Websites in brand communication: interactivity and cross-media effects

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Publication date
2010

Chapter 4

What Makes the Websites of Global Brands Truly Interactive? [4]

Abstract

To investigate the relationship between actual and perceived interactivity, this study combines a content analysis of interactive functions on the websites of the top 100 global brands with a survey (N = 715) in which the perceived interactivity of the same websites is measured. The main findings are: (1) there is great incongruence between the level of actual and perceived interactivity, (2) adding interactive functions to a website does not guarantee a strong perception of interactivity, (3) six unique website characteristics contribute positively to interactivity perceptions. In conclusion, its unique characteristics make the websites of top global brands truly interactive.

[4] A version of this chapter is revised and resubmitted to Journal of Advertising as: Voorveld, H. A. M., Neijens, P. C., & Smit, E. G. (2010). What makes the websites of global brands truly interactive?

A version of this paper has been awarded with a Top Paper Award at the International Conference on Research in Advertising, of the European Advertising Academy.

The authors would like to thank Nydia Manichand for her assistance.

Introduction

Interactivity is commonly seen as the crucial distinction between traditional and new media (Chung & Zhao, 2004) and as the vital element of successful online advertising (Thorbjornson, Supphellen, Nysveen, & Pedersen, 2002; Kim & McMillan, 2008). Two constructs are central to the theoretical discussion about interactivity: actual interactivity and perceived interactivity. Actual interactivity is objectively assessed interactivity, also called feature-based interactivity (Song & Zinkhan, 2008). This type of interactivity can be measured by observing the number and type of interactive features on a website. Perceived interactivity is subjectively experienced by users and therefore often referred to as experiential interactivity (Liu & Shrum, 2002; Wu, 2005). This form of interactivity can be measured by asking consumers about their feelings or experiences during their website visit.

In the past years interactivity research has changed from a focus on actual interactivity to a focus on perceived interactivity (Song & Zinkhan, 2008). When the focus was on actual interactivity, studies typically identified potential interactive website features. Later, a central theme in the studies was the question how interactivity features influence the effectiveness of websites. Currently, many authors are arguing that not actual, but perceived interactivity of a website determines consumers' responses (Song & Zinkhan, 2008). Some researchers even argue that a clear distinction between actual and perceived interactivity will help explain seemingly inconsistent findings concerning consumers' responses to website interactivity (for an overview see Liu & Shrum, 2002; Wu, 2005). Thus, it is vital to learn more about the relationship between these two key constructs.

Therefore, the aim of this study is to investigate the relationship between actual and perceived interactivity on the websites of brands. By doing so, our study responds to the call of many authors that stressed the importance of investigating this relationship (Liu & Shrum, 2002; Song & Zinkhan, 2008; Lee, Lee, Kim, & Stout, 2004; McMillan, 2002). Strikingly, little research has examined this issue (Song & Zinkhan, 2008; Bucy & Tao, 2007). Concerning the relationship, many traditional interactivity studies suggest a positive linear relationship between actual and perceived interactivity. These studies suggest that increasing the quantity of interactive features (i.e. actual interactivity) results in stronger interactivity perceptions (Coyle & Thorson, 2001; Macias, 2003; Sicilia, Ruiz, & Munuera, 2005). However, there is also some evidence that the relationship between interactive functions and perceived interactivity is more complicated, specifically that "simply adding features does not guarantee a high level of [perceived] interactivity" (Song & Zinkhan, 2008, p. 109).

The current research is necessary for at least three reasons. Firstly, for the sake of theory development on interactivity effects. Liu and Shrum (2002) stated, for example, that the lack of consistent findings on interactivity effects could have been caused by the lack of our knowledge about the relationship between objectively assessed interactivity and subjectively measured interactivity. Secondly, it is important to learn more about the relationship in order to improve the validity of future research. "Without an understanding of how participants perceive the actual interactive features, researchers run the risk of creating an invalid operationalization of interactivity" (Liu & Shrum, 2002, p. 58). The final reason why it is vital to study the relationship between interactivity functions and perceptions is related to advertising practice. In order for marketers to know which interactive features to incorporate on their websites they must know which interactive website functions contribute to interactivity perceptions.

In the remainder of this article we first shortly review the theoretical background and operationalization of the interactivity construct. Secondly we discuss the small amount of existing literature on the relationship between actual and perceived interactivity. Next we describe the design of our study. Finally, after reviewing the findings, we draw conclusions about what makes a website of a top global brand truly interactive.

Background

Definition and Conceptualization of Interactivity

Although there is a significant amount of research into interactivity, there is still no consensus about its definition and dimensions (e.g., Liu & Shrum, 2002, Raney et al., 2003; Thorbjornson et al., 2002; McMillan and Hwang, 2002; Song & Zinkhan, 2008). Liu and Shrum (2002) made an invaluable contribution to the advertising literature by meaningfully synthesizing numerous interactivity definitions and conceptualizations in the advertising, marketing, and communication literature.

Following Liu and Shrum (2002, p. 54), we define interactivity as: "The degree to which two or more communicating parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized." Several scholars recognize the multidimensional nature of the interactivity construct (e.g., Liu & Shrum 2002; Johnson, Bruner II, & Kumar, 2006; Song & Zinkhan, 2008). Liu and Shrum (2002) specified three central dimensions, overarching many elements of interactivity that are found in the literature.

The first dimension is two-way communication which refers to "the ability for reciprocal communication between companies and users, and users and users" (Liu & Shrum, 2002, p. 55). On closer examination, several other authors also describe this dimension, but use different terminology, such as communication (Song & Zinkhan, 2008), bi-directional flow of information (Liu, 2003), and direction of communication (McMillan & Hwang, 2002). Website features or functions that could facilitate two-way communication are, for instance, feedback forms, web logs, chat rooms, surfer postings, e-mail links, and online order facilitations (e.g., McMillan & Hwang, 2002; Liu & Shrum, 2002; Song & Zinkhan, 2008).

The second dimension, synchronicity, refers to "the degree to which users' input into a communication and the response they receive from the communication are simultaneous" or without delay (Liu & Shrum, 2002, p. 55). Other scholars call this dimension responsiveness (Song & Zinkhan, 2008), time (McMillan & Hwang, 2002) and speed of response (Johnson et al., 2006). Website functions that could improve synchronicity are features that enhance the feeling that a website responds immediately, for example an animation that display the time it takes for the website to load or an option to choose a type of internet connection.

The third dimension is active control. "Active control is characterized by voluntary and instrumental action that directly influences the controller's experience" (Liu & Shrum, 2002, p. 54). Other authors refer to this dimension as: control (Song & Zinkhan, 2008), user control (McMillan & Hwang, 2002), and a user's ability to voluntarily participate in and instrumentally influence a communication (Liu, 2003). Active control is facilitated by the presence of navigational tools, such as hyperlinks, site maps, and search options, or possibilities to customize products or information on the website (e.g., McMillan & Hwang, 2002; Song & Zinkhan, 2008).

Relationship between Actual and Perceived Interactivity

Several studies discussed the likelihood of an unclear relationship between actual and perceived interactivity, and acknowledged the need for research on this issue (e.g., McMillan et al., 2008, Song & Zinkhan, 2008; Liu & Shrum, 2002; McMillan, 2002; Lee et al., 2004). Surprisingly, only four studies empirically tested the relationship. McMillan (2002) was the first who found some preliminary indications that the relationship between objectively and subjectively assessed interactivity was unclear. Results of her exploratory content analysis of 108 health websites showed no correlation between objectively assessed interactivity and the perceptions of the coders.

The second preliminary study was conducted by Lee et al. (2004). The authors performed a content analysis of three websites and performed in-depth interviews with 39 students about their experiences on these websites. Results showed that the websites had objectively the same levels of interactivity (i.e. the same number of interactive features), however, participants reported differences in the level of perceived interactivity.

The third study (Yun 2007) tested the influence of response time, hyperlinks, multimodality (the presence or absence of sounds on a website), and active involvement (the presence of a personalized advice based on consumers input) on interactivity perceptions in an experimental study. Results showed that only response time was able to affect interactivity perceptions. When the website responded faster, interactivity perceptions became higher. However, the author acknowledged that the measurement of the perceived interactivity concept was probably not reliable because it was measured with a single indicator. Consequently, the study calls for further examination with reliable measurements.

The fourth, most recent study in the field, specifically aimed to disentangle the relationship between actual and perceived interactivity. Song and Zinkhan (2008) experimentally tested how three interactive website features on a website were able to predict the level of perceived interactivity. Results showed that the most important predictor of perceived interactivity was the degree to which a message was personalized. Additionally, response time and number of clicks also significantly predicted the perceived interactivity of the website. Although the study made a large contribution to the field, Song and Zinkhan (2008) recommended testing the influence of more interactive functions to give a more comprehensive insight. Our study is a direct response to this call.

Explanations for Incongruence between Actual and Perceived Interactivity

Why is the relationship between actual and perceived interactivity so complicated? In the literature two possible explanations are given (Lee et al., 2004; Song & Zinkhan, 2008). First, some interactive functions might be perceived as more interactive than other functions (Liu & Shrum, 2002). For example, a personal choice helper; a function that can make relatively sophisticated recommendations on consumers' choices based on their input on preferences and decision criteria, might be perceived as more interactive than the availability of an e-mail link that can be used to contact a sales representative.

Second, some interactive website functions, for example hyperlinks, might have become so common that they do not contribute to interactivity perceptions anymore (Yun, 2007). Thus, it is possible that only relatively unique interactive functions affect interactivity perceptions.

Research Questions

To further investigate the relationship between actual and perceived interactivity we formulated three research questions:

RQ1: Is there incongruence between the level of actual and perceived interactivity on the websites of brands?

RQ2: What is the relationship between the number of interactive functions on a website and the level of perceived interactivity?

RQ3: Which interactive functions contribute to the perceived interactivity of the websites of brands?

Method

To examine the relationship between actual and perceived interactivity, we combined two research methods: a content analysis and a survey. First, we investigated the actual interactivity by exploring which interactive functions were present on the websites of brands. Once we identified the presence of interactive functions, we conducted a survey in which we measured interactivity perceptions. Finally, we linked the two datasets together to discover the relationship between actual and perceived interactivity and to see which key website functions enhance interactivity perceptions.

Content Analysis

Sample. A list of the top 100 global brands (Business Week, 2007) was used for selecting the websites in our analysis. Search engine websites, online auction sites (e.g., Ebay) and the websites of brands that only exist on the internet (e.g., Amazon) were removed from the sample, because these websites do not fit our definition of the websites of brands which are defined as business to consumer websites that have persuasion as the most important goal (Voorveld, Neijens, & Smit, 2009). Another reason for removing these websites from our sample is because websites like e-bay and Amazon could provide other forms of interactivity that can not be measured with the coding scheme that was used in this paper. In addition, only brands that also had an operating Dutch language website were selected, as the study was conducted in the Netherlands. Earlier research has shown that websites from the Netherlands do

not substantially differ from their American counterparts with regard to interactive website functions (Voorveld, Neijens, & Smit, in press). Therefore we believe the results of our study will be relevant to the western world. The selection consisted of 65 websites. Figure 2 mentions the websites that were analysed in this study.

Coding instrument. The coding instrument (see Table 1, 2, and 3) was developed and validated by Voorveld et al., (in press). The coding instrument included 47 interactivity functions which were obtained from earlier studies on interactivity (e.g., Ghose & Dou, 1998; McMillan & Hwang, 2002; Dou & Krishnamurthy, 2007). The 47 functions were categorized into the three interactivity dimensions (two-way communication, synchronicity, and active control). The content and face validity of this categorization was assured by experts in the field of interactivity research. The experts were asked to what extent an interactive function represented the pre-assigned dimension of interactivity and whether the representative website functions were thorough enough to measure the interactivity dimension (Cho & Cheon, 2005). Earlier application of the instrument showed high levels of inter-coder reliability (Perreault and Leigh's index = .90). Furthermore, the instrument was applicable to different contexts and the instrument was sensitive enough to differentiate between countries and brands (Voorveld et al., in press).

Variables in the content analysis were the 47 individual interactive functions and an index score for each dimension. We calculated an index score for each interactivity dimension by adding the number of corresponding interactive functions used on each website and dividing this number by the total interactive functions within the dimension (* 100). To calculate the index score we followed the procedure of Cho and Cheon (2005).

Procedure. Two coders were made familiar with the definitions of each interactive function and were trained to code the websites. They coded whether an interactive function was present (1) or absent (0). To assess inter-coder reliability, 20% of the websites were coded by both coders. Because websites are continuously changing, we decided to control for possible changes by having both coders code at the same time. Coding and the conduction of the survey took place in the same time period (December 2008).

The unit of analysis for this study consisted of two parts: (1) the home pages of each website (i.e., the first-level pages) and (2) all hyperlinked pages from the home page (i.e., the second-level web pages) (Cho & Cheon, 2005). We chose to code two levels because trying to code an entire website would be extremely time-consuming and confusing (Ha & James, 1998; Okazaki, 2005). Limiting our analysis to the first two levels of the websites improved the

accuracy of our analysis while giving a more in-depth view than coding only home pages, as is done by many others in the field (for an overview see Weare & Lin, 2000; McMillan, 2000). Furthermore, recent research suggests that coding two levels is appropriate for investigating the interactivity of websites (McMillan et al 2008).

Inter-coder reliability. Inter-coder reliability was calculated using the reliability index suggested by Perreault and Leigh (1989). This index is considered the best by many researchers because it corrects for agreement by chance due to the number of categories (e.g., Kolbe & Burnett, 1991). The reliability scores had a mean value of .92. Because a large majority (90%) of the reliability indexes exceeded the recommended minimum value of .80, we decided not to remove any variable from our analysis. The coders resolved all disagreements by consulting screenshots that were saved of every coded webpage, 100% agreement was achieved.

Survey

Materials, participants, and procedure. The 65 websites from the content analysis were used as stimulus material in the survey. Three hundred and thirty one respondents (72.2% women), mainly students from the University of Amsterdam, participated in the survey. Participants were asked to browse a website for about five minutes in order to learn more about the brand and its products. After browsing a website, participants had to fill in the questionnaire. Participants browsed three websites, however due to technical problems some participants only browsed one or two websites. Websites were randomly selected from the list of 65 websites. Completing the survey took 20 to 25 minutes. In total, 715 evaluations were completed, which resulted in about 11 evaluations per website.

Measures

Perceived interactivity. To measure the three dimensions of perceived interactivity, eleven items of the scale of Liu (2003), and Song and Zinkhan (2008) were used. When combining our scale, we followed a recent article on interactivity by Song & Zinkhan, 2008, although the chosen items closely resemble the original wordings of Liu (2003). At the time the study was conducted no other, more recent scale was available to measure perceived interactivity.

Two-way communication dimension. Two way communication was measured with four items of Liu (2003) and Song and Zinkhan (2008). Items included: (1) "The website enables conversation" and (2) "The website facilitates two-way communications between the visitors and the site", (3) "It is

not difficult to offer feedback to the site", and (4) "The website makes me feel it wants to listen to its visitors". Response categories ranged from 1 (*strongly disagree*) to 7 (*strongly agree*).

Synchronicity dimension. Synchronicity was measured with three items of Liu (2003) and Song and Zinkhan (2008). Items included: (5) "The website processes my input very quickly", (6) "I was able to obtain the information I want without any delay" and (7) "The website was very fast in responding to my feedback". Response categories ranged from 1 (*strongly disagree*) to 7 (*strongly agree*).

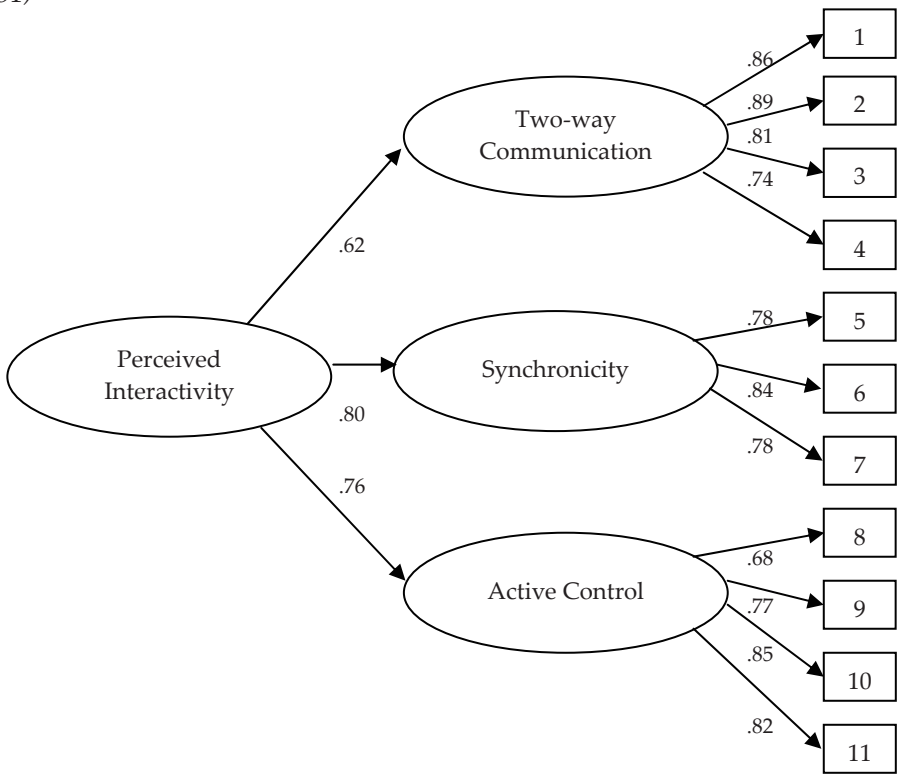
Active control dimension. Active control was measured with four items of Liu (2003) and Song and Zinkhan (2008). Items included: (8) "While I was on the site, I could choose freely what I wanted to see", (9) "While I was on the site, I was always aware where I was", (10) "While I was on the site, I always knew where I was going", and (11) "I feel that I have a great deal of control over my visiting experience at this site". Response categories ranged from 1 (*strongly disagree*) to 7 (*strongly agree*).

The underlying structure of the perceived interactivity scale was verified in a confirmatory factor analysis using Structural Equation Modelling in Amos. The model revealed a good fit of the data (X^2 (41, N = 715) = 212.23, p < .001, CFI = .962, NFI = .953, RMSEA = .076) (Byrne, 2001). In this way perceived interactivity is modelled as a second-order latent construct (see Figure 1).

Our results resemble the structure of the 15-item instrument for measuring interactivity by Liu (2003). One score for each dimension was obtained by calculating the mean of the items representing the dimension (Two-way communication: M = 3.68, SD = 1.26, Cronbach's alpha = .89; Synchronicity: M = 4.76, SD = 1.27, Cronbach's alpha = .84; Active control: M = 4.88, SD = 1.29, Cronbach's alpha = .86). One score for overall perceived interactivity was obtained by calculating the mean of the scores on the three dimensions (M = 4.41, SD = 1.02).

Control variables. The following variables were measured to assess their influence on the perceived interactivity scales: time spent on the website, internet experience, online shopping experience, and frequency of earlier visits to the website

Figure 1. *Second-order factor structure of the perceived interactivity construct (N = 751)*



Note. Factor loadings are standardized scores

Results

Construction of the Dataset

No correlation was found between the control variables and the perceived interactivity scales. Due to this fact we decided not to control for these variables in our analyses. Data from the content analysis were used as independent variables in the subsequent analyses. Data from the survey were used as dependent variables. Perceived interactivity scores for each dimension were calculated for all 65 websites. As a result our dataset contained one case for each website (i.e. aggregated data based on mean scores per website, N = 65, 11 evaluations per website).

RQ1: Incongruence between Actual and Perceived Interactivity

Our first research question investigated if there was incongruence between actual and perceived interactivity on the websites of brands. For every website we calculated two rank scores, which we inserted in a plot (see Figure 2). The horizontal axis displays the rank scores based on the actual interactivity of the websites (the total number of interactive functions on that website). The vertical axis displays the rank scores of the websites based on its perceived interactivity score. This rank is based on the overall perceived interactivity score that is composed of all three interactivity dimensions. A rank of 1 was assigned to website with the highest value, while a rank of 65 was assigned to the site with the lowest value.

Figure 2. *Incongruence between actual and perceived interactivity*

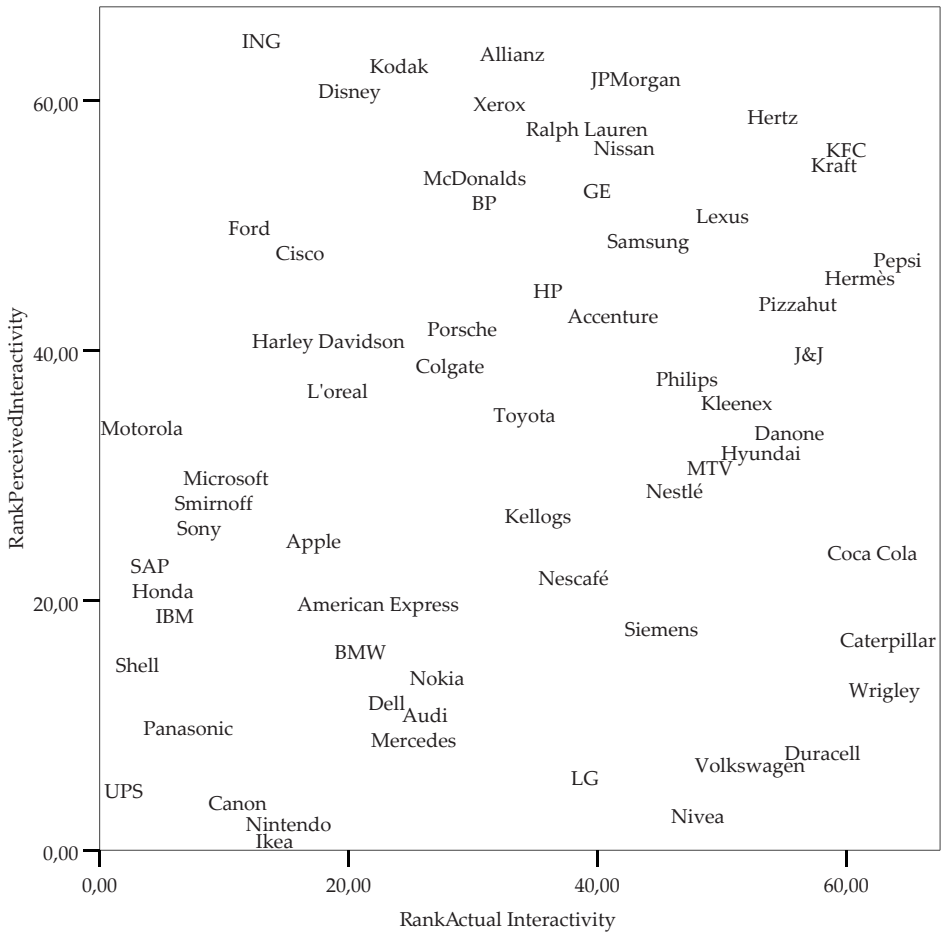


Figure 2 points out incongruence between websites that were objectively seen as highly interactive and websites that were subjectively perceived as interactive. For example, the website that was objectively viewed as the most interactive was the website of Motorola. However, people did not perceive this website as very interactive. Based on the perceived interactivity score the website is ranked as 34th. In line with this observation, the Spearman's rank correlation coefficient between the scores for actual interactivity and perceived interactivity revealed a non significant relation (r_s .18, p = .15 two-tailed). So, we can conclude that there is indeed great incongruence between the level of actual and perceived interactivity on the websites of brands.

RQ2: The Relation between the Number of Interactive Functions and Perceived Interactivity

Our second research question investigated the relationship between the number of interactive functions on a website and the level of perceived interactivity. To test whether the number of interactive functions on a website affected its perceived interactivity, the total number of interactive functions within each dimension (from the content analysis) was regressed on the perceived interactivity score for that dimension (from the survey). One-tailed significance tests were used because we had strong expectations about the direction of the relation; we expected that adding functions would result in stronger interactivity perceptions

For the two-way communication dimension, there was a marginally significant relationship between the index score and the perceived interactivity score (β = .18, p = .08, one-tailed). Thus, the actual interactivity score marginally affected interactivity perceptions. Next, the number of interactive functions within the synchronicity dimension was regressed on the perceived interactivity score for that dimension. The number of interactive functions was not significantly related to the perceived interactivity score (β = -.01, p = .48, one-tailed). There was neither a significant relationship for the active control dimension (β = .05, p = .34 one-tailed), nor between the total number of interactive functions and the overall perceived interactivity score (β = .13, p = .14, one-tailed).

In summary, for two out of three dimensions there was no relationship between the number of interactive functions and the perceived interactivity scores. Moreover, there was no significant relationship between the total number of interactive functions and the overall interactivity score. Thus, a high number of interactive functions on a website do not guarantee a high level of perceived interactivity.

RQ3: Interactive Features Contributing to Interactivity Perceptions

We describe the results of the third research question separately for each interactivity dimension. First, we will shortly describe the results of the content analysis, and then we will describe which functions contributed to interactivity perceptions.

Two-way Communication

Actual interactivity. The content analysis revealed that the most commonly used interactive function representing the two-way communication dimension was the presence of multiple modes of contact, which was present on 87.7% of the websites (see Table 1). The majority of the websites also included an option to order products online (55.4%). Nearly 45% of the websites contained an online job placement (44.6%), in which visitors to the websites had the opportunity to search for a job online. On about 20% of the websites visitors could recommend the website or product to a friend, visitors could type in their feedback in an e-form, and/or there was a personal choice helper; a function that can make relatively sophisticated recommendations on consumers' choices based on their input on preferences and decision criteria. In general, 3.55 interactive functions (18.70% of the total 19 functions) were present on the websites.

Relationship with perceived interactivity. To investigate the link between actual and perceived interactivity, independent sample t-tests were conducted. The presence or absence of an interactive function was the independent variable, the score on the two-way communication dimension of perceived interactivity was the dependent variable.

Table 1 shows that there are significant differences in perceived interactivity scores regarding four interactive functions. Functions that resulted in a significantly higher perceived interactivity score are: the possibility to recommend the website to a friend, a feedback form and the possibility to register a product online. In other words, these functions significantly affected the two-way communication dimension of perceived interactivity. Remarkably, there was also one interactive function that was negatively related to the score for the two-way communication dimension of perceived interactivity: the possibility to send electronic cards. We will come back to this in our discussion.

Table 1. *Two way communication dimension*

Actual interactivity		Perceived interactivity		
Function	% present [a]	If not present	If present	*t*
Presence of multiple modes of contact: for example, telephone, e-mail or online form	87.7	3.61	3.71	.57
Online order: an option to order products	55.4	3.69	3.70	.11
Online job placement: online resume submission, personal career goal check etc.	44.6	3.69	3.70	.03
The possibility to recommend the website or product to a friend	24.6	3.65	3.84	1.61
Personal choice helper: a function that can make relatively sophisticated recommendations on consumers' choices based on their input on preferences and decision criteria	23.1	3.68	3.74	.50
A feedback form: customers can type in their feedback in e-forms	18.5	3.65	3.87	1.59*
User groups: online community for product users	16.9	3.67	3.79	0.84
Survey: survey for visitors that solicits their comments on the content and design of the site or the firms offering and service	12.3	3.67	3.84	1.01
Product registration: possibility to register your product online, often to obtain updates, extra information or incentives	10.8	3.65	4.04	2.37***
Surfer postings: a section where surfers can write their stories, opinions, or convey messages to the other	9.2	3.68	3.81	0.73
An online fan club: a community of people who share a strong, common interest in the brand or product	9.2	3.67	3.89	1.20
E-cards: a possibility to send electronic cards	7.7	3.73	3.30	-2.26***
An online game against a computer	7.7	3.69	3.78	0.49
An online game against other players	7.7	3.69	3.78	0.49
Podcasts: a program (as of music or talk) made available in digital format for automatic download over the Internet	6.2	3.70	3.64	-0.25
Online chatting	4.6	3.68	3.95	1.08
Online problem diagnostics: customers report their problem spots and this function helps them to locate the problem exactly.	3.1	3.70	3.51	-0.63
Product suggestions of other customers	1.5	3.69	4.19	1.18

Note. [a] percentage of websites that displayed this function. Total number of websites is 65. [b] on a seven-point scale. * $p < .10$, ** $p < .05$, *** $p < .01$, all one-tailed

Synchronicity

Actual interactivity. Table 2 shows that the most common interactive function that represents the synchronicity dimension of interactivity is an animation that displays the time it takes for the website to load, which was present on 61.5 of the websites of top global brands. An option that allows visitors to skip the introductory page of a website was present on 16.9% of the websites. A virtual reality display, a function that permits consumers to virtually "feel or experience" the product, was present on only 9.2% of the websites and a live customer service was present on only 7.7%. Regarding the underlying interactivity dimension, 1.09 interactive functions were used on the global websites (18.21% of the possible six interactive functions).

Relationship with perceived interactivity. Table 2 shows that there are no significant differences in perceived interactivity scores for the six interactive functions representing the synchronicity dimension. No interactive function was able to affect the perceived interactivity score for the synchronicity dimension.

Table 2. *Synchronicity dimension*

Actual interactivity		Perceived interactivity		
Function	% present [a]	If not present	If present	*t*
Animation that displays the time it takes for the website to load	61.5	4.66	4.65	-0.12
Skip intro option: an option that allows visitors to skip the introductory page of a website	16.9	4.67	4.57	-0.61
Virtual reality display: a function that permits consumers to virtually "feel or experience" the product	9.2	4.68	4.36	-0.85
Live customer service, for example online discussion with a sales representative using instant messaging or chatting programs	7.7	4.64	4.80	0.70
Speed choice: option to choose a type of internet connection, for example broadband or cable	7.7	4.65	4.74	0.42
Error message given by the website when there is something wrong with the website	n.a.			

Note. [a] percentage of websites that displayed this function. Total number of websites is 65. [b] on a seven-point scale. * $p < .10$, ** $p < .05$, *** $p < .01$, all one-tailed. n.a. not applicable because there was no error.

Active control

Actual interactivity. As seen in Table 3 the most common interactive functions that represent the active control dimension of interactivity were the presence of internal links (98.5%), hotlinks (92.3%) and external links (90.8%). The majority of the websites also offered software downloading (67.7%), a sitemap (63.1%), a keyword search (63.1%), and a dealer locator (55.4%). Although not present on the majority of websites, other popular functions were: dropdown menus (49.2%), the possibility to receive a newsletter (44.6%), and a registration requirement (30.1%). In general, 7.52 interactive functions (34.2 % of the total 22 functions) were used on the websites.

Relationship with perceived interactivity. Table 3 shows significant differences in perceived interactivity scores regarding three interactive functions. In other words, three interactive functions positively affected the score for the active control dimension of perceived interactivity. Functions that were positively related to the perceived interactivity score are: dropdown menus, an option to customize products, and a possibility to customize information on the website. Surprisingly, the results also showed three interactive functions that negatively contributed to the active control dimension of perceived interactivity: a registration requirement to get access to certain parts of the website or certain information; the choice to see the text-view of the website, i.e. the website without pictures, and links used to navigate back to the home page of the website. We will come back to these unexpected results in our discussion.

In summary, six interactive functions significantly affected interactivity perceptions: the possibility to recommend the website to a friend, a feedback form, the possibility to register a product online, dropdown menus, the option to customize products, and the possibility to customize information on the website. To verify the significance of these findings we repeated an earlier analysis. Previously, the Spearman's rank correlation coefficient between the rank scores for actual interactivity and perceived interactivity revealed a non-significant relation. This time we calculated the correlation between the rank scores based on the six interactive functions and the perceived interactivity score. This analysis revealed a significant relationship (r_s = .31, p < .01, two-tailed), confirming the importance of the six functions.

Table 3. *Active control dimension*

Actual interactivity		Perceived interactivity		
Function	% present [a]	If not present	If present	*t*
Internal hyperlinks: links used to navigate within the website	98.5	5.04	4.86	-.37
Hot links: links used to navigate back to the home page of the website	92.3	5.13	4.84	-1.34*
External links: links used to navigate to other websites	90.8	5.04	4.84	-.97
Software downloading: surfers can download software of files from the website, usually for free	67.7	4.76	4.91	1.18
Sitemap: a webpage that displays the structure of a website	63.1	4.83	4.88	0.39
Keyword search: a function that allows a visitor to pinpoint the particular information he or she is looking for	63.1	4.84	4.87	0.22
Dealer locator: a function that allows visitors to pinpoint a dealer	55.4	4.83	4.88	0.41
Dropdown menu's: an interface element which allows visitors to choose a value from a list	49.2	4.77	4.95	1.51*
Possibility to receive a newsletter	44.6	4.82	4.91	0.75
Registration requirement to get access to certain parts of the website or certain information	43.1	4.94	4.75	-1.50*
Choice of language: an option to choose the language of the website	21.5	4.88	4.81	-0.45
Customize product: an option to compose products by yourself	12.3	4.83	5.13	2.85**
Personal preference option: possibility to customize information on the website	10.8	4.83	5.14	1.66**
Order status tracking: customers can track the status or whereabouts of their orders online in real time	9.2	4.87	4.80	-0.35
Connection with a mobile phone, for example to download games	7.7	4.88	4.69	-0.86
Choice to see the website with or without flash	6.2	4.85	4.98	0.51
Choice to see the text view of the website, i.e. the website without pictures	4.6	4.88	4.49	-1.41*
Possibility to make a wish list, especially in online shops	4.6	4.85	5.02	0.60

Table 3 (continued). *Active control dimension*

Actual interactivity		Perceived interactivity		
Function	% present [a]	If not present	If present	*t*
Explicit presence of cookies, for example a button "remember me"	3.1	4.85	5.12	0.78
Requirement to report your age before entering a website	1.5	4.87	4.56	-0.63
Option to change the background colour of the website	1.5	4.86	4.98	0.25
Possibility to change settings to use the website as your home page	1.5	4.87	4.40	-0.99

Note. [a] percentage of websites that displayed this function. Total number of websites is 65. [b] on a seven-point scale. * $p < .10$, ** $p < .05$, *** $p < .01$, all one-tailed

Conclusion and Discussion

The aim of our study was to investigate the relationship between actual and perceived interactivity on the websites of brands. The study combined a content analysis of interactive website functions with a survey in which the perceived interactivity of the same websites was measured. Using this approach, which was previously never used in interactivity research, the study detected a great incongruence between the level of actual and perceived interactivity. Remarkably, the study showed that simply adding interactive functions to a website does not guarantee high perceptions of interactivity. Furthermore, we were able to detect six interactive functions that determined the perceived interactivity of a website. These functions were: feedback forms, the possibility to register a product online, the possibility to recommend the website to a friend, dropdown menus, the option to customize products, and the possibility to customize information on the website. It is notable that these functions (except for dropdown menus) are not very common functions. Most functions appeared on only 10 to 25 % of the websites. More common functions that were present on the majority of the websites did not contribute to perceived interactivity. Whereas these functions are clearly considered interactive in the literature (e.g., Ghose & Dou, 1998; Ha & James, 1998; Liu & Shrum, 2002), it can be concluded that basic interactive functions are no longer able to affect interactivity perceptions because they have become common on the majority of websites. Thus, the answer to the question: What makes a website of a top global brand truly interactive is: unique website characteristics.

Our study empirically confirmed that "simply adding features does not guarantee a high level of interactivity" (Song & Zinkhan, 2008, p. 109). Results

showed that the number of interactive functions on a website did not significantly affect the perceived interactivity scores for two out of three interactivity dimensions. Previous research already proposed that it is probably not the number of interactive functions on a website that determines its perceived interactivity, but the quality of the interactive features (McMillan, 2002; Liu & Shrum, 2002; Song & Zinkhan, 2008). Our study was the first that empirically confirmed this claim.

Unexpectedly, our study also pointed to some functions that negatively affected interactivity perceptions: the possibility to send electronic cards, a registration requirement to get access to certain parts of the website or attain certain information, the choice to see the text-view of the website, and hot links. It could be that hot links and a choice to see the text-view of the website had a negative impact because there would have been no need for the functions when the website structure was clear and the usability was satisfactory. Furthermore, the negative impact of a registration requirement and the possibility to send e-cards is probably caused by privacy concerns. Research has shown that consumers are only willing to share personal information when they feel strongly connected to the brand or have a favourable attitude toward the brand (Smit, Bronner, & Tolboom, 2007). The participants in our survey probably are not strongly connected to the brands and therefore restrain from sharing personal information, by sending e-cards or registering as a user. Finally, the negative impact of the functions could also have been caused by the fact that people just do not like the functions. Future research could identify the underlying factors that have caused the negative impact of these interactive functions.

Unfortunately, we were not able to identify interactive functions that contributed to the synchronicity dimension of perceived interactivity. Central to this dimension is the extent to which a website responds without delay or is perceived to respond immediately. It could be that this perception is not facilitated by interactive features but that it can only be affected by measuring the temporal delay between action and reaction (Johnson et al., 2006). Future research should therefore measure response time to see whether this variable is able to affect the synchronicity dimension of perceived interactivity.

Limitations and Future Research

Although the study improved our knowledge of interactivity, some limitations need to be noted. The first limitation is the relatively small sample size (content analysis: N = 65, survey: N = 715). This small sample size is caused by aggregating the data per website for the largest part of our analyses. The

small sample size reduced the chance to detect interactive functions that significantly affected perceived interactivity. Consequently we chose to use a probability value of $p < .10$. Future research could replicate and improve the current study by investigating more websites.

A second limitation of the study is related to the methodological approach of our study. Participants were asked to browse the websites in order to learn more about the brand and its products. Because they could freely browse the website, we do not know which interactive functions were seen or actually used by the participants. It might be, however, that an interactive function actually has to be used in order to contribute to interactivity perceptions (Liu & Shrum, 2002; Song & Zinkhan, 2008). Although we believe that the likelihood for a function to affect interactivity perceptions is higher when people actually make use of that function, we do not believe that interactive functions cannot affect interactivity perceptions when people do not use the functions (Liu & Shrum, 2009). As a result, we believed it was important not to force participants in our study to use the interactive functions. A main advantage of this approach is that it more closely resembles natural website browsing. Thus, the external validity of our approach is relatively high. An additional benefit of using voluntary exposure was that it provided us the opportunity to include many (i.e. 47) interactive functions in one study. When using forced exposure we should have designed numerous experimental studies. In the future, experimental research could verify the influence of the six functions that were found in the current study.

Another interesting avenue for future research would be the use of more precise measures of exposure to interactive functions. First, software that can track participants' browsing behaviour on a website can be used to acquire a more precise measure of exposure to interactive functions. Second, eye-tracking research would provide large opportunities to measure the visual attention that is paid to interactive functions. In these ways more precise measures of exposure can be acquired which can be related to survey data.

Given the weak relation between actual and perceived interactivity, future research should also try to determine other variables that affect interactivity perceptions. A study of Song and Zinkhan (2008) already showed that customers' tasks and situations affect interactivity perceptions. It would also be interesting to investigate the influence of brand image on interactivity perceptions. Given the fact that only top global brands were used in our study, it could be that all brands have somewhat superior brand images. These superior brand images could have influenced interactivity perceptions and thereby could have caused the weak relation between interactive functions and

interactivity perceptions. Future research could therefore replicate this study using a random sample of brands.

Now that we know which interactive functions contribute to interactivity perceptions, future research could also go one step further by determining whether the interactive functions also contribute to advertising effectiveness. It would not only be interesting to study the positive effects of interactivity, as is done already (e.g., Sicilia et al., 2005; Sohn, Ci, & Lee, 2007; Coyle & Thorson, 2001; Liu & Shrum, 2009), it would also be valuable to examine potential detrimental effects of interactivity. Although some researchers already argued that interactivity is not always "a good thing" (Liu & Shrum, 2002), to our knowledge only some studies examined negative effects of interactivity (Bezjian-Avery, et al., 1998; Liu & Shrum, 2009). No studies have investigated negative effects of website interactivity on the amount confusion or irritation experienced by users.

In conclusion, our research has improved our scientific knowledge about the relationship between actual and perceived interactivity. The study contributes to the literature on measuring and manipulating interactivity. Furthermore, marketers could use our results to choose website features which would enhance perceived website interactivity.

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