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Towards a Well-Balanced Quality Assessment of Electronic Media

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INTRODUCTION

In the communication process between organizations and their external stakeholders, our society makes more and more use of electronic media.

This article will examine in which way the quality of electronic media, especially websites of organizations, can be measured. First, we shall go briefly into the theoretical components involved in the assessment of the quality of websites. On the one hand, the perspective of organizations is an important issue. In using their websites, organizations have specific objectives, such as supplying information, offering services/products and the making of payments. On the other hand, the behaviour of the visitor, as the stakeholder of the organization, is an important factor as well.

Further, we shall give an overview of the subjects and characteristics which are also relevant in the assessment of websites. A website is a medium in which various highly diverse characteristics are joined together. Here, the quality standards for information technology come together with those in the field of design and content.

Next, we shall discuss a case-study in which six evaluation methods are applied to the websites of 30 different organizations. The results of this research provide us with a number of insights regarding the evaluation of websites. In our discussion, the different approaches to the checklists will be dealt with. With the aid of these insights, a model will be introduced to compensate for possible shortcomings of the investigated evaluation methods.

THEORETICAL BACKGROUND

As its owner, an organization is the initiator of the website. For an organization it is important that the internet, and, more specifically, its own website, contributes to an efficient business management (Davenport, 2000). Some websites are subject to a complicating property which is hardly common in traditional media: interactivity. Furthermore, the influence of the internet goes further than the influence of the traditional media: an increasing number of internet applications are becoming an integral part of the business process. Helpdesk services, requests for offers, order processing and payments can be dealt with through the internet. When referring to the goal-orientation of a website, we not only mean the marketing and communication of an organization, but also the front office of, for example, the sales department as well as the accounts department (Tiggelaar, 2001). To what extent the objectives are achieved is often enigmatic, however, Boersma et al. (1999) point out that there is a clear link between the quality of a website and how well-known it is.

The following continua may be useful in determining whether the internet can make an effective contribution to the objectives of the organization:

With regard to product, service or process:

Digitalizable	Undigitalizable
Formalizable/ Standardizable	Unformalizable/ Unstandardizable
Personal relation is not important	Personal relation is important

With regard to product or service:

Transportable ——— Not transportable

With regard to product:

Seeing and touching it is not important (low touch) —— Seeing and touching is important (high touch)

The more a product, service or process yields to the left, the more the Internet will be a suitable medium (Boonstra 2000, p. 3).

By analysing the afore mentioned criteria, a number of factors can be indicated why the website, put on the internet, might be ineffective. Therefore, for an organization it is important to examine to what extent the primary process, the nature of the products and services as well as the desires and goals of the customers or stakeholders fit in with the possibilities that a website can offer. Based on these considerations, an organization may choose a website which corresponds to its characteristics.

Molenaar (1999) points out that the objectives of a website can be divided into the following types:

1. Information; the organization supplies its information by way of the internet.
2. Interaction; the organization and the customer communicate by way of the internet.
3. Transaction; the organization offers the customer material goods, services and/or digital products by way of the website.
4. Integration aimed at the cooperation between organizations within the value chain.

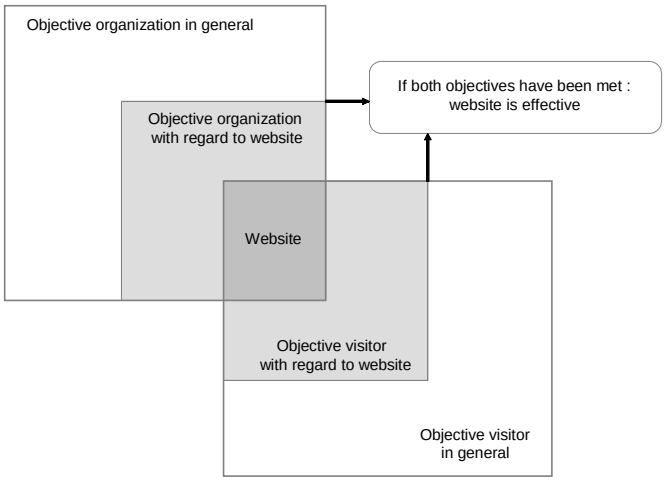
In combination with the earlier mentioned continua of Boonstra (2000), the above mentioned typification can give an indication regarding which functional characteristics of a website are suitable for an organization, while taking into account its objectives, primary process and products or services.

Not every organization operates on the same market or for the same target group; for years now, marketing studies have been conducting research in the field of target groups and their behaviour. Due to the use of this knowledge, websites have increasingly been aimed at a specific target group. (Tiggelaar, 2001). Sometimes, a website of a particular organization simultaneously serves more target groups, for example, customers and share holders.

The yield of an on-line strategy is for a large part determined by customer perception (Hofman, Novak and Yung, 1999): the perception of the target group during a visit to the website. An optimal customer perception will lead to a maximum conversion of the target group (visitors register, return to the website or make use of services).

So, apart from the organization's objectives and characteristics, the behaviour of the visitor plays a crucial role in the determining of quality aspects (Marsman, 2002). Each visitor has one or more goals. These goals could be seeking information, purchasing products, gather-

Figure 1: A model for the assessment of websites (Boersma et al, 2000)



ing information about a purchase, playing games, etc. Even a seemingly purposeless search at random can be an aim in itself: for example, a pleasant passing of the time or satisfying curiosity. The visitor will only then remain at the site, if his/her objective, or part of it, has been met.

Figure 1 shows that, in the ideal situation, a website is qualitatively good if it meets both the objective of the organization offering the website and the objective of the visitor. These objectives are not the same for every website and that is why the quality criteria for each website differ in weight. In this sense, the quality concept refers to different aspects and variables.

Thus, the adjustment between content, design and technology is an important issue in the realization of the objectives (Boersma et al., 1999). The evaluation methods which we have studied also include these three components. Before further describing the evaluation methods, we shall first go further into these three components.

Content

The first of the three components is "content". Only when the message is fixed the content (text) and the presentation plus the style can be determined. For example, the message of an e-commerce site will have to result in the visitors making purchases. The site will have to emanate confidence, the text will have to be clear with respect to the rights of the customer, and the use of the language will have to fit in with the target group. The design of the site should support that same message (that is, it should not be poorly organized or experimental), and, moreover, it should correspond to the database of goods on which this website is presumably based. Also, the technology is already partly determined, because both a database and possible payment options are probably part of the website. So, all these aspects are a direct consequence for the content of the message.

Design

A good design determines the degree of attractiveness of the website. However, it also facilitates the navigation on the site. In the first generation of sites, practically all links were simple underlined hypertext links. In the websites of today, the navigation sometimes lacks transparency. Beautiful, adventurous designs have often pushed aside internet-surfing based on logic and intuition (Bosma & Vellinga, 2000).

On the other hand, it is interesting to see how designers, by means of innovative experiments, are constantly changing the "rules" on the internet. Therefore, it is not only developments in the technological field which are accountable for the progress on the internet. Design is also habituation. If the design of a website were to change, users would become disoriented. There is a chance that, in a later stage, people might get used to the new design again, but it is also possible that they will massively turn their backs on the site.

Technology

To be approved of, a website does not have to use the latest technology. However, it does have to work flawlessly. Faulty displays and stagnating pop-up menus must be avoided. Further, on different platforms and in different browsers, the site has to work properly. A website, using technology which is too heavy or too modern, reduces target group size at the site, since not everyone has broadband connection at his disposal, or the latest software, browsers or plug-ins. Yet with a clear assumption of these means at the disposal of the target group, it would be natural to make use of highly up-to-date means in the field of technology.

Above, a number of aspects have been discussed which are of importance in the assessment of websites. Focus points are the organization, the visitor, and the website. Starting from these focus points, we have looked for available methods to evaluate websites. In doing so, we have made use of the first impressions of our respondents as well as structured assessment methods, which, according to the authors, result in reliable evaluations of different kinds of websites.

DESCRIPTION RESEARCH PROCESS

The research process consisted of two stages. During the first stage of the research, 90 respondents were asked to give a general impression of a website. The group respondents consisted out of a selected group of master students Business Administration. The websites of 30 different organizations have been studied. Among these organizations, there were 14 government organizations and 16 private enterprises. Six of the websites of government organizations offered the opportunity of digital registration and two of the websites of the enterprises sold products online. It has been our aim to make an equal division of the earlier mentioned subdivision of Molenaar (1999): Information, Interaction, Transaction, and Integration.

The respondents were asked with which objective, in their opinion, the web site had been made, and whether they thought this objective had been met with respect to its construction and functionalities. So the respondents mainly based their opinions on their own first impressions, and had not yet been informed by us about the theoretical backgrounds with regard to the assessment of the websites. Further, the respondents were asked about what they thought would be the objective of a visitor of the web site in question. In this first analysis, the respondents were also asked to indicate whether the website mainly consisted of factual business-oriented information or mainly of advertisements. The way in which information is presented already enables us to gain some first knowledge concerning our subject of research.

In the second stage of our research, the same websites were assessed by the same respondents with the aid of a checklist. In this study, we have selected the following six checklists.

1. Checklist for a Business/Marketing Web Page (Alexander & Tate, 1996)
2. Web Page Evaluation Worksheet (Everhart, 1996)
3. Site Evaluation From (JITT, 1996)
4. Ten C's For Evaluating Internet Sources (McIntyre Library, 2003)
5. Quality Guideline Dutch Government (Department of the Interior, 2002)
6. Usability Index Checklist for Web Sites (Keevil and Associates, 1998)

The different checklists have been applied to the same websites which were used in the broad analysis. This enabled us to compare the results, since different checklists were applied to one particular website. Using different assessment methods for one particular website has resulted in almost all cases in scores which are highly divergent.

The assessment of one particular website showed a negative outcome for the broad analysis in the first stage, while the outcomes of the applied checklists were positive (Department of Social Affairs). The use of different checklists for the same website regularly resulted in contradictory outcomes. Applying checklists 5 and 6 to the website of the municipality of Hoogeveen resulted in the following picture:

The website has scored positively in the field of technology, but negatively with respect to content and design (checklist 6). When we used checklist 5, however, the evaluation was positive. Nevertheless, the respondents who had worked with checklist 5 did not agree with this assessment, since, in their opinion, it did not sufficiently cover the aspects which they thought were important. This is striking, as this checklist is specifically aimed at government websites. Thus, applying different checklists to the same website produces divergent results. Only websites with obvious defects have produced more unambiguous outcomes. This made it difficult for us to make a well-founded assertion about the quality of a website, since one checklist may result in a positive assessment and another may lead to a negative outcome.

There are, therefore, large differences between the results of the broad analysis and the applied checklists. In addition, when applied to the same website, the different checklists mutually result in different outcomes. It appears that the checklists differ from each other to a considerable degree, and are, therefore, not generally applicable. It is rather the combination of a broad analysis based on a first impression together with applying different checklists, which offers us a more balanced view of the quality of a website.

This is why the question arises to what extent the scores of the checklists reliably reflect the quality of websites. To obtain a clearer view of why these differences in scores exist, we will study the six checklists in more detail and compare them.

COMPARISON OF THE APPLIED CHECKLISTS

We have studied the six checklists for websites in more detail and compared them. In doing so, we have pointed at the following aspects of the organization's objectives, the organization's target group, and the visitor's objective. A number of checklists take the organization's objective into account. The first checklist specifically aims at testing a business/marketing website and the fifth is specifically meant for testing government websites. The sixth checklist does indicate the organization's objective, it is, however, not included in the assessment. The remaining checklists are not further specified with reference to the organization's objectives. Only the second checklist differentiates between the organization's target groups. With the exception of the second checklist, the checklists, generally, do not distinguish between the visitor's targets either. This is all the more notable because of the fact that according to the theory the visitor plays a crucial role in determining quality aspects (Marsman, Boersma and Jorna, 2003).

In table 1, the differences in focus points between the checklists will be presented and further worked out.

Table 1 indicates which criteria the checklists are using in determining a score. We have categorized the criteria into the themes design, content, and technology.

As the table shows, no checklist covers all aspects. For example, in the first and fourth checklist, design is not at all dealt with. And the fourth and third checklists, for example, differ considerably with regard to focus. In the fourth checklist, the focus on content is 71.5% and that on technology 28.6%. The third checklist especially focuses on design (50%) and content (44.5%), while technology is not covered at all.

Comparing the different assessment methods, it is striking to see that they apply different ratings for the aspects content, design, and technology. Furthermore, the checklists differ in the extent to which they stress the importance of the different criteria which make these characteristics measurable. It is unclear why one checklist puts the emphasis on certain assessment criteria, while another focuses on completely different criteria. In all cases, the theoretical starting-points are implicit, and, often, there has no explanatory text been added to the checklist. When applying different checklists to one particular website, this may result in different outcomes. While, ideally, the assessment of one particular website by means of checklists should, when repeated, result in identical outcomes. Therefore, as table 1 shows, no checklist exists which is sufficiently apt to give an optimum evaluation of a website, for there are always certain aspects which are not being analysed. So, the checklists for quality assessment of websites which we have studied are not suitable for general use. In our opinion, this is a shortcoming which undermines the valid ness and reliability of the assessment results. That is why in our model, we will include certain points of departure so that the assessment criteria can be selected in a well-balanced way, while taking into account the organization's objective, its target group, and the visitor's objective.

Table 1: comparison of different checklists (in %)

Number Questionnaire / Theme		1	2	3	4	5	6
Design	Supporting User Tasks						12.8
	Navigation, finding the information		9.5	22.2		20	25.2
	Aesthetically Appealing		19	27.8		20	
	Sub-total design	***0***	***28.5***	***50***	***0***	***40***	***38***
Content	Information Richness		35.7	27.8	25.7	48	17.7
	Currency	26.3	19		2.9	4	8.2
	Credible / Accurate	68.4	4.8	16.7	42.9		29.3
	Sub-total content	***94.7***	***59.5***	***44.5***	***71.5***	***52***	***55.2***
Technology	Accessibility		9.5		25.7	4	6.8
	Retrievability via search engine		2.4				
	Reproduction by different resolutions	5.3		5.5	2.9	4	
	Sub-total technology	***5.3***	***12***	***5.5***	***28.6***	***8***	***6.8***
Total number of criteria		19	42	18	35	25	147
Questionnaire differentiates between objectives organization		V				V	V
Questionnaire differentiates between target groups organization			V				
Questionnaire differentiates between objectives visitor			V				

WELL-BALANCED ASSESSMENT

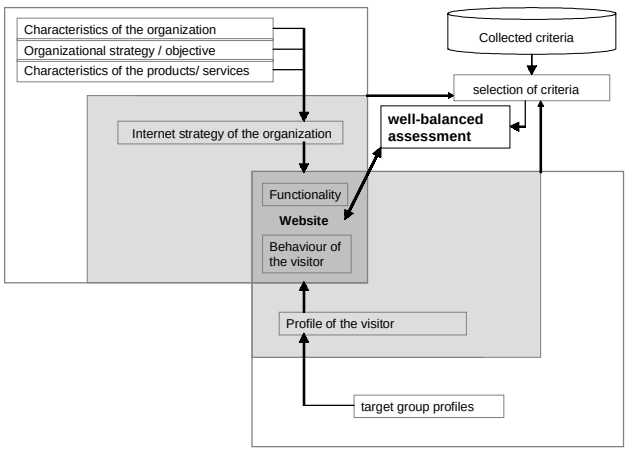
In the ideal situation, a website is assessed on the basis of criteria which are tailored to a specific target group. In addition, and this is important with regard to the development of our model, these checklists make use of objective as well as subjective criteria. This is only possible, if such a checklist is used by one specific target group to assess one or more specific types of websites.

Due to the different objectives organizations have, the different target groups they serve and the different objectives users may have, it is virtually impossible to develop a universal checklist. Whiz kids in the age-group of 15 – 21 years have, for example, quite different ideas about a "beautiful" design than the early pensioner who breaks down the digital barriers for the first time. On the other hand, the downloading times of web pages will, assuming that they have the same types of modems and computers at their disposal, be almost similar.

In Figure 2, a model is depicted in which the elements of figure 1 as well as the insights acquired from the comparative research into checklists have been worked out.

The research model depicted in figure 2 shows that the researcher, on the basis of the selected target groups, the objectives of the target groups and those of the organization, will benefit from establishing his own criteria with which the achieving of these objectives can be measured.

Figure 2: Model of a well-balanced assessment of websites



Therefore, we have included a number of steps in the assessment method. If we want to establish a method which can be broadly applied, we will, in the first place, have to collect a large number of criteria. Next, depending on the objective of the organization, the target groups and the objective of the visitor, a selection of criteria can be made which perfectly suits these elements. Part of the criteria which are established on the basis of this checklist is purely quantitive. This part does not reflect the opinion of the user or target group. It merely describes the characteristics of the website. Another part of the criteria registers the opinion of the visitors.

Now, in order to assess the quality of the website, the characteristics of the website will, as it were, be filtered (figure 2). In this way, the website will eventually be subjected to a well-balanced assessment, depending on the organization's characteristics, the target group(s) and the visitors' objectives.

To conclude

To be assessed as "good", a website has to comply with a number of written and unwritten rules. The unwritten rules are the hardest to deal with, for, often, they relate to taste, preference, and other subjective aspects. In determining these quality aspects, the visitor plays a crucial role. The visitor will only then remain at a site, if the objective, or a part of it, has been met. A site can be considered as qualitatively good, if it meets the website provider's objective as well as the visitor's objective. As we have seen, these are not the same for every site.

Our research has shown that the methods for quality assessment, which have been currently used, are not suitable for general use. On the basis of this conclusion, we have developed a model which takes into account the objectives of the visitor, the target groups, and the objective of the organization which provides the website. To achieve this, a large number of criteria have to be collected.

Depending on the specific objective of the visitor, the characteristics of the target groups and the objective of the organization, several criteria can be selected. On the basis of the earlier mentioned characteristics, the different criteria can now be linked to an assessment factor. On the basis of the selected criteria and assessment factors, a custom-made checklist can be made up. In doing so, we have, in fact, covered the whole spectrum. On the basis of profiles of target groups on the one hand, and objectives of the organization and the pursuit of efficiency on the other hand, an assessment of this kind can provide us with tailor-made advice regarding the characteristics of the website.

BIBLIOGRAPHY

Alexander, J. en M.Tate (1996) *Checklist for a Business/Marketing Web Page*, http://www2.widener.edu/Wolfgram-Memorial-Library/webevaluation/busmark.html

Boersma, S.K.Th., R.J.J.M. Jorna, Christiaan van der Hilst en Tjalling Pater (2000) *Toetsingsmodel websites*. Rijksuniversiteit Groningen, Groningen.

Boonstra, A (May 2000) 'De ontwikkeling van een internetstrategie. Naar een modelering van e-commercestrategieën' (Developing an internet strategy. Towards a modeling of e-commerce strategies), In: *Informatie*, pp. 36-45.

Bosma, E.S. en G. Vellinga (June 2000) Kwaliteit van websites. In: *Personal Computer Magazine*, pp.148-153.

Davenport, Thomas (2000), *Mastering Information Management*. Financial Times Prentice Hall, London.

Everhart, Nancy. (1996) *Web Page Evaluation Worksheet*, http://www.duke.edu/~de1/evaluate.html

JITT (1996) *Site Evaluation Form*, Oregon public education network, http://openc.k12.or.us/jitt/evalform.html

Keevil and Associates (1998) *Usability Index Checklist for Web Sites*, http://www3.sympatico.ca/bkeevil/sigdoc98/index.html

Marsman, H., S.K.Th. Boersma and R.J.J.M. Jorna (2003) 'Een model voor de kwaliteit van websites', In: *Bedrijfskunde, tijdschrift voor modern management*, Kluwer, jg. 75, nr. 2, pp. 71-77.

McIntyre Library (2003) *Ten C's For Evaluating Internet Sources*, http://www.uwec.edu/library/Guides/tencs.html

Molenaar, C. (1999) *Veranderingen door internet-Branches in de toekomst*, Alphen aan den Rijn: Samson.

Novak, T.P., D.L. Hoffman and Y.F. Yung. (2000) *Measuring the Customer Experience in Online Environments: A Structural Modeling Approach*, In: *Marketing Science*, Winter, 19(1), 22-24.

Ministerie van Binnenlandse Zaken (2002) *Kwaliteitsrichtlijn overheid*, http://www.advies.overheid.nl/monitor/2002/index.html

Metrixlab. (2002) *Customer Experience Management, Methodologie & technologie*, http://www.metrixlab.nl/site/uk/home.asp