The Effects of Website Quality Perception on Users’ Responses – A Multidisciplinary Approach

Completed Research Paper

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Abstract

The quality of an organizational website can be a competitive advantage in an increasingly fierce online environment. This article identifies decisive factors of website quality and assesses their effects on user satisfaction. While past website-quality research focuses on the perspectives of web developers and designers, our study targets web users and integrates perspectives of information systems (IS), marketing and environmental psychology. Based on a conceptual framework, we develop and test a structural model of website quality perception with data collected from 1,485 users of an organizational website. Findings suggest that both functional and hedonic aspects impact users’ affective and cognitive responses towards a website. Specifically, functional aspects (i.e., content and technical quality) show significant effects on both users’ involvement and attitude towards the website. Hedonic aspects (i.e., design and usability) only affect users’ attitude towards the website, but show higher total effects on user satisfaction than functional aspects.

Keywords

Website quality, website perception, web atmospherics, user satisfaction.

Introduction

Websites constitute the major gateway to an organization’s online presence (Cebi 2013). New information technologies and changing user needs, however, make it difficult for organizations to differentiate themselves from competitors in a global cyberspace (Hasan and Abuelrub 2011; Koufaris 2002). While online retailers, such as amazon or eBay, operate in a multi-channel transaction environment allowing users to browse, buy and recommend items, organizational websites, such as websites of car manufacturers or consultancy services, primarily aim at providing information for a wide range of stakeholders (Tate et al. 2007). Multiple stakeholders with diverse interests, however, turn online information provision into a challenging business, as their quality judgments and responses will not only depend on functional aspects of a website (e.g., content), but also on hedonic aspects (e.g., design) (Aladwani and Palvia 2002).

Previous research on website quality perception has mainly focused on retail websites (e.g., Bauer et al. 2006; Parasuraman et al. 2005), web portals (e.g., van Riel et al. 2001), e-government websites (e.g., Elling et al. 2012) and social media sites (e.g., Ellahi and Bokhari 2013). In a similar fashion, former studies either discuss functional or hedonic aspects of website quality in a descriptive manner (e.g., Kim and Stoel 2004) or focus on web-designers’ and web-developers’ perspective (Aladwani and Palvia 2002). In an era of customer responsiveness, however, users of organizational websites are major stakeholders. Catering for their diverse needs makes it even more important for organizations to find reliable ways for
balancing both functional and hedonic aspects of their website (Aladwani and Palvia 2002). This study, therefore, takes a user-centered perspective and investigates the effects of an organization’s website quality on users’ responses. Organizational websites are viewed as Internet sites which provide a virtual presence for organizations (Hoffman et al. 1995) and enable users to obtain useful information more quickly and more easily (Lee and Kou Bek 2010).

The present article aims at creating an instrument to assess the effect of perceived website quality on user satisfaction, while considering users’ affective and cognitive states. It contributes to existing literature in three ways. First, it takes a Gestalt perspective (Schiffman 2001) and suggests that users’ perceptions of online environments depend on their integration of multiple online stimuli into a coherent and unified overall perspective. Second, it advances the concept of online service quality (Hausman and Siekpe 2009) and web atmospheres (Kotler 1973; Richard 2005) by adapting selected factors that reflect both functional (i.e., technical and content quality) and hedonic aspects (i.e., design and usability) of website quality (e.g., Bernardo et al. 2012). Third, it integrates the perspectives of IS, marketing, and environmental psychology, as it applies the stimulus-organism-response framework from environmental psychology to IS and expands the marketing concept of atmospherics to organizational websites by investigating users’ emotional and cognitive responses towards online environmental cues. Finally, the present study identifies decisive factors of user satisfaction and provides fruitful implications for both web designers and IS practitioners.

**Literature Review and Conceptual Framework**

Similar to the physical environment in traditional stores, atmospheric qualities of a website (e.g., Eroglu et al. 2001) are likely to influence users’ affective (e.g., their involvement) and cognitive (e.g., their attitude towards a website) responses (Mehrabian and Russell 1974). Online environments, however, lack some properties of traditional store atmospherics (such as three of the five sensory appeals, that is, odor, haptics, and taste), but possess others (such as flexibility across time and space) that differentiate them from physical settings. Studies on store atmospheres (e.g., Donovan and Rossiter 1982) or sensory marketing (e.g., Krishna 2012) thus cannot be entirely applied to the online environment. This circumstance has led to the development of “web atmospheres” (i.e., any web interface component within an individual’s perceptual field that stimulates one’s senses) (Dailey 2004; Milliman and Fugate 1993). The notion of web atmospherics is inherently linked to website quality research, since users’ decision on which websites to browse, for how long to stay and how much information to acquire is mainly driven by online atmospheric cues (Eroglu et al. 2001).

Conceptualizing and measuring the perceived quality of online environments, however, does not represent a mere extension of existing research on quality perception in a physical space (e.g., Grönroos 1984), as websites have different characteristics than physical stores with different opportunities for conveying quality (Wolfinbarger and Gilly 2003). In an online environment, the delivery of information and services requires the customer to interact with a possibly complex software product. Quality characteristics of websites are thus central to this discussion (Donthu 2001). Because established models measuring quality in a physical space, such as SERVQUAL (Parasuraman et al. 1991), are not easily applicable for online environments (Tate and Evermann 2010), specific online quality measures have been developed to account for the characteristics of virtual cues, such as E-S-QUAL (Parasuraman et al. 2005), eSQ (Zeithaml et al. 2002) or SITEQUAL (Yoo and Donthu 2001). Despite ongoing efforts in scale development, website quality perception remains a fragmented area of research, as existing studies primarily discuss the meaning of relevant aspects of web quality in a descriptive manner (Kim and Stoel 2004; Wolfinbarger and Gilly 2003) or measure website efficiency rather than quality (e.g., Donthu 2001). Likewise, most of the suggested website-quality attributes have been designed as a tool to support web-designers (e.g., Olsina et al. 2001) or measure website quality with ad hoc items (e.g., Liu and Arnett 2000). In order to measure users’ perceived website quality with a highly reliable tool, we draw on Aladwani and Palvia (2002), defining website quality as “users’ evaluation of a website’s features meeting their needs and reflecting overall excellence of the website”. By taking a multidisciplinary, user-centered view, we link functional and hedonic aspects that constitute website quality with users’ affective and cognitive responses in an integrative model.

For model development, we draw on the Gestalt approach (Schiffman 2001) at first, arguing that users perceive (web) environments as an integrated whole (i.e., different to the sum of its parts), and the notion
of web atmospherics (i.e., the conscious design of web environments to create positive user responses) (Dailey 2004). According to Gestalt psychology, studying perception addressing single cues is regarded as insufficient, since single cues per se lose sight of the perception itself (Koffka 1936). It is thus the total configuration of online cues that determines users’ responses to a website (Brunner-Sperdin et al. 2014 in print). Second, to investigate user’s emotional and cognitive responses towards their perception of organizational websites, we apply the stimulus-organism-response (S-O-R) framework from environmental psychology (e.g., Mehrabian and Russell 1974). In line with prior research on website perception based on the S-O-R framework (e.g., Eroglu et al. 2001), our model measures the impact of key characteristics of website quality (i.e., stimulus) on users’ responses towards the website (i.e., organism and response). Stimulus is conceptualized as an influence that arouses the individual in an online context. More specifically, it comprises all cues visible and audible to the user (Eroglu et al. 2001). Online environmental stimuli affect users’ internal (affective and cognitive) states of processing, retention and retrieval of information (organism). Similar to Richard (2005), in this article we focus on attitudinal processes towards the website and on user’s involvement (i.e., their degree of personal relevance) as internal states. Finally, user’s internal states of processing impact users’ response behavior (i.e., approach or avoidance) towards the online environment (Mehrabian and Russell 1974).

For categorizing online environmental cues as "stimulus," we draw on Eroglu et al. (2001) and Richard (2005), who consider, for instance, a website’s navigational characteristics, informativeness, information content effectiveness, structure and organization as “stimulus”. We, however, follow current website quality research (e.g., Bernardo et al. 2012) and literature on experiential consumption (e.g., Holbrook and Hirschman 1982), suggesting that different websites or products can possess both hedonic and functional attributes at the same time. For websites, functional aspects refer to instrumental and practical benefits of a web-offering and are considered as being closer to users’ necessities or needs. Hedonic characteristics, by contrast, are referred to aesthetic, experiential and enjoyment benefits as they are perceived as being closer to users’ wants and are primarily consumed for sensory gratification and affective purposes (e.g., Chitturi et al. 2008). In our study, environmental cues (stimulus) comprise in line with prior research on website quality (Aladwani and Palvia 2002; Tate et al. 2007) a website’s content quality (CQ), technical quality (TQ), design (DES) and usability (UA). Content quality and technical quality cover functional aspects of website quality such as timing, relevance, ease of information, availability, loading rates and interactive features (Aladwani and Palvia 2002). Among the more hedonic aspects, design integrates aesthetic and experiential aspects such as the attractiveness of the website, the proper use of fonts, colors and media and the conveyance of a sense of competence. Usability is considered as part of users’ aesthetic web experience in our study and thus assigned to the more hedonic aspects of a website. In line with Bernardo et al. (2012), issues related to navigation or interaction with the site also reflect a websites’ hedonic quality.

Addressing users’ internal states (organism), we consider their attitude towards the website and their involvement as mediating constructs in our model (Richard 2005). Attitude is defined as “feelings, moods and emotions that people experience in relation to attitude objects” (i.e., websites) (Bagozzi et al. 2001). Involvement is viewed as “a person’s perceived relevance of an object [i.e., the Internet] based on inherent values, needs, and interests” (Zaichkowsky 1985). Highly involved users will thus actively search for information and explore new stimuli due to their higher need for environmental stimulation (Balabanis and Reynolds 2001).

Both constructs (attitude and involvement) represent important antecedents of users’ responses towards a website (Singh et al. 2005) and are considered as relevant mediators between website quality factors (CQ, TQ, DES and UA) and user satisfaction (e.g., Hausman and Siekpe 2009). The four factors constituting website quality (stimulus) are thus supposed to impact users’ attitude and involvement towards the website (organism):

\[
H1: \text{The higher the perceived (a) content quality, (b) technical quality, (c) design and (d) usability of a website, the more positive users’ attitude towards the website.}
\]

\[
H2: \text{The higher the perceived (a) content quality, (b) technical quality, (c) design, and (d) usability of a website, the higher users’ involvement with the website.}
\]

Since theories of user attitudes and intentions towards technology focus on users’ future behavior (Tate 2011), we investigate in a second step the effects of users’ affective and cognitive states (organism) on...
their responses. In line with established IS-models (such as TAM (Davis 1989)), we regard responses towards a website as being determined by a persons' involvement and attitude towards the website. Thus, the effects of environmental cues on users' responses are suggested to be mediated by users' attitude and involvement as internal states. With respect to users' responses, satisfaction is viewed as a partly cognitive and partly affective evaluation of (online) experiences (Mano and Oliver 1993). For user satisfaction, we build on both the IS success model (DeLone and McLean 1992) and the Web customer satisfaction model (McKinney et al. 2002). Whereas the former model suggests to distinguish between information quality and system quality, the latter builds upon this distinction and conceptualizes user satisfaction (US) as being affected by information quality satisfaction (IQS) and system quality satisfaction (SQS).

While many IS studies do not differentiate information from system features when measuring user satisfaction (Ives and Olson 1984; Seddon 1997), we measure IQS and SQS as separate antecedents of user satisfaction. IQS is defined as users' perception of the quality of information presented on a website, whereas SQS reflects a website's performance in information retrieval and delivery (McKinney et al. 2002). The distinction between IQS and SQS is crucial, since users dissatisfied with website retrieval and delivery mechanisms are likely to leave the website even if the information provided is perceived to be of high-quality. Conversely, if a website lacks information that users need, its design or ease of use will not keep users from leaving the website (Seddon 1997). In line with the S-O-R framework (Figure 1), we link users' attitude towards and involvement with the website to information quality satisfaction (IQS) and system quality satisfaction (SQS), which are both antecedents of user satisfaction (US) (DeLone and McLean 1992):

\[ H_3: \text{The more positive users' attitude towards the website, the higher their (a) information quality satisfaction and (b) system quality satisfaction.} \]

\[ H_4: \text{The more involved users are with the website, the higher their (a) information quality satisfaction and (b) system quality satisfaction.} \]

\[ H_5: \text{The higher users' satisfaction with (a) information quality and (b) system quality, the higher is their user satisfaction.} \]

![Figure 1: Theoretical Framework](image)

**Method and Analysis**

To test our hypotheses, we carried out a quantitative study. To measure the constructs, we used scales that are well established in the literature and adapted them if necessary to fit the specific context of our study. The four constructs used for measuring an organizations' website quality are based on the website quality scale by Tate et al. (2007). Since the instrument was designed for university web portals and our study
focused on websites without transactions, we excluded "service interaction quality" and "transaction quality and safety" and considered "content" and "appearance" (framed as "design" in our study) from Aladwani and Palvia (2002) instead. For measuring involvement, we adapted the scale items suggested by Zaichkowsky (1985). In case of attitude towards the website (ATW), we used four items based on Singh et al. (2005) and items proposed by Tate et al. (2007). For measuring users’ responses, scales suggested by McKinney et al. (2002) were adapted. All items were measured on a seven-point Likert scale (“strongly disagree” to “strongly agree”). The operationalization of factors and selected measures are outlined in Table 1.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Quality</td>
<td>CQ_01 The website provides believable information.</td>
</tr>
<tr>
<td></td>
<td>CQ_02 The website provides timely information.</td>
</tr>
<tr>
<td></td>
<td>CQ_03 The website provides relevant information.</td>
</tr>
<tr>
<td></td>
<td>CQ_04 The website provides easy to understand information.</td>
</tr>
<tr>
<td></td>
<td>CQ_05 The website provides information at the right level of detail.</td>
</tr>
<tr>
<td>Technical Quality</td>
<td>TQ_01 The website is always up and available.</td>
</tr>
<tr>
<td></td>
<td>TQ_02 The website has valid links (hyperlinks).</td>
</tr>
<tr>
<td></td>
<td>TQ_03 The website loads fast (response time acceptable).</td>
</tr>
<tr>
<td></td>
<td>TQ_04 The website is easy to access.</td>
</tr>
<tr>
<td>Design</td>
<td>DES_01 The website looks attractive.</td>
</tr>
<tr>
<td></td>
<td>DES_02 The website looks organized.</td>
</tr>
<tr>
<td></td>
<td>DES_03 The website uses fonts properly.</td>
</tr>
<tr>
<td></td>
<td>DES_04 The website uses colors properly.</td>
</tr>
<tr>
<td></td>
<td>DES_05 The website presents the information in an appropriate format.</td>
</tr>
<tr>
<td></td>
<td>DES_06 The website conveys a sense of competency.</td>
</tr>
<tr>
<td>Usability</td>
<td>UA_01 The website looks easy to navigate through.</td>
</tr>
<tr>
<td></td>
<td>UA_02 The website has adequate search facilities.</td>
</tr>
<tr>
<td></td>
<td>UA_03 The website provides useful links.</td>
</tr>
<tr>
<td></td>
<td>UA_04 I feel in control on this website.</td>
</tr>
<tr>
<td>Involvement</td>
<td>INV_01 I am interested in everything that is related to the Internet.</td>
</tr>
<tr>
<td></td>
<td>INV_02 The Internet is an important part of my life.</td>
</tr>
<tr>
<td></td>
<td>INV_03 The Internet is a means to me.</td>
</tr>
<tr>
<td>Attitude towards the Website</td>
<td>ATW_01 I have a positive attitude towards the website.</td>
</tr>
<tr>
<td></td>
<td>ATW_02 I like the website.</td>
</tr>
<tr>
<td></td>
<td>ATW_03 I sense the website as being pleasant.</td>
</tr>
<tr>
<td></td>
<td>ATW_04 The website conveys a sense of enjoyability.</td>
</tr>
<tr>
<td>System Quality Satisfaction</td>
<td>SQS_01 I am satisfied with the provided features of the website.</td>
</tr>
<tr>
<td></td>
<td>SQS_02 My expectations concerning the provided features of the website have been fulfilled.</td>
</tr>
<tr>
<td></td>
<td>SQS_03 I am delighted with the provided features of the website.</td>
</tr>
<tr>
<td>Information Quality Satisfaction</td>
<td>RQS_01 I am satisfied with the obtained information from the website.</td>
</tr>
<tr>
<td></td>
<td>RQS_02 My expectations concerning the obtained information from the website have been fulfilled.</td>
</tr>
<tr>
<td></td>
<td>RQS_03 I am delighted with the obtained information from the website.</td>
</tr>
<tr>
<td>User Satisfaction</td>
<td>US_01 Overall I am satisfied with the website.</td>
</tr>
<tr>
<td></td>
<td>US_02 Overall I am pleased with the website.</td>
</tr>
<tr>
<td></td>
<td>US_03 After using the website I am delighted.</td>
</tr>
</tbody>
</table>

**Table 1: Scales**

**Survey and Sample**

To empirically test the proposed theoretical framework, a self-administered online survey was conducted. A pre-study (n=36) was set up to enhance clarity and content validity of our questionnaire (Straub 1989). In the main study, around 25,000 stakeholders were invited to browse the website of a university (Krücken and Meier 2006). As non-profit organizations, universities fit the present study well, since their websites are primarily aimed at the provision of information to a multitude of users (e.g., current and prospective students, academic staff, ALUMNI, etc.). After three minutes of browsing the website, respondents were automatically redirected to our online survey.

We received 1,659 responses (response rate: 6.6%). A missing data analysis and outlier detection (Hair et al. 2010) resulted in 174 cases to be excluded. The final sample contains 1,485 cases. No missing values are present in the variables representing factors. The majority of respondents (69.2%) is between 21 and 30 years old and 61.3% are female. About two thirds of respondents are from Austria (66.3%), which is the
location of the organization in focus. Most of the users of the organizations’ website (71.1%) stated that they spend 11 hours or more online on average per week. All in all, we obtained a sample of predominantly young Europeans who are used to interacting with websites and gained a lot of online experience.

**Reliability and Validity**

To assess reliability and validity, we followed the conventional iterative approach, including the assessment of corrected item-total correlations, Cronbach’s alpha values and results of exploratory factor analyses (EFA) (Churchill 1979; Hair et al. 2010). As all variables load on a single factor for each construct, unidimensionality is supported (Hair et al. 2010). Cronbach’s alpha values (Table 2) exceed the conventional minimum of .70 (Nunnally and Bernstein 1994) and corrected item-to-total correlations exceed the threshold of .50 (Zaichkowsky 1985). Together, these findings demonstrate high internal consistency and reliability at both item and construct level.

| Factor                          | Cronbach’s alpha values | Corrected item-total correlation | Confirmatory factor analysis
g  | Factor loading | Factor reliability | Average variance extracted |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Quality</td>
<td>.910</td>
<td>.752</td>
<td>.796</td>
</tr>
<tr>
<td>Technical Quality</td>
<td>.842</td>
<td>.656</td>
<td>.714</td>
</tr>
<tr>
<td>Design</td>
<td>.920</td>
<td>.732</td>
<td>.705</td>
</tr>
<tr>
<td>Usability</td>
<td>.861</td>
<td>.634</td>
<td>.670</td>
</tr>
<tr>
<td>Involvement</td>
<td>.803</td>
<td>.563</td>
<td>.598</td>
</tr>
<tr>
<td>Attitude towards the website</td>
<td>.943</td>
<td>.845</td>
<td>.885</td>
</tr>
<tr>
<td>System quality satisfaction</td>
<td>.912</td>
<td>.755</td>
<td>.798</td>
</tr>
<tr>
<td>Information quality satisfaction</td>
<td>.916</td>
<td>.760</td>
<td>.791</td>
</tr>
<tr>
<td>User satisfaction</td>
<td>.913</td>
<td>.764</td>
<td>.815</td>
</tr>
</tbody>
</table>

a. Goodness-of-fit statistics: \(\chi^2 = 3337.8; \) \(p = .000; \) df = 520; comparative fit-index (CFI) = .940; normed fit-index (NFI) = .929; root mean square error of approximation (RMSEA) = .060; standardized root mean residual (SRMR) = .044

b. The lowest value of all items is presented for each factor.

### Table 2: Assessment of reliability and validity

For assessing validity, we adopted the two-step approach (Anderson and Gerbing 1988). We tested construct validity and fit of the proposed measurement model with a confirmatory factor analysis (CFA), calculated with SPSS 19 and AMOS 19 using maximum likelihood estimation. Goodness-of-fit was assessed with a combination of incremental fit indices and absolute fit indices (Hair et al. 2010). As shown in Table 2, indices suggest a good fit of our model. Cronbach’s alpha values, significant loadings of items on their corresponding factors, high factor reliabilities and values of average variance extracted support convergent validity (Fornell and Larcker 1981; Hair et al. 2010). Discriminant validity is indicated by the results of a \(\chi^2\)-difference test (Hair et al. 2010).

### Results

We tested our hypotheses using a covariance-based structural equation model (SEM) technique and maximum likelihood estimation in AMOS 19 (Bollen 1989; Hair et al. 2010). For assessing the fit of the model, we relied on the combination of fit indices already used for CFA. As presented in Figure 2, the overall goodness-of-fit statistics together with the standardized path coefficients and R² values indicate that the data fits the proposed model well. Standardized path coefficients are larger than .20 for most significant relationships and, hence, can be considered meaningful (Chin 1998). Collectively, the results reflect our theoretical assumptions that are based on the S-O-R framework and IS success model, thus supporting nomological validity (Hair et al. 2010; Parasuraman et al. 2005).
Figure 2: Path diagram with standardized results

Table 3 shows the descriptives and correlations between our constructs that result from our CFA (for fit indices see Table 2). The standardized total effects of environmental cues on user responses are presented in Table 4.

Table 3: Correlation matrix.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>IQS</th>
<th>INV</th>
<th>SQS</th>
<th>ATW</th>
<th>US</th>
<th>UA</th>
<th>DES</th>
<th>TQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQS</td>
<td>3.36</td>
<td>1.47</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INV</td>
<td>2.46</td>
<td>1.24</td>
<td>.218</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQS</td>
<td>3.43</td>
<td>1.46</td>
<td>.796</td>
<td>.214</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATW</td>
<td>3.72</td>
<td>1.57</td>
<td>.660</td>
<td>.175</td>
<td>.738</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>3.46</td>
<td>1.54</td>
<td>.767</td>
<td>.205</td>
<td>.906</td>
<td>.817</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UA</td>
<td>3.67</td>
<td>1.47</td>
<td>.691</td>
<td>.191</td>
<td>.772</td>
<td>.884</td>
<td>.820</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DES</td>
<td>2.88</td>
<td>1.38</td>
<td>.644</td>
<td>.236</td>
<td>.715</td>
<td>.838</td>
<td>.761</td>
<td>.848</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TQ</td>
<td>2.12</td>
<td>1.12</td>
<td>.452</td>
<td>.432</td>
<td>.493</td>
<td>.479</td>
<td>.447</td>
<td>.553</td>
<td>.662</td>
<td></td>
</tr>
<tr>
<td>CQ</td>
<td>2.69</td>
<td>1.22</td>
<td>.731</td>
<td>.305</td>
<td>.687</td>
<td>.697</td>
<td>.641</td>
<td>.770</td>
<td>.744</td>
<td>.697</td>
</tr>
</tbody>
</table>

Table 4: Standardized total effects.

In contrast to previous studies (Delafrooz and Paim 2011), both functional (content and technical quality) and hedonic aspects (design and usability) of website quality have a major influence on users' attitude. However, as technical quality has a negative effect on users' attitude towards the website, H1 is partly supported. Users' involvement is influenced by functional aspects only (content and technical quality), indicating partial support for H2. In case of functional aspects, effects of content quality on both involvement (γ=.11) and attitude towards the website (γ=.09) are relatively low. A website's technical quality has the highest impact on users' involvement (γ=.42). Hedonic aspects, by contrast, significantly
impact users’ attitude towards the website only, whereas design has a higher effect (γ=.37) than usability (γ=.59).

On the level of users’ internal states, both H3 and H4 are supported. Involvement predominantly impacts information quality satisfaction (β=.12), whereas attitude towards the website has a higher impact on system quality satisfaction (β=.77).

Finally, on the level of user responses, H5 is supported. System quality satisfaction strongly affects user satisfaction (β=.81), while information quality satisfaction has only a minor influence (β=.17), indicating that satisfaction with functional features of a website impacts user satisfaction much stronger than satisfaction with information provided. According to the standardized total effects (Table 4), users’ responses (SQS, IQS and US) are more affected by website design and usability, representing hedonic aspects, than by functional aspects (i.e., content and technical quality). Compared to relatively small standardized total effects for content quality (.08) and technical quality (-.07), design (.26) and usability (.43) show much higher effects. When considering user satisfaction, the total effect of users’ attitude towards the website on their satisfaction (.73) is much higher than the total effect of involvement on user satisfaction (.10). Contrasting previous studies (Baierova et al. 2003), the results of our study indicate that usability and design are decisive factors for the satisfaction of website users.

Discussion and Implications

In this paper we identify decisive factors of website quality and assess their effects on users’ emotional and cognitive responses (i.e., their involvement, attitude and satisfaction). The findings provide a fruitful basis for both managerial and theoretical implications. From a managerial perspective, organizational websites provide the main and centralized source of information for a multitude of stakeholders. When aiming to influence users’ involvement, our results suggest focusing on changing functional aspects of the website (i.e., content and technical quality). By contrast, when seeking to influence users’ attitude formation towards the website, results indicate to concentrate on influencing hedonic aspects (i.e., design and usability). When aiming to enhance user satisfaction, organizations should emphasize hedonic aspects, as they have much higher total effects on users’ responses than functional aspects. In order to gain and keep satisfied users, our results suggest that organizational websites with a focus on information provision should look attractive and organized, use fonts and colors properly and present information in an appropriate format. At the same time, they should facilitate ease of navigation and a feeling of “being in control.”

Digital devices (smartphones, tablet PCs, laptops or TVs) nowadays require responsive web designs that adapt their layout and content to different viewing contexts (Baturay and Birtane 2013). In this respect, our results might be of particular relevance for web designers. Users are confronted with new input types (e.g., voice or touch gestures), varying viewing distances (e.g., tablet vs. TV) and changing device resolutions, which also represent key challenges for organizational websites, as fluid layouts with images and media make it even more complex to create a consistent organizational web appearance. When thinking about users’ responses, our results indicate that content and technical quality are specifically important to keep users involved with an organizational website. Hedonic aspects, such as design or usability, however, will positively impact users’ attitude formation towards the website and increase their satisfaction levels.

The presented model contributes to existing IS and marketing research in several ways. First, the study re-assessed the validity of the scales in use (Aladwani and Palvia 2002; McKinney et al. 2002; Tate et al. 2007) and tested the user-centered approach (Aladwani and Palvia 2002) in an organizational context. Second, echoing the S-O-R framework, we linked functional and hedonic aspects of websites to users’ responses. We found support for most hypotheses, except the non-significant relationship between both hedonic aspects and users’ involvement (H2c and H2d). This is particularly interesting since prior studies (e.g., Mazaheri et al. 2011) confirmed a significant relationship between more hedonic aspects of a website (e.g., entertainment) and users’ involvement. By contrast, in the research of Mazaheri et al. 2011, the relationship between functional characteristics of a website and users’ involvement was not supported. Third, total effects on user satisfaction show that hedonic aspects of organizational websites (i.e., design (.43) and usability (.26)) outperform functional aspects (i.e., technical (-.07) and content quality (.08)). Finally, especially users’ attitude towards the website highly affects user satisfaction mediated by both
system and information quality, leading to a higher total effect (.733) on user satisfaction than involvement (.096).

Although the present study uses well-established research methods, some limitations need to be acknowledged. First, a single respondent was asked to rate both predictor and dependent variables, which might result in common rater effects (Podsakoff et al. 2003). To compensate for this, respondents were asked to rate items of dependent constructs first and subsequently assess independent constructs. Second, our sample is drawn from stakeholders of a single organization and certainly cannot represent the variety of all website users. As we drew upon a sample of 1,485 respondents, we are confident that robust results could be obtained. Nevertheless, we encourage other researchers to test and refine our model and apply it to similar settings. Third, we used a rather generic measure of involvement (i.e., involvement with the Internet), and not one that is related to a specific website in our model (Zaichkowsky 1985). It would be interesting to test a website-specific measure of user involvement in future research and compare the findings.

Conclusion and Outlook

The present study takes a multidisciplinary, user-centered approach to develop and validate a structural model of website quality perception. Findings suggest that both functional and hedonic aspects impact users' internal states and responses towards organizational websites. Hedonic aspects (i.e., design and usability), however, show much higher total effects on users' satisfaction than functional aspects (i.e., content quality and technical quality). Attractive web design paired with ease of navigation and a clear website structure thus represent key antecedents of users' responses towards a website (in terms of user satisfaction). Technical issues and content quality, by contrast, show significant main effects on users' involvement with the website, but neither affect their attitude towards the website, nor show high total effects on user satisfaction.

These findings carry suggestions for research and practice. Our findings indicate that a clear structure and ease of navigation supported by streamlined design are superior to technical aspects and content when it comes to outcomes (i.e., user satisfaction). The quality of websites, and specifically their hedonic aspects, thus, call for close attention from both researchers and practitioners to gain and keep satisfied users.

Our study extends and connects existing approaches on measuring website quality from a users' perspective. Further validation of the proposed model and used scales in different contexts could be addressed by future work. Moreover, a distinction between first users and repeat users could be taken on board, since their perception of a website's quality might vary considerably. This could also set the stage for longitudinal studies investigating how users' perception of website quality changes over time. The study is intended to stimulate further research and support practitioners in enhancing user satisfaction.

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The Effects of Website Quality Perception on Users’ Responses


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