992), who define it as the willingness to rely on an exchange partner in whom one has confidence. This definition is in accordance with early research, which associated trust with a “confidence in the other’s intentions and motives”, a definition that still holds (Lewicki *et al.*, 1998, p. 439). It is also echoed by recent research in offline and online services (e.g. Cheung and Lee, 2001), which defines trust as the “degree of confidence or

certainty the [...] [customer] has in [...] exchange options” (Zeithaml and Bitner, 2000, p. 327). E-trust will therefore be defined as the degree of confidence customers have in online exchanges, or in the online exchange channel.

Electronic exchanges are believed to present numerous risks to customers (Grabner-Kräuter and Kalusha, 2003), while trust appears to be especially important for creating loyalty when the perceived level of risk is high (Anderson and Srinivasan, 2003). Purchasing online is considered risky, since customers lack direct contact with the company, i.e. through sales personnel or the physical store (Reichheld and Schefer, 2000), and have to hand over sensitive information, such as credit card numbers, in order to complete the transaction. The absence of interpersonal interaction also suggests that online trust is mainly cognitive, i.e. based on customers’ judgments of the reliability and capabilities of the merchant or the exchange channel, and not affective trust, i.e. founded on a bond among individuals (McAllister, 1995).

To date, there is a lack of empirical studies on trust in online exchanges (for a review, see Grabner-Kräuter and Kalusha, 2003), and particularly on the effect of e-trust on customer behavior. Grabner-Kräuter and Kalusha (2003) also point to a lack of studies on the trust in e-tailers, since many past studies have only investigated web site browsing, hypothetical purchasing scenarios, or internet banking.

It should be explicitly recognized that there are different types of trust, and a distinction needs to be made between a person’s disposition, or propensity to trust, system-based trust and interpersonal trust (Grabner-Kräuter and Kalusha, 2003). Dispositional trust plays a particularly important role in the interaction between unfamiliar actors (Bigley and Pearce, 1998) and is therefore essential for the initial use of electronic retailers (Grabner-Kräuter and Kalusha, 2003), as well as for purchases of goods and services that score high on credence and experience qualities. System-based trust equals e-trust and deals with customers’ trust in purchasing or searching for goods/service information online. Since interpersonal relationships do not describe the interaction between customers and e-tailers well, we prefer the term “e-tailer trust” to describe trust of customers in specific online merchants.

There is some evidence supporting a positive relationship between e-tailer trust and e-loyalty, in terms of increased spending (Gefen, 2000), and intentions to purchase (Pavlou, 2003) or repurchase (Pan *et al.*, 2002). Lack of trust is frequently cited as a reason for not purchasing

from online merchants (Lee and Turban, 2001). In analogy with findings from traditional loyalty research, positive word of mouth (Dick and Basu, 1994; Garbarino and Johnson, 1999; Gremler and Brown, 1999) can also be expected to result from trust. However, a lack of e-trust – or trust in the electronic exchange – cannot be influenced directly by online merchants, who can only influence their own e-tailer trust.

Merchant trust is the most studied form of trust in online exchanges, whereas system-based trust has largely been neglected (Grabner-Kräuter and Kalusha, 2003). E-trust is expected to affect customers' willingness to purchase online (Reichheld and Scheffer, 2000), but empirical evidence is lacking. A study by Kim and Prabhakar (2000) found that e-trust had a significant effect on the usage of internet banking, whereas trust in the bank itself had no effect. Therefore, with respect to the effect of e-trust on customer loyalty, it can be expected that:

*H2.* E-trust directly and positively affects e-loyalty.

Customer satisfaction is closely related to interpersonal trust (Geyskens *et al.*, 1996) and is considered an antecedent of trust (Garbarino and Johnson, 1999; Selnes, 1998). A positive effect of satisfaction on trust can be expected in the online environment as well, though empirical research in this domain is scarce. A positive effect of customer satisfaction on trust with respect to the service provider has been demonstrated for the book e-tailing industry (Pavlou, 2003). In analogy with these findings, customers' satisfactory experiences with a specific e-tailer are expected to increase their willingness to make more online purchases from that e-tailer (loyalty), as well as their trust in the online medium as such (system-based trust). Satisfaction with a specific application of the system (the e-tailer) will increase confidence in the system as a whole. It is therefore expected that:

*H3.* E-satisfaction directly and positively affects e-trust.

While e-service quality dimensions are occasionally considered to be causing e-loyalty directly (Srinivasan *et al.*, 2002), a majority of studies view them as antecedents of e-satisfaction (Szymanski and Hise, 2000; Van Riel *et al.*, 2004), i.e. satisfaction is conceptualized as a mediator of the relationship between quality and loyalty (Caruana, 2002). As yet, there is no consensus on the exact nature or number of quality dimensions that customers consider when evaluating e-services (c.f. Srinivasan *et al.*, 2002; Wolfinbarger and Gilly, 2003; Yang *et al.*, 2003; Zeithaml *et al.*, 2000, 2002). For the present study, five commonly used e-quality dimensions were chosen:

- (1) ease of use;
- (2) web site design;
- (3) customization;
- (4) responsiveness; and
- (5) assurance.

These dimensions will be briefly discussed.

Ease of use is an essential element of consumer usage of computer technologies (Davis, 1989; Morris and Turner, 2001; Venkatesh, 2000; Venkatesh and Davis, 2000), and is of particular importance for new users (Gefen and Straub, 2000). Ease of use is a determinant of service quality (Dabholkar, 1996) and is decisive for customer satisfaction, since it enhances the efficiency of using the service (Xue and Harker, 2002). In an e-tailing context, ease of use includes aspects such as functionality, accessibility of information, ease of ordering and navigation (Reibstein, 2002). Besides being easy to use, the company's site should be pleasing to the eye. Thus, another quality dimension directly related to the user interface is web site design (Wolfinbarger and Gilly, 2003; Zeithaml *et al.*, 2000), or e-scape (Van Riel *et al.*, 2004). An often-cited benefit of online technologies is that the web site can be personalized to the user's needs, although this may be a challenging task, because of the lack of a human touch (Rust and Kannan, 2002). E-tailers should strive to customize their services to users' individual needs (Srinivasan *et al.*, 2002), e.g. based on past purchases and other information provided by customers. Loyal customers can be a valuable source for service improvements (Wikström, 1996a, b), but companies often ignore such information (Finkelstein, 2003). As in a traditional service context, customers expect quick feedback on requests and when they suggest improvements. Though responsiveness in general has a positive influence on e-satisfaction, it should be noted that it may impact quality perceptions negatively if customers feel that they are bombarded with company e-mails (Zeithaml *et al.*, 2000). The fifth quality dimension is assurance, i.e. the customer's perceived security and privacy when using the e-tailer's services. Security and privacy are of serious concern to e-service customers (Rust and Kannan, 2002). Security concerns the risk of third parties obtaining critical information about the customer (e.g. access to credit card or bank account details), whereas privacy relates to the concern about the potential misuse of personal information by marketers (Milne and Rohm, 2000). Privacy exists when customers can restrict the use of personal information. However, many customers are not aware of what information e-tailers collect, or where to look for opt-in or opt-out options. Milne and Rohm (2000), for example, found that less

than half of surveyed direct mail responders knew how to remove their name from the mailing list. Moreover, regulations differ between countries, and, for example, whereas opt-in is required within the European Union, opt-out is a legal option in the USA. Customers who use the global internet are unlikely to be familiar with the regulations that apply to each web site and, therefore, have to place their trust in the integrity of the e-tailer. E-tail customers are also found to exhibit less privacy concerns than non-internet users, though concerns are also higher among older persons (Graeff and Hamon, 2002). Concerns over lack of privacy may help to explain why Wolfinbarger and Gilly (2003) found no effect of security/privacy on satisfaction, loyalty intentions, and attitude towards the web site, and only a small negative effect on overall web site quality. Although e-tailers' privacy policies are ranked low in importance in relation to other elements (Reibstein, 2002), they will become of utmost importance when violated.

Because the focus of the present study is not on the relative effects of different e-quality dimensions, no dimension-specific hypotheses are formulated. All five dimensions are expected to impact on customers' satisfaction with the e-tailer:

*H4.* E-quality directly and positively influences e-satisfaction.

Finally, the quality elements of the e-service are expected to affect e-trust directly (Grönroos *et al.*, 2000), because they represent trust cues that convey the trustworthiness of the site and the system to customers (Corritore *et al.*, 2003). In a review of studies on online trust, Grabner-Kräuter and Kalusha (2003) even interpret e-quality determinants as trust, i.e. trusting beliefs, and intentions to repurchase as trusting intentions. Furthermore, Corritore *et al.* (2003) call web sites objects of trust and suggest that navigational architecture and design elements have a direct effect on trust. A qualitative study by Davis *et al.* (2000, p. 183) on e-tail brands also demonstrates the importance of e-tailer trust, with quotes such as "Think of brands I [...] trust in terms of quality" and "... if there was no trust, I couldn't allow the service to continue". Although these studies are not on e-trust, e-quality can be expected to have a positive effect also trust in the online medium. Therefore, in analogy with the arguments used to underpin the relationship between satisfaction and e-trust, we expect that the confidence customers have in online exchanges will be positively affected by the quality of their online experiences:

*H5.* E-quality directly and positively influences e-trust.

Figure 1 summarizes the hypotheses in a conceptual model.

## Method

### Sampling and questionnaire design

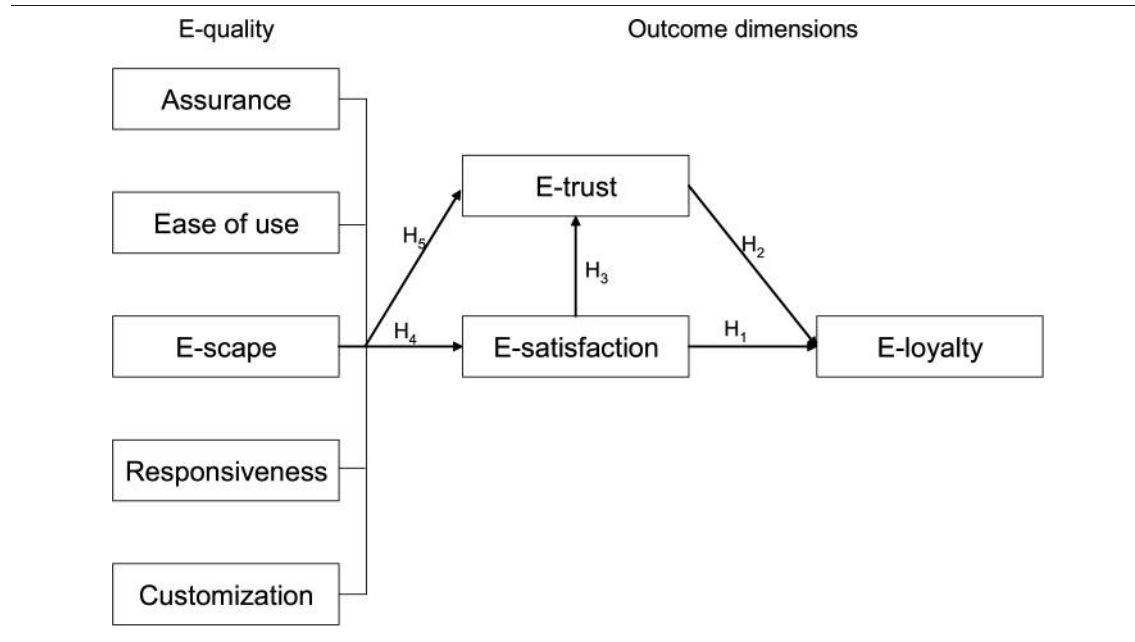
In order to validate the conceptual model presented in Figure 1, data were collected from actual customers of online book and CD stores. An electronic questionnaire was designed and made available via the internet. Invitations to participate were sent by e-mail to 350 university students, recent graduates and academics in Europe. The e-mail stated the purpose of the research and included a hyperlink directing respondents to the questionnaire. Recipients were asked to forward the invitation to others, thus creating a snowball sample. Participants were asked to evaluate a web site of their choice, provided it belonged to an online vendor of books and CDs. Each participant evaluated the web site of the vendor they were most familiar with. Web sites of book and CD vendors were chosen since they are transactional, while books and CDs are a prevalent object of e-commerce. They have also been objects of study in past research on e-commerce (e.g. Pan *et al.*, 2002; Pavlou, 2003).

Measurement of the performance of the user interface was based on conceptual research by Grönroos *et al.* (2000) and Parasuraman and Grewal (2000). E-service quality, e-satisfaction and e-loyalty measures were based on qualitative research by Zeithaml *et al.* (2000). Finally, a five-item scale was developed for the measurement of e-trust. All items were measured on seven-point Likert-type scales as self-reported attitudes towards a range of statements. The scales went from strongly disagree (1) to strongly agree (7). The questionnaire contained 31 undisguised statements, topically organized. A total of 184 usable responses were obtained. Since no information is available about the number of potential respondents, the exact response rate cannot be determined. Of the respondents, 38.3 per cent were female. Nearly half of the respondents were younger than 25, and only 17.6 per cent were above 30. The majority of the respondents (62.8 per cent) were still studying when filling out this questionnaire, 22.9 per cent were following an academic career and 12.8 per cent were working in a different environment not further specified.

## Results

Both the measurement model and the structural model were estimated by means of partial least squares (PLS) (cf. White *et al.*, 2003). The use of PLS was guided by the following considerations. First, after screening the distribution of the data

Figure 1 Conceptual model



for normality, it became clear that most variables were slightly skewed. PLS makes no assumptions regarding the distribution of the variables (Fornell and Cha, 1994). Second, the limited sample size was a reason for deciding to use PLS (Cassel *et al.*, 2000). Being a least squares technique, PLS ensures optimal prediction accuracy (Fornell and Cha, 1994). Finally, PLS estimates have been shown to be very robust against multicollinearity (Cassel *et al.*, 2000). To estimate the model, PLSGRAPH (Version 3.00, Build 1016) was used.

### Measurement model results

The adequacy of the measurement model was assessed by evaluating the reliability of the individual items, the internal consistency among items expected to measure the same construct, convergent validity, and the discriminant validity among the various constructs (cf. Hulland, 1999; White *et al.*, 2003).

Inspection of the loadings of items on their respective constructs revealed a high degree of individual item reliability, as all items have loadings of greater than 0.50 on their respective constructs (cf. Hulland, 1999; White *et al.*, 2003). The approach suggested by Fornell and Larcker (1981) was used to assess the internal consistency of the constructs under study. A substantial degree of internal consistency is evidenced, as all values exceed the 0.70 guideline suggested by Nunnally and Bernstein (1994). As all average variance extracted values are well above 0.50, it can be

stated that the constructs under study display a high degree of convergent validity (Chin and Newsted, 1999). Fornell and Larcker's (1981) test of average trait variance extracted provides evidence of discriminant validity, as for all construct pairs the square root of the average variance extracted from the traits exceeds the correlation between the two respective constructs (cf. Chin, 1998). In addition, discriminant validity is evidenced according to Bagozzi and Warshaw's (1990) criterion, stating that discriminant validity is present when the correlation coefficient is less than 1 by an amount greater than twice its respective standard error. Finally, examination of the theta matrix revealed that no item loaded higher on another construct than it did on its associated construct (cf. White *et al.*, 2003), thereby providing evidence for the presence of discriminant validity. Table I summarizes the results concerning the measurement model related to the assessment of individual item reliability, internal consistency, and convergent validity, while Table II provides an overview of the correlation coefficients and descriptive statistics of the constructs under study.

### Structural model results

Table III presents the estimation results pertaining to our hypothesized conceptual framework. Based on the model performance statistics, it can be concluded that the proposed model has a good fit to the data. PLS makes no distributional

Table I Measurement properties

	Loading	t value	Mean	SD
<b>E-loyalty</b> (CR = 0.882; AVE = 0.653)				
I will recommend this online company to other people	0.89	57.19	6.01	1.027
I would recommend this company's web site to others	0.82	25.48	5.80	1.085
I intend to continue using this online company	0.86	29.81	5.94	1.151
I prefer this online company above others	0.65	12.12	5.65	1.187
<b>E-satisfaction</b> (CR = 0.883; AVE = 0.653)				
I am generally pleased with this company's online services	0.83	29.33	5.84	0.998
The web site of this online company is enjoyable	0.75	18.05	5.27	1.179
I am very satisfied with this company's online services	0.81	20.36	5.70	1.101
I am happy with this online company	0.84	22.80	5.60	1.109
<b>E-trust</b> (CR = 0.805; AVE = 0.512)				
I am prepared to give private information to online companies	0.73	12.96	4.26	1.563
I am willing to give my credit card number to most online companies	0.82	18.96	4.29	1.828
It is not a problem to pay in advance for purchased products over the internet	0.68	9.12	3.69	1.822
Online companies are professionals in their branch	0.57	5.96	4.46	1.179
Online companies intend to fulfill their promises	0.64	5.38	4.89	1.092
<b>Ease of use</b> (CR = 0.914; AVE = 0.729)				
It is easy to get access to this company's web site	0.72	12.05	6.20	0.932
This site is user friendly	0.90	55.98	5.73	1.096
Navigation on this site is easy	0.91	39.84	5.63	1.151
It is easy to find your way on this site	0.88	30.64	5.58	1.108
<b>E-scape</b> (CR = 0.918; AVE = 0.789)				
The info on this site is attractively displayed	0.87	30.44	5.23	1.188
The site layout and colors are appealing	0.92	52.82	5.12	1.148
I am satisfied with the site design	0.88	43.98	5.26	1.056
<b>Responsiveness</b> (CR = 0.846; AVE = 0.646)				
It is easy to get in contact with this online company	0.81	21.77	5.41	1.127
This online company is interested in feedback	0.80	18.38	4.90	1.210
The online company quickly replies to requests	0.80	22.17	5.32	1.218
<b>Customization</b> (CR = 0.843; AVE = 0.644)				
I feel that my personal needs have been met when using this site or doing transactions with this online store	0.84	30.69	5.71	1.025
This site provides me with information and products according to my preferences	0.85	36.97	5.64	1.087
I feel that the online store has the same norms and values as I have	0.70	12.62	4.75	1.171
<b>Assurance</b> (CR = 0.891; AVE = 0.731)				
I feel secure about the electronic payment system of this company	0.84	26.40	5.63	1.355
This online company is trustworthy	0.87	38.25	6.01	0.929
I feel secure when providing private information to this online company	0.88	40.63	5.41	1.412
Note: CR = composite reliability; AVE = average variance extracted				



**Table II** Descriptives and bivariate correlations between main constructs, and square roots of average variance extracted

	Mean	SD	1	2	3	4	5	6	7	8
1. E-loyalty	5.85	0.892	0.808							
2. E-satisfaction	5.60	0.884	0.763**	0.808						
3. Ease of use	5.79	0.918	0.496**	0.645**	0.854					
4. E-scape	5.20	1.005	0.349**	0.598**	0.625**	0.888				
5. Responsiveness	5.21	0.953	0.531**	0.670**	0.552**	0.438**	0.804			
6. Customization	5.37	0.876	0.537**	0.583**	0.545**	0.486**	0.627**	0.802		
7. Assurance	5.68	1.057	0.512**	0.476**	0.302**	0.295**	0.462**	0.526**	0.855	
8. E-trust	4.32	1.051	0.235**	0.220**	0.064	0.087	0.189	0.158	0.346**	0.695

Notes: \*Correlation is significant at the 0.05 level (two-tailed); \*\*correlation is significant at the 0.01 level (two-tailed); AVE on diagonal

**Table III** Results of PLS regression

Hypothesized relationship		Path coefficient	t value	p value	Conclusion
H1	E-satisfaction → e-loyalty	0.68	11.52	0.00	Accept H1
H2	E-trust → e-loyalty	0.14	2.03	0.04	Fail to reject H2
H3	E-satisfaction → e-trust	0.24	1.93	0.06	Fail to reject H3
H4	Assurance → esatisfaction	0.18	2.74	0.01	Fail to reject H4
H4	Ease of use → e-satisfaction	0.23	3.80	0.00	Fail to reject H4
H4	E-scape → e-satisfaction	0.32	3.98	0.00	Fail to reject H4
H4	Customization → e-satisfaction	0.08	1.96	0.05	Fail to reject H4
H4	Responsiveness → ee-satisfaction	0.14	1.90	0.06	Fail to reject H4
H5	Assurance → e-trust	0.36	4.58	0.00	Fail to reject H5
H5	Ease of use → e-trust	NS	NS	NS	Reject H5
H5	E-scape → e-trust	NS	NS	NS	Reject H5
H5	Customization → e-trust	NS	NS	NS	Reject H5
H5	Responsiveness → e-trust	NS	NS	NS	Reject H5

Model performance		R <sup>2</sup>	N	df	F	p value
Dependent variable						
E-trust		0.198	184	6	7.28	0.000
E-satisfaction		0.575	184	5	48.16	0.000
E-loyalty		0.536	184	2	104.54	0.000

assumptions. Therefore a bootstrapping method was used to ascertain the stability and significance of the parameter estimates (cf. White *et al.*, 2003). More specifically, the *t* values were computed on the basis of 500 bootstrapping runs (cf. White *et al.*, 2003).

Turning to the results concerning the specific hypotheses, it can be seen that all except two hypotheses are supported at the 0.05 level. However, at the 0.10 level all hypothesized relationships are statistically significant. The results of the analyses are visualized in Figure 2.

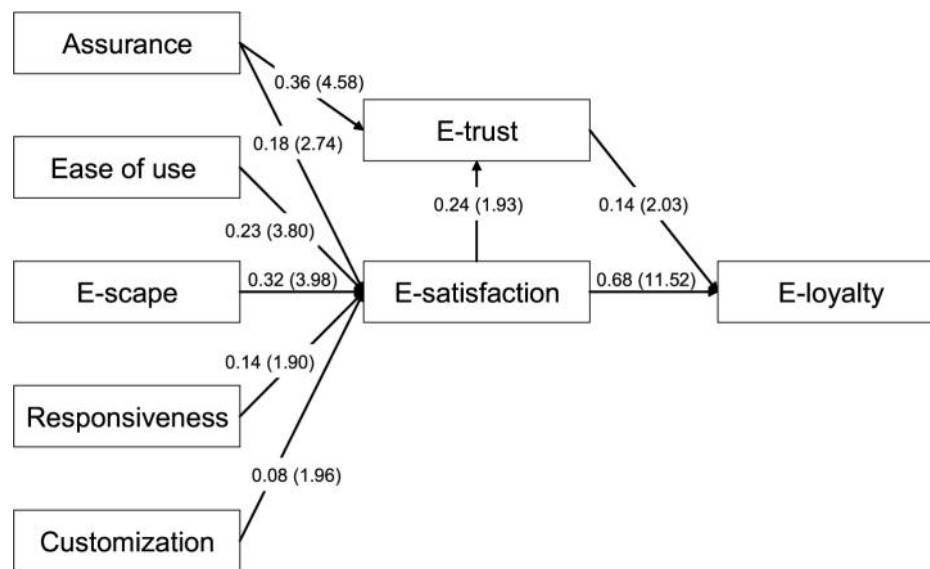
**Conclusion**

The objective of the present study was to investigate the role of customer evaluations of electronic service and e-trust in explaining

customer loyalty to online retailers. More specifically, a mediating role of e-trust between e-quality and e-loyalty was modeled. Data were collected in an e-commerce setting and used to validate the developed model.

As expected, e-satisfaction – largely explained by the variance in e-service quality – positively and directly influences e-loyalty (H1). E-trust is also directly affecting loyalty (H2), but much less than satisfaction, which may imply that trust is not the anticipated major contributor to loyalty in an online environment (Finn and Kayandé, 1997). Assurance plays a different and more important role than previous studies reserved for similar constructs (Parasuraman, 2000). It directly influences satisfaction (H4), but assurance also strongly drives e-trust (H5). Other service quality dimensions (e-scape, ease of use, customization and responsiveness) did not have a significant

Figure 2 Empirically validated model: coefficients (t values)



influence on e-trust (*H5*), but the user interface dimensions strongly affect satisfaction, while only moderate effects on satisfaction were found of responsiveness and customization. Furthermore, e-satisfaction is found to drive e-trust (*H3*), thereby mediating the effect of assurance on e-trust.

### Managerial implications

In the present study, e-trust does not appear to play the imperative role suggested by many authors. Still, a significant positive effect of e-trust on loyalty was demonstrated, while assurance was shown to affect loyalty positively both via customer satisfaction and via e-trust. From a managerial point of view, e-trust is very difficult to influence or control directly, since it results from multiple interactions with multiple online service providers, brand effects and personality attributes such as technology readiness. In an e-tailing environment, however, assurance is a service quality dimension, which can be directly and exclusively controlled by the service provider. Trust can effectively be inspired by providing a safe, reassuring and reliable web site. Companies can therefore increase e-customer loyalty indirectly by improving the assurance dimension of their web site, e.g. by using the well-known Verisign® label, by improving their reputation (e.g. through extensive quality control), or by transferring brand equity built offline. Satisfaction, which contributes considerably to loyalty, can be increased substantially by providing an attractive user interface that is easy to use.

### Limitations and suggestions for further research

Several limitations are related to the sample and the research design. The fact that different web sites were evaluated by different observers, while each observer evaluated only one web site, creates heterogeneity in the observed object, which is not controlled for (Bamert, 2004). To minimize this effect, it would be recommended to have all participants evaluate a finite number of web sites. By asking the participants in the survey to evaluate a web site they were familiar with, a self-selection bias was introduced in the sample. It would be better to include a wide variety of subjects. Although the sample in the present study appeared homogeneous in many respects, more demographic information could also be gathered about the participants, to allow segmentation.

The sample was fairly small, and to obtain more reliable estimates it is recommended to replicate the study on a larger scale, and possibly extend it to other industries. Furthermore, a more representative sample selection will increase the validity of the study. Due to a mixed sample of students and academics, the generalizability to a larger population is limited, since both groups are very familiar with the internet and have a high technology readiness (Parasuraman, 2000).

Other limitations are related to the measurement of the various constructs. The observed variance in e-trust is only partially explained by assurance and satisfaction. This warrants more research into the determinants of e-trust. The observed effect of e-trust on loyalty was also relatively small, certainly compared to

expectations. This may point at the possibility that the indicators used in this study did not capture the full concept.

As discussed by Corritore *et al.* (2003) and Grabner-Kräuter and Kalusha (2003), there is a need for studies on different types of trust. Our study is one of the few that has addressed system-based trust, or e-trust, but there is a need for further research on the nature of e-trust.

Dispositional and merchant trust ought to be included to investigate the relative effect of each trust construct on customer loyalty, as well as on the extent of e-tailer usage. In other words, non-users should also be included. Dispositional trust might also explain differences between swift (trusting a web site without any previous experience with it) and slow trust (trusting only gradually after good experiences with the site), mentioned by Corritore *et al.* (2003). Moreover, there are no studies on what effect trust has at different stages of online customer relationships (Corritore *et al.*, 2003; Wilson, 1995).

Another factor that was omitted from the study was the effect of the brand on loyalty. Brands can relieve perceived risks to a large extent, and have a reassuring effect on customers (Davis *et al.*, 2000), thus increasing their commitment to a vendor. It has been suggested that "an e-tailer with a stronger brand name and more trusted Web site" could charge higher prices (Pan *et al.*, 2002, p. 443). A well-known brand could reduce the need for e-trust, and could either directly influence loyalty to the vendor, or affect satisfaction through the assurance dimension. A vendor with an unknown brand, on the contrary, could take advantage of consumers with high levels of e-trust.

Price obviously plays a role in customers' decisions to be loyal to an online vendor or not, while the present study did not control for price. For customers, the price advantage of some e-tailers may be offset by poorer service quality, since service quality is often positively related to e-tailer pricing (Pan *et al.*, 2002). It could be expected that an interaction effect between price and trust exists. The larger the price difference between vendors or the higher the price-sensitivity of the customer, the less e-trust could be expected to play a role in maintaining loyalty. This observation warrants further investigation.

Trust can relieve different types of perceived risk on the internet, such as financial risk (losing money), functional risk (receiving incomplete or damaged products, or a computer virus), and time risk (long delivery delays and difficult product exchanges). For other product categories, different types of risk may play a role (e.g. physical risk in the case of ordering drugs or food online). According to Corritore *et al.* (2003), risk is

sparsely studied in the online literature. The need for trust presupposes inherent risks in taking the action and, therefore the effects of different types of risk on e-trust need further investigation. The perceived risk in buying books and CDs online is relatively low. To further investigate the role of e-trust, it could be recommended to include vendors of goods that are considered more risky in the study.

There is also a lack of studies of cultural effects on trust and its importance for e-tailer adoption. Since the concept of trust is strongly related to Hofstede's (1993) dimension of uncertainty avoidance, differences could also be expected in the way it facilitates patronage behavior in different cultural settings. Instead of continuing to rely on Hofstede's classification of countries to study cultural differences (Jarvenpaa *et al.*, 1999; Parasuraman *et al.*, 2004) differences in the role trust plays could be useful in segmenting consumer markets in future studies. Issues such as the effect of cultural differences on the relationship between dispositional and e-trust on customer e-tailer loyalty need further investigation.

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