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Veröffentlichungsversion / Published Version
Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:
Bauer, H. H., Falk, T., & Hammerschmidt, M. (2006). eTransQual: a transaction process-based approach for capturing service quality in online shopping. *Journal of Business Research*, *59*(7), 866-875. https://nbn-resolving.org/urn:nbn:de:0168-ssoar-5758

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SCIENCE DIRECT®
Journal of Business Research 59 (2006) 866–875
JOURNAL OF BUSINESS RESEARCH

eTransQual: A transaction process-based approach for capturing service quality in online shopping

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Received 1 December 2004; received in revised form 1 December 2005; accepted 1 January 2006

Abstract

Existing e-service quality scales mainly focus on goal-oriented e-shopping behavior excluding hedonic quality aspects. As a consequence, these scales do not fully cover all aspects of consumer's quality evaluation. In order to integrate both utilitarian and hedonic e-service quality elements, we apply a transaction process model to electronic service encounters. Based on this general framework capturing all stages of the electronic service delivery process, we develop a transaction process-based scale for measuring service quality (eTransQual). After conducting exploratory and confirmatory factor analysis, we identify five discriminant quality dimensions: functionality/design, enjoyment, process, reliability and responsiveness. All extracted dimensions of eTransQual show a significant positive impact on important outcome variables like perceived value and customer satisfaction. Moreover, enjoyment is a dominant factor in influencing both relationship duration and repurchase intention as major drivers of customer lifetime value. As a result, we present conceptual and empirical evidence for the need to integrate both utilitarian and hedonic e-service quality elements into one measurement scale.
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Keywords: Electronic service quality; Online shopping; Transaction process; Scale development

1. Introduction

The rapid expansion of information and communication technologies in daily business activities is the most important long-term trend in the business world (Rust, 2001). Accordingly, a large growth potential is forecasted especially for the provision of products and services via the Internet (Evanschitzky et al., 2004). If and how this potential can be exploited sufficiently depends largely on Internet retailer's ability to meet customers' expectations in the virtual shopping environment (Zeithaml et al., 2002). According to Meuter et al. (2000) the number of dissatisfied online customers experiencing service breakdowns, lost orders, or inadequate complaint handling is notable. These unsatisfying service encounters cause annual Web sales losses of several billion dollars per year (Rust and Lemon, 2001). Therefore, managing electronic service quality becomes an essential challenge for e-tailers.

In order to establish a comprehensive and effective service quality management, this article applies a transaction process-based framework to electronic service encounters incorporating both utilitarian and hedonic e-service quality elements. Conceptual underpinning for this approach is provided by insights from an extensive literature review, taking into account environmental psychology and flow theory. This article shows that the process-oriented characterization of e-services provides a sound and holistic conceptual framework for analyzing overall service quality in the Internet.

2. Literature review

2.1. E-services

A review of the relevant literature reveals the existence of various approaches to conceptualize e-services. Rust and Lemon (2001, p. 86) very generally describe e-services as "…

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doi:10.1016/j.jbusres.2006.01.021

providing a superior experience to consumers with respect to the interactive flow of information". This broad understanding may serve as a basis for a further, more detailed investigation. Grönroos et al. (2000) provide a more differentiated definition in proposing the so-called NetOffer model, according to which online services can be divided into a functional dimension (what is delivered in terms of service outcome) and a technical dimension (how is it delivered in term of service process). Yet, to fully capture all dimensions of an electronic service the functional/technical approach has to be expanded by taking into account an additional dimension comprising all aspects that take place before the actual delivery of the service. Consequently, we suggest that a complete definition should cover all cues and encounters that occur before, during and after the electronic service delivery (Bauer et al., 2005; Parasuraman et al., 2005; Zeithaml et al., 2002).

2.2. E-service quality

In line with the different conceptualizations of electronic services, previous efforts to measure e-service quality also display different approaches and outcomes. In their seminal work on quality planning and analysis in the offline world, Juran and Gryna (1970) suggest four quality dimensions: capability (does the product perform as expected), availability (is the product usable when needed), reliability (is the product free from failure) and maintainability (is the product easy to repair when broken). These generic quality dimensions for traditional products and services are–at least partially–reflected in many of the following quality scales. Therefore they may serve as helpful starting points for substantiating a quality concept for e-services.

Barnes and Vidgen (2001) draw upon the SERVQUAL model in order to generate a pool of quality items. Based on an analysis in the field of online book trade, the authors extract five key dimensions each of which encompasses two subdimensions: tangibles (aesthetics, navigation), reliability (reliability, competence), responsiveness (responsiveness, access), assurance (credibility, security) and empathy (communication, understanding the individual). Overall, the developed WebQual scale focuses on technical quality aspects like ease of use and is therefore more useful for the field of interface design than for holistic quality measurement. We argue that not considering hedonic aspects of online shopping (e.g. fun or enjoyment) is a major omission.

Van Riel et al. (2001) propose a classification of service components which is based on the "technical/functional quality framework" by Grönroos et al. (2000) and comprises the following aspects: core services, facilitating services, supporting services, complementary services, and user interface. In doing so, they attempt to assess the quality of e-services by measuring customer satisfaction with these components of an e-service.

On the basis of online and offline focus groups, a sorting task and an online survey, Wolfinbarger and Gilly (2003) examine the dimensionality of service quality in Internet retailing. By means of exploratory and confirmatory factor analysis four quality dimensions emerge: fulfillment/reliability, Web site design, customer service and security/privacy. The extracted factors are represented by 14 items and explain 70% of the variance of a global e-tail quality judgment. Despite the high reliability and validity of the developed eTailQ scale, the elimination of quality items referring to hedonic aspects of online shopping has to be criticized.

Based on the explorative study by Zeithaml et al. (2002), Parasuraman et al. (2005) provide the most comprehensive work on e-service quality so far. They empirically test a multiple item scale (E-S-QUAL) for assessing service quality of online shopping providers. Their findings correspond to the insights of their explorative study: two different scales are necessary to measure electronic service quality. The E-S-QUAL scale addresses core service quality aspects and consists of four quality dimensions (efficiency, fulfillment, system availability and privacy). Additionally, the E-RecS-QUAL scale is proposed to be relevant when customers face "nonroutine encounters" during the online-shopping process which are related to service recovery like product returns, dealing with problems, etc. (Parasuraman et al., 2005). This latter scale is composed of three quality dimensions (responsiveness, compensation and contact). Despite their sophisticated scale development process and the sound statistical methods used, we express two concerns.

First, analogue to eTailQ (Wolfinbarger and Gilly, 2003), E-S-QUAL lacks of items referring to hedonic service quality elements. Parasuraman et al. (2005) state that "other experiential aspects such as fun or pleasure do not fall within the conceptual domain of service quality because such hedonic aspects are distinct benefits that may not be relevant in all contexts or to all customers" (p. 229). However, as noted by Babin et al. (1994, 2005), if shopping trips are assessed solely on the utilitarian benefits of products or services attained, the numerous intangible and emotional aspects related to a shopping experience are excluded. This idea is supported by implications from environmental psychology indicating that especially the tangible/physical environment generates more emotional than cognitive customer reactions during the service experience (Bitner, 1990). For example Wakefield and Blodgett (1999) extend traditional service quality research by empirically demonstrating that the design of the physical facilities (e.g. store layout) and ambient factors (e.g. music) induce customers' affective responses. Therefore, these studies propose that emotional components should be incorporated when assesing service quality in a retail context.

Comparable to the physical environment in the real world, we expect the Web site interface to provide extrinsic cues in virtual service encounters which trigger emotional responses (Van Riel et al., 2001; Yoo and Donthu, 2001). Furthermore, according to flow theory such feelings are aroused during electronic service encounters especially by Internet characteristics such as multi-media, interactivity, hypermediality and a high level of control during navigation (Childers et al., 2001; Csikszentmihalyi, 1988; Hoffman and Novak, 1996). The fact that affective reactions are of crucial importance for the evaluation of e-services is reflected in the finding that fun and enjoyment, which characterize a flow experience, are major determinants of Internet usage behavior (Van Riel et al., 2001).

Thus, emotional elements need examination as well. Electronic service quality measures should integrate online shopping's potential entertainment and emotional value in order to capture an online shopping activity fully. This view is reflected by perceived enjoyment and excitement of buying at a Web site rather than by the act of task completion (Babin et al., 1994; Holbrook and Hirschman, 1982). Garvin (1987) encourages this view by introducing "aesthetics" as a quality dimension that addresses the consumer's subjective evaluation of how a product looks, feels, sounds, tastes or smells. Transferring the idea of this quality criterion to an electronic service context, characteristics like Web site design or fun and playfulness of Web site usage become essential.

A second concern regarding the Parasuraman et al. (2005) study is that the authors do not consider that consumers infer about the quality of nonroutine services provided in the after-sales phase long before problems actually take place. According to information economics services are mainly characterized by experience and credence qualities due to their inseparability and intangibility (Zeithaml, 1984). As such, a quality assessment can only take place after consumption which may result in pre-purchase insecurity on the customer side. Offering a broad range of support and after-sales services which indicates the providers' responsiveness to customer problems may serve as an instrument for signaling unobservable process quality attributes. This in turn reduces insecurity. Therefore, we propose that especially responsiveness items are relevant core quality aspects independent of actual problems.

For deriving a comprehensive e-service quality scale encompassing both utilitarian and hedonic quality elements along with responsiveness issues, we introduce a process-based framework for electronic service encounters in the next section.

3. A transaction process-based framework for electronic services

Given the variety of approaches for measuring e-service quality and given the lack of hedonic and responsiveness facets, we suggest a comprehensive conceptual framework in order to capture all relevant quality aspects of the virtual service transaction. According to our transaction process-based framework, traditional offline transactions may be subdivided into four transaction stages. In the first stage, market offerings are examined and compared. Next, the market participants negotiate and ideally conclude a contract. While the first two stages are dominated by information gathering and processing, the third stage deals with the exchange of goods and services. Finally, the fourth stage addresses the importance of relationship related activities (Bauer et al., 2005). The idea of improving the measurement of service quality by grouping user activities into a number of discrete stages is supported by the task completion approach (Montgomery et al., 2004; Sismeiro and Bucklin, 2004). Each of the tasks within the four stages must be completed for service delivery to take place (e.g. selection of product, placement into shopping cart, provision of shipping information, etc.). Such a process-based approach provides richer diagnostic information and managerial implications for improving service quality. As several empirical findings show, Web site users are able to separate their evaluations of an online shopping experience according to discrete stages (Dellaert and Kahn, 1999).

This broad description of offline transactions is well applicable to investigate electronic interactions between customers and e-tailers (Bauer et al., 2005; Zimmermann, 1997). Fundamental customer expectations remain the same comparing online with offline environments, but most of them are now fulfilled electronically (especially in stages 1, 2 and 4). Nevertheless, the complete electronic shopping experience consists of more than just Web site interactions so that offline elements (fulfillment, delivery) continue to be important for customers. In order to identify Internet specific quality aspects in the transaction process chain, we describe the phases in more detail.

In the first stage, customers search for information about e-service offerings. Prices, reputation of the provider, order delivery time, etc. are all assessed by navigating through the Web site content in order to structure the purchase decision. These activities are comparable with an individual entering the service provider's brick and mortar store in the real world. However, the Internet dramatically expands the possibilities for customers to efficiently compare and evaluate offers by providing analyses and decision tools (search engines, purchase agents, etc.). At this stage, the user's quality assessment refers mainly to the extent to which the site provides extrinsic and intrinsic value to him (Childers et al., 2001) On the one hand, the Web site is assessed whether it minimizes customer search efforts through a playful and smooth navigation and logical structuring of information. This assessment is accomplished by a high degree of usability, such as accurate representations of the products on the Web site and well-arranged content categories. On the other hand, the perceived fun of using the Web site and the personalization of content and features seem to be important quality criteria (Zeithaml et al., 2002).

In the agreement stage, service suppliers and customers agree on the conditions of their transaction. At this stage, the perception of superior quality is determined by the tools offered to facilitate the communicational exchange between users and the online provider (C2B communication) as well as the interaction among the users themselves (C2C communication). Here, various communication instruments are available including e-mails, fax, chats, discussion forums, newsgroups, voice over IP, "call me back" buttons and feedback forms (Barnes and Vidgen, 2001; Jayawardhena, 2004).

The transaction negotiated on beforehand is accomplished in the fulfillment phase. The ordered goods or services are delivered in exchange to the payment of the order. In the fulfillment phase the users' quality perception depends on how efficiently (easy and quick) he is able to place an order into the online subscription system (Parasuraman et al., 2005; Wolfinbarger and Gilly, 2003). In this phase errors and service breakdowns have to be avoided so that transactions can be completed. Moreover, prompt order confirmation and delivery tracking are relevant service features in this stage. Finally, the provider should deliver the ordered service or product as promised, i.e. in time and proper condition (Meuter et al., 2000).

In the last phase, quality evaluation refers to the capability to care for the customers beyond the completed transaction and to build long-term relationships. Relevant quality criteria refer for instance to the ability and willingness to promptly respond to customer problems (inquires, complaints) occurring after the purchase (Parasuraman et al., 2005). Moreover, the provider should also be keen on informing customers about special offers and complementary services/products. Even if the after-sales stage cannot be assigned to the actual transaction, this stage impacts quality judgments in two ways. First, being able to contact the service provider in case of questions or requests is of vital importance for customers. This aspect is also reflected in the so-called functional quality discussed in the NetOffer model by Grönroos et al. (2000). Second, by gathering and analyzing data on their customers needs, service providers can improve their offerings and target marketing actions.

In view of the previous argumentation, we consider the four-stage transaction model applicable as a universal framework for a profound investigation of electronic service quality. Incorporating all four phases in an e-service quality concept continues Juran and Gryna's (1970) fundamental idea proposed for physical products. The following discussion describes a pool of relevant service quality indicators along the four stages. These items constitute a comprehensive quality measurement scale for virtual services that will be empirically tested for reliability, validity and economic relevance.

4. E-service quality measurement model

4.1. Generation of e-service quality items

The item generation is based on the findings of our literature review which covers vital elements of the transaction chain proposed above. In order to fill the gaps that were left by previous research, especially aspects related to enjoyment of Web site use and after-sales support, we conducted semi-structured interviews (Thompson et al., 1989). Marketing research assistants trained in qualitative interviewing carried out a total of 30 interviews with online shopping users. The informants were all either graduate-level students or university staff, a group likely to be early technology adopters having prior experience in using online shopping. Interviews ranged from 30 to 60 min in duration. The focus of the interviews was to tap consumers' feelings and expectations regarding online shopping. This was achieved by asking the informants to describe their experiences with online shopping transactions. To ensure that all relevant aspects of an electronic service transaction were captured, we capitalized on the above described four-stage framework in the semi-structured interviews.

As a result, 53 quality items were generated for further data collection. The main findings of the literature review and the qualitative interviews are summarized in Fig. 1 following the logical structure underlying the transaction process model.

4.2. Empirical study

The quantitative data used to extract the dimensionality of a process-based e-service quality (eTransQual) scale were collected by means of a structured questionnaire. The questionnaire was distributed by a German market research institute to randomly selected members of its online panel. Participants were asked to recall a recently used online shopping provider and refer to that provider regarding their answers (Parasuraman et al., 2005). We only considered respondents that completed a product purchase to assure that participants had sufficient online shopping experience so that all aspects of the transaction chain could be evaluated. This supports our basic intention to develop a holistic e-service quality scale covering all four stages of the service transaction process. Respondents judged the performance of 53 quality attributes on a five-point Likert-type scale anchored by 1 = "strongly disagree" and 5 = "strongly agree". Moreover, an overall service quality measure was assessed as agreement to a one-item statement ("The overall quality of my transaction with this online retailer is excellent"). In addition to the quality items, the questionnaire included statements on customer's perceived value and satisfaction. These dependent

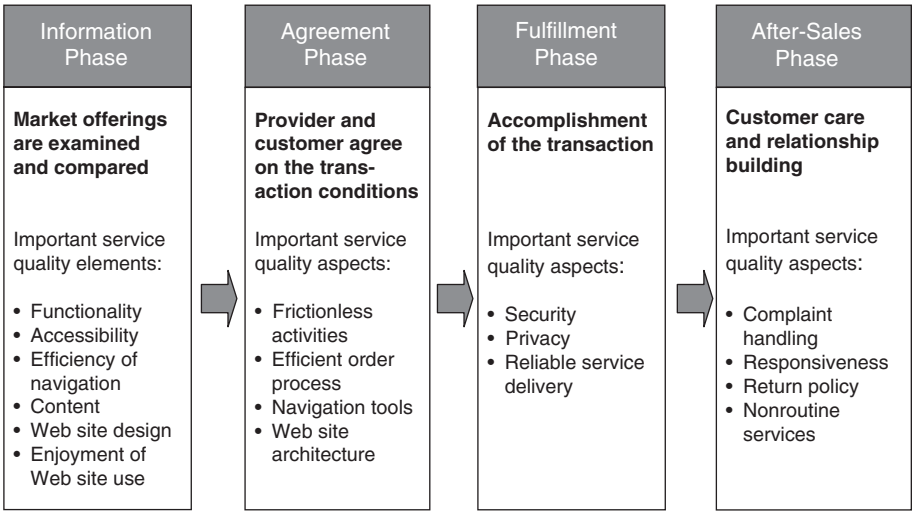


Fig. 1. Generated item pool covering the four transaction stages.

variables are used to evaluate the predictive validity of our e-service quality dimensions. Perceived value was measured as agreement with three cost/benefit statements. Customer satisfaction was assessed by four items suggested by Henning-Thurau et al. (2002).

To examine the economic relevance of our e-service quality measure, we aimed to investigate its impact on relationship duration and repurchase intention as important drivers of customer lifetime value (Anderson et al., 2004). Relationship duration was assessed by the question "I invest maximum effort to maintain the relationship" (Henning-Thurau et al., 2002) following the reasoning that such relationship-specific, idiosyncratic investments rise when the relationship lengthens. This item seems to be more reliable than merely asking respondents when the provider was first selected, as the latter provides little information about how long an intensive relationship will be maintained in future. Thus, we employ a measure which better captures a relationship's expected duration in terms of its continuity compared to measures focussing on past behaviour. Repurchase intention was captured by one item in line with Homburg and Giering (2000). All items were assessed using the same numeric scale ranging from 1 = "strongly disagree" to 5 = "strongly agree".

On the basis of control questions relating to online shopping experience and frequency of usage irrelevant questionnaires could be identified and were not taken into account. This resulted in 384 fully usable questionnaires. In order to assess the representativeness of the sample, we collected and compared socio-demographic data of the respondents with those reported in an extensive national study of Internet users conducted by W3B, one of the leading German Market Research Institutes for interactive media (W3B, 2004). Our comparison revealed a close match between both samples. Table 1 summarizes the basic demographic characteristics of our sample.

Table 1
Sample profile

Variable	Percentage
Gender	
Male	60
Female	40
Age	
< 20	7
20–40	63
41–60	25
> 60	5
Education	
Low (secondary school)	26
Middle (high school; apprenticeship)	32
High (university; polytechnic)	42
Experience with online shopping provider	
< 3 months	7
3–6 months	7
6–12 months	12
> 12 months	74
Frequency of using the provider in the last 12 months	
< 3 times	16
3–6 times	39
> 6 times	45

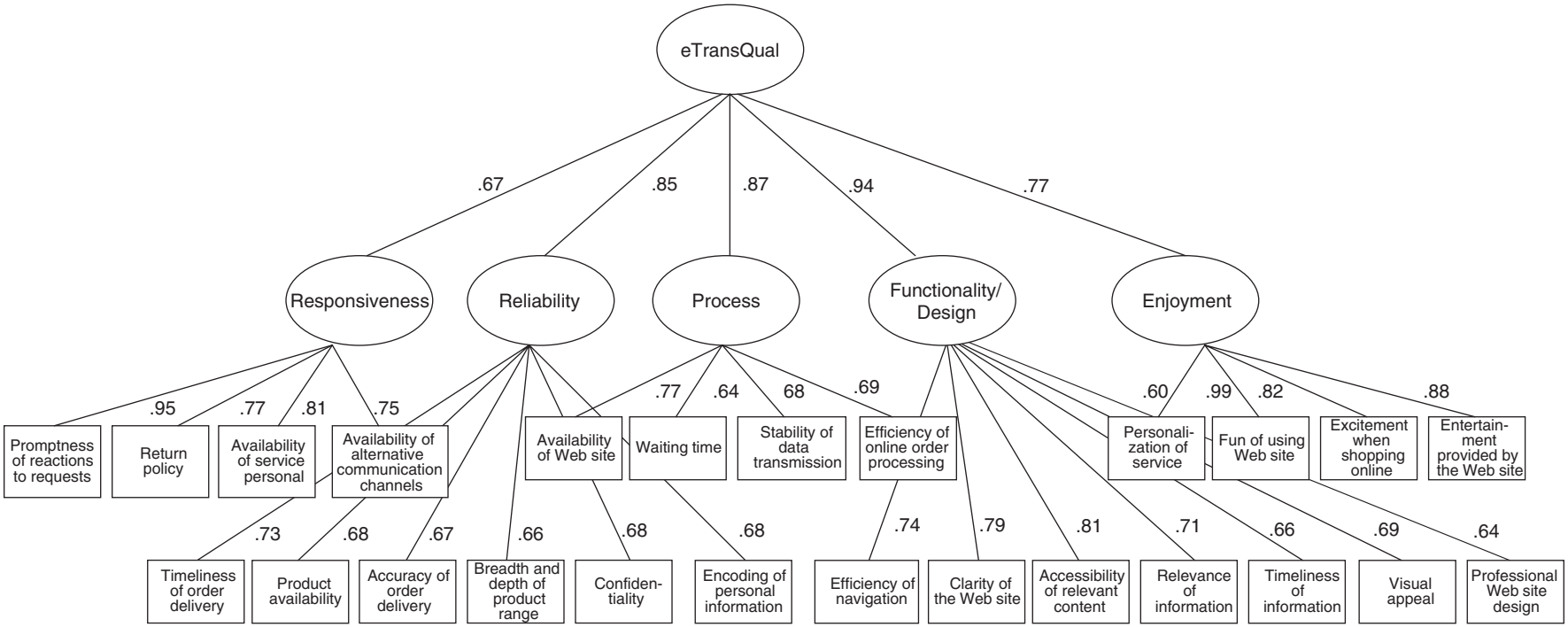
Table 2
Psychometric properties and CFA results for the retained 25 items of the eTransQual scale

Dimensions Items	Mean	Factor loadings (CFA)	Indicator reliability	Cronbach's α	AVE
Functionality/design				0.89	0.52
1. Efficiency of navigation	3.8	0.74	0.55		
2. Accessibility of relevant content	3.8	0.81	0.66		
3. Clarity of the Web site	4.0	0.79	0.62		
4. Relevance of information	4.2	0.71	0.50		
5. Timeliness of information	4.1	0.66	0.44		
6. Visual appeal	4.0	0.69	0.48		
7. Professional Web site design	4.2	0.64	0.41		
Enjoyment				0.84	0.70
8. Personalization of information and offerings	3.6	0.60	0.36		
9. Fun of using the Web site	4.0	0.99	0.98		
10. Excitement when shopping online	3.2	0.82	0.67		
11. Entertainment provided by the Web site	3.1	0.88	0.77		
Process				0.88	0.50
12. Availability of the Web site	4.3	0.77	0.59		
13. Stability of data transmission	4.4	0.68	0.46		
14. Efficiency of online order processing	4.1	0.69	0.48		
15. Waiting time	4.2	0.64	0.41		
Reliability				0.83	0.47
16. Timeliness of order delivery	4.3	0.73	0.53		
17. Accuracy of order delivery	4.6	0.67	0.45		
18. Product availability	3.9	0.68	0.46		
19. Breadth and depth of product range	4.3	0.66	0.44		
20. Encoding of personal information	4.0	0.68	0.46		
21. Confidentiality	4.0	0.68	0.46		
Responsiveness				0.85	0.68
22. Availability of alternative communication channels	3.8	0.75	0.56		
23. Return policy	3.7	0.77	0.59		
24. Availability of service personnel	3.7	0.81	0.66		
25. Promptness of reactions to requests	3.6	0.95	0.90		

All factor loadings are significant at $p<0.001$.

4.3. Scale validation

The empirical validation of the eTransQual scale was performed by exploratory and confirmatory factor analysis as well as reliability analysis, following the guidelines of Churchill



Fit measures: χ^2 = 653, df= 270, RMSEA = .10, CFI = .99, RMR = .07, GFI = .98, AGFI = .97

Fig. 2. The higher-order model of e-service quality (eTransQual).

(1987) and Gerbing and Anderson (1988). This method of construct validation has been widely established in the literature (Baumgartner and Homburg, 1996). To analyze the dimensionality of the scale, we applied the MSA criterion at first level (Hair et al., 1998). The MSA of 0.937 indicates an excellent applicability of the item pool for exploratory factor analysis (EFA). Subsequently, successive repetition of the EFA and elimination of items based on low factor loadings, high cross loadings and insufficient item-to-total correlations resulted in a pool of 25 remaining quality indicators. Next, the extracted dimensions were tested for their reliability and validity one by one by means of confirmatory factor analyses (CFA) with LISREL 8.71. The local fit indices indicator reliability, average variance extracted (AVE) and Cronbach's α were employed to evaluate each dimension (Baumgartner and Homburg, 1996; Churchill, 1987). The corresponding measures suggest a good fit of the extracted five quality dimensions of the eTransQual scale that are defined as: functionality/design, enjoyment, process, reliability and responsiveness (see Table 2).

Virtually all fit criteria exceeded the threshold levels commonly suggested in the literature (Bagozzi and Baumgartner, 1994). The fit statistics propose a superior degree of reliability and convergent validity of all scale dimensions. In order to examine whether all identified dimensions actually refer to a superordinate construct of overall e-service quality (eTransQual) we conducted a second-order CFA using all extracted five quality dimensions ($\chi^2=653$; $df=270$). Each of the five first-order dimensions has a significantly large ($p<0.001$) and positive loading on the second-order factor, ranging from 0.67 to 0.94. Furthermore, all correlations between the five constructs are significant at $p<0.001$, indicating that the five scales converge on a common underlying construct (Lages et al., 2005). This suggests that the higher order model accounts for the data well. The global fit indices of the higher order measurement model shown in Fig. 1 propose an excellent model fit, with a possible exception of the RMSEA, which is slightly above the conservative cutoff value of 0.08 suggested by Browne and Cudeck (1993). However, it is still within the range which Hair et al. (1998) consider acceptable fit (RMSEA ≤ 0.10) (Fig. 2).

For deriving a parsimonious measurement model with dimensions that are sufficiently exclusive in their meaning, an assessment of the discriminant validity was performed utilizing the conservative Fornell/Larcker test. Discriminant validity is given when the shared variance among any two constructs (i.e., the square of their intercorrelation) is less than the AVE of each construct (Fornell and Larcker, 1981). With some exemptions, the AVE exceeds the squared correlations with the remaining factors (Table 3).

4.4. Testing for common method bias

To test for common method bias, we employed Harman's one-factor test (McFarlin and Sweeney, 1992). The rationale for this test is that if common method variance poses a serious threat to the analysis and interpretation of the data, a single latent factor would account for all manifest variables (Podsakoff and Organ, 1986). A worse fit for the one-factor model would suggest that common method variance does not pose a serious threat. The one-factor model yielded a $\chi^2=1217$ with $df=275$ (compared with the $\chi^2=653$ and $df=270$ for the five-dimensional measurement model). The fit is considerably worse for the unidimensional model, suggesting that common method bias is not a serious threat in the study.

4.5. Predictive validity of the eTransQual scale

The model is tested for predictive validity by investigating the relationship of each eTransQual dimension to overall service quality of the Web site, perceived value and customer satisfaction as major marketing objectives. The fit values for the multi-item constructs perceived value and customer satisfaction shown in Table 4 are indicative of the psychometric soundness of these measures.

The relationships between the quality dimensions and the dependent variables were examined by means of multiple regression analysis. For each quality dimension we used summed-score measures of their corresponding items (Table 5).

All extracted quality dimensions have a strong significant impact on an overall service quality judgment, explaining 61% of its variance. This indicates strong external validity of our e-service quality model. Reliability is the most important determinant of the global quality perception ($\beta=0.36$). This corresponds to the study conducted by Wolfinbarger and Gilly (2003) who identify reliability as a strong predictor for overall quality and customer satisfaction. The remaining service quality dimensions contribute rather equally to overall service quality with Beta weights ranging from 0.19 (functionality/design) to 0.16 (responsiveness) and 0.12 (enjoyment and process).

Functionality/design ($\beta=0.26$), reliability ($\beta=0.23$) and process ($\beta=0.22$) are the strongest factors in predicting customer's perceived value. Support for these results is found in the relationship marketing literature. Vargo and Lusch

Table 3
Fornell/Larcker Test for the five quality dimensions

	Functionality/design	Enjoyment	Process	Reliability	Responsiveness
Functionality/design	0.52				
Enjoyment	0.51	0.70			
Process	0.66	0.43	0.50		
Reliability	0.64	0.42	0.52	0.47	
Responsiveness	0.39	0.26	0.33	0.31	0.68

All correlations are significant at $p<0.001$; AVE on diagonal.

Table 4
Psychometric properties of perceived value and customer satisfaction

Dimensions Items	Mean	Factor loadings	Cronbach's α
Perceived value			0.86
1.Overall convenience of Web site use	4.1	0.82	
2.Cost–benefit ratio (value for money and effort)	4.0	0.90	
3.Reasonable price (economical offers)	3.9	0.75	
Satisfaction			0.95
4.Overall satisfaction with provider	4.2	0.91	
5.Decided for the best provider	4.3	0.94	
6.Satisfaction with decision	4.3	0.94	
7.Wise choice	4.0	0.86	

(2004) state that customers become operant resources (co-producers) in the service delivery chain. Thus, customer value is created by the customer himself throughout the relationship. Consequently, the willingness to provide customers with functional tools and efficient processes for co-production is critical for value creation. In total, the derived e-service quality dimensions explain 63% of the variance in perceived value.

Four of the five quality dimensions show a strong positive effect on customer satisfaction. Comparable to the findings for perceived value, reliability and functionality/design are the most important satisfaction drivers with Beta weights of 0.41 and 0.20. Altogether, our quality factors explain 65% of the variance of customer satisfaction.

Reliability seems to be the most powerful driver of all dependent variables. This finding confirms that the reliability issues represent the most critical factor for assessing the perceived value and satisfaction with online retailers.

4.6. Economic relevance of the eTransQual scale

Managers are under increased pressure to show the economic consequences of their marketing actions in order to legitimate marketing budgets. Thus, investments in service quality must be made financially accountable by showing improvement in customer generated cash flows (Rust et al., 2004). In order to prove the economic relevance of our e-service quality construct, we explore the relationships between its five dimensions and relationship duration and repurchase intention. These variables have been identified as major drivers of customer lifetime value in several studies (Anderson et al., 2004; Gupta et al., 2004; Reichheld and Teal, 1996). As can be seen from Table 6, the enjoyment dimension–which has been mainly neglected in empirical studies so far–has the strongest impact on relationship duration as a major antecedent of customer profitability. Repurchase intention is also strongly affected by enjoyment. Also responsiveness–which is excluded from the regular quality scale by Parasuraman et al. (2005)–relates strongly to relationship duration.

Table 5
Relationships of eTransQual dimensions to overall quality, perceived value and satisfaction

Construct	Overall service quality	Perceived value	Satisfaction
Functionality/design	0.19*	0.26*	0.20*
Enjoyment	0.12**	0.12**	0.07***
Process	0.12**	0.22*	0.14**
Reliability	0.36*	0.23*	0.41*
Responsiveness	0.16**	0.15**	0.15**
R^2	0.61	0.63	0.65

* Significant at $p<0.001$.
** Significant at $p<0.01$.
*** Significant at $p<0.05$.

Table 6
Relationships of eTransQual dimensions to major drivers of customer profitability

Construct	Relationship duration	Repurchase intention
Functionality/design	0.06	0.10
Enjoyment	0.35*	0.16*
Process	0.13***	0.11***
Reliability	0.02	0.30*
Responsiveness	0.33*	0.12**
R^2	0.29	0.41

* Significant at $p<0.001$.
** Significant at $p<0.01$.
*** Significant at $p<0.05$.

As Table 6 shows, responsiveness and enjoyment are the only dimensions that significantly affect *both* value drivers. By relating quality improvement efforts particularly to responsiveness and enjoyment, companies can enhance "return on quality". These findings clearly argue in favor of the incorporation of these two quality dimensions into the core service quality scale. We believe that including both quality dimensions in one scale is vital for explaining satisfaction as well as for predicting and influencing customer profitability.

5. Conclusion and limitations

This study compares a newly developed scale, eTransQual, vis-à-vis two scales well established in the literature—the eTailQ scale developed by Wolfinbarger and Gilly (2003) and the E-S-Qual Scale presented by Parasuraman et al. (2005) (Fig. 3). We integrate hedonic quality aspects which result from intrinsic shopping motives. Neither eTailQ nor E-S-Qual considers this dimension. Strong evidence for the importance of hedonic aspects for evaluating online shopping experiences is demonstrated both by the results from the scale validation procedure as well as the exploration of their impact on marketing outcome variables. Their strong influence on perceived value indicates that shopping behavior cannot be described as purely goal-oriented and rational as suggested by several authors. Instead, hedonic and emotional motives play an important role. By providing a "flow experience" online retailers can strongly improve quality perceptions and thereby enhance perceived value. The weak relationship to satisfaction provides some evidence that experiencing fun and excitement during Web site usage is expected from consumers without explicit articulation as this lies in the nature of

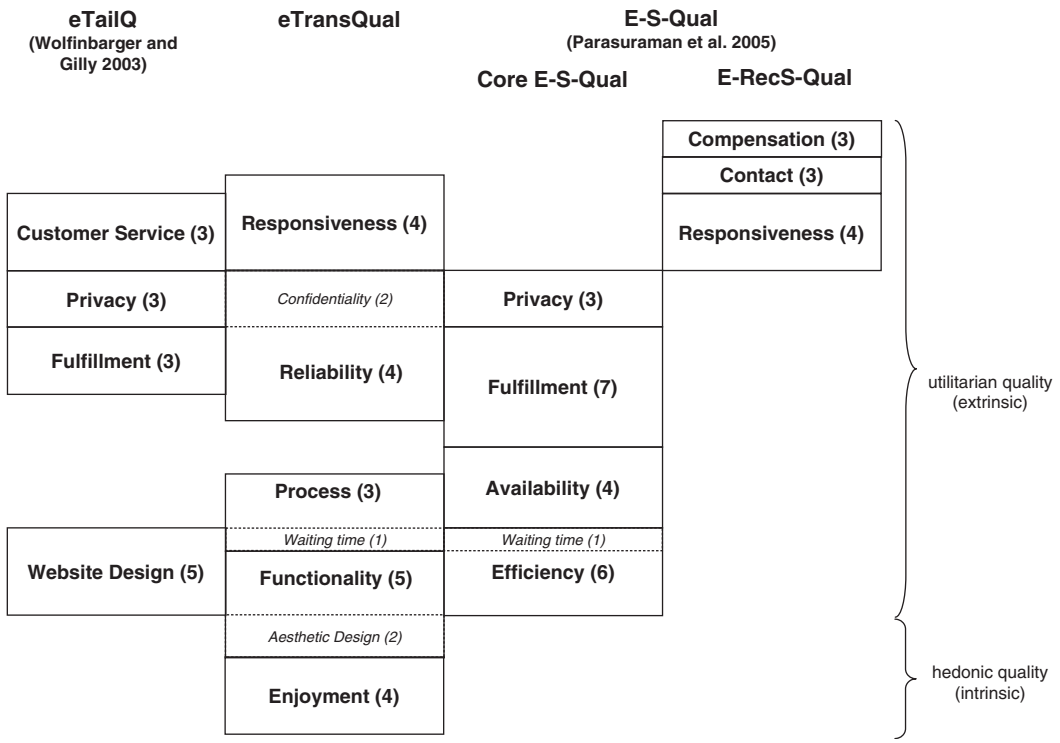


Fig. 3. Comparison of eTransQual with two existing scales. The size of the rectangles indicates the conceptual richness (content coverage) of the dimensions. The number of items is shown in parentheses. The terms in italics refer to quality "subdimensions".

multimedia technologies. Thus, assuring hedonic quality can be interpreted more as a "dissatisfaction inhibitor" than a "satisfier".

Given the strong correlation between the responsiveness dimension and the other dimensions, and also given the strong loadings of all dimensions on a higher order quality construct, this study illustrates that responsiveness should be integrated together with the remaining factors in one scale. Thus, in contrast to Parasuraman et al.'s (2005) findings, in our study responsiveness (which is in Parasuraman et al.'s study mainly covered by the separated RecS Qual scale) does not emerge as a distinct scale which is only relevant when users run into problems. As a basis for their decision to use a Web site, users make judgments about the quality of the prospective recovery services far before actual problems occur. Therefore measurement should not be done separately.

The study shows that the aesthetic appeal of the Web site relates strongly to the judgment of the functionality and usability of a Web site. As our findings suggest, users strongly associate the efficiency of a Web site and the quality of the content with the visual appeal of the Web site design.

The extracted quality dimensions cover all stages of the service transaction process enabling a full assessment of an online service experience. From a marketing management point of view, the reliability dimension has to be emphasized due to its utmost importance in predicting customers' perceived value and satisfaction. Service managers should especially concentrate on issues such as accurate order delivery, providing timeliness information and broad service and product offerings. Nevertheless, from an economic point of view, enjoyment and responsiveness prove to be strong enablers for enhancing future customer cash flows.

To address the limitations of our study we point out the following issues. Even though the study succeeds in validating the measurement scale, generalizability concerns may arise. The results refer only to a population of Internet users which have made actual purchase experiences with the shopping site. As a result, a potential sample bias could occur by excluding people who browsed the Web site but did not choose to buy from this provider. This could be due to various reasons, including poor Web site design or process failures during the electronic service encounter. Future studies could test the eTransQual scale for other populations of web users like browsers and non-buyers in order to confirm the generalizability of our results.

In addition, the constant technological changes along with the growing externalization of service deliveries call for greater attention paid to the time dependency of research on electronic services. Existing research reflects only electronic service quality assessments focusing on a specific point in time rather than comprising longitudinal quality evaluations. Finally, research into the determinants of e-service quality could be a promising field for further studies in this area. In this context, the roles of a service provider's market orientation and innovativeness seem worthy of further investigation.

Acknowledgement

The authors thank Arch G. Woodside and Barry J. Babin, the editors, and two anonymous reviewers for their valuable comments on earlier drafts of the paper. We also thank Jeroen

Schepers from Eindhoven University of Technology, for his help in improving the paper.

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