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## TOWARDS A SYSTEMATIC EVALUATION OF WEB DESIGN

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### ABSTRACT

A good web design is a prerequisite for a successful business nowadays, when the most used way for the people to inform themselves is the Internet. Web design includes the optical composition, the structure and the user guidance of websites. The importance of each website leads to the question if there is a way to measure its usefulness. The aim of this paper is to suggest a methodology for the evaluation of web design. The desired outcome is to have an evaluation that is concentrated on a specific website and its target group.

*Keywords:* Web design, evaluation methodology, effective design, user guidance, target group, components of web design.

### INTRODUCTION

Nowadays almost every company or organization has its website. An excellent design of these is a key for a good representation of each business. Web design includes the optical composition, the structure and the user guidance of websites [1, p3]. However, it has many perspectives. Except the esthetics and the good concept, other perspectives of web design are the user friendliness and features connected with the operation alternatives [1, p.3].

The most information that can be in the form of text, picture, sounds or films/animations in Internet is located on websites. [5] The importance of internet presence cannot be neglected. Most of the people use the web almost every day in order to inform themselves about different themes. For every user of the website, it is important to find well-presented information that he looks for in a timely manner [3].

So the key question is: What does an excellent website look like and what means “excellent” in this context? To consider this, there are many sub-questions like: What is the optimal amount of pictures and how should they be positioned? What is the optimal amount of text, so that the reader can accept it in the best way? What is the proper navigation?

Effective design is a combination of experience, surprise and a feeling of comfort on the one side. On the other side, it is a good orientation, functionality and shopability [2, p.35]. For every owner of an internet page is important that his target group is satisfied [8]. The work of Hansjörg Zimmerman in the area of usability of offers on the Internet shows what can be the consequences of a bad created web page [8]. He describes the not visible navigation, the too long and not structured texts, the not good effect of the colors on the monitor and the not target group adapted website as typical mistakes during the creation of an internet page. Those lead to confusion of the user and do not motivate him to visit the site again [8]. This is proof for the importance of the orientation of web design in such a way so that the target group can be satisfied. However, how can be the customer’s satisfaction with a website measured? From that follows the scientific research question: Can web design be evaluated with the help of an algorithm or a systematic analysis?

### STATE OF THE ART OF WEB DESIGN

There are a lot of online tools for web design evaluation such as WDG HTML Validator, Websitegrader, Seitwert and much more. However, those examine only the technical perspective of the product. The design of a web page should be in every aspect to the target group adapted [3]. From that follows the difficulty about web design evaluation and this is exactly the dependency on the target group. Every nationality, age, job and gender group has its own preferences. Another point is that it should be paid attention to the function of the internet site: business card, E-Business, E-Commerce and so on.

As a motivation for the development of an evaluation methodology for web design serve the empirical results of M. Thielsch and R. Jaron about importance of esthetics for the perception of websites [4]. They divide the perception of websites in three main dimensions: contents, usability and esthetics.

Their survey about importance of these dimensions shows that contents are on the first place, than comes usability and on the last place is esthetics. This is what the user said; when he was directly asked about his opinion and had time to think about it. Other statements can be made as a result of laboratory experiments [4]. There is a strong correlation between each of the three dimensions and the first sight and the general impression of a website. The conclusion of this contribution is that it should be paid attention to all the dimensions of an internet site. It is important to provoke the interest at the beginning in order to have a better chance for more visits in the future. In this phase is esthetics a strong influence factor. After that in the next phase - repeated visit, have the usability and the contents an important role[4].

In general there are six components, in which the creation of a website can be divided [7, p.20]:

### **Orientation**

The user sees with the help of orientation elements in which area he is moving and which themes can be also chosen [6]. The point is to define the structure clearly and then to evaluate if it is effective or not.

### **Navigation**

The clear and effective navigation structure and information structure are one of the most important success factors for a website [6]. In this part is the movement on the webpage discussed.

### **Information**

Information is delivered to the user with the help of the contents on the internet site. It is important how the information is presented. When we talk about web design, the point is not the contents on itself, but the way how they are given to the user. The understanding is much more connected with the form and the structure of the text as with the text on itself. A reader-friendly text requires a good readable font on the monitor, a clear structure and short and concise sentences [6]. The pictures as a part of the website are also ordered in the component information. The reason is that pictures boost the meaning of the text. They can also make the understanding of the information easier. Thiessen divides the pictures in three categories [7, p.102]. Those with illustrative function are directly with the text connected and illustrate it. [7, p.102] The ones with structural function serve as an explanation of the structure of the website. [7, p.102] The last ones are with decorative function. [7, p.102] They are also almost always with the text connected, but they are not explaining the contents. They are there to boost it esthetically. In the most internet pages are all these three types to be found and no one of them should be neglected, because they are all part of the visual perception.

### **Screen-Layout**

Screen-layout includes the proper monitor presentation of the contents of one website and the design composition of all used elements. [6] Layout is important for the perception of a particular website. The way that the different elements are positioned and presented can make the user feel himself safe. [6] With the help of screen-layout, you can make your target group trust you. [6] And this is the best way to win customers. The colors are an important part of the screen-layout and the visual representation. Colors play a considerable role in people's perception [7, p.138] Interpretation of different color tones is influenced by culture and personality and that is the reason why people are not able to percept colors without emotion and neutral. [7, p.138] Because of that, they should be adjusted to the purpose of the website. For the colors concept cannot be made any general statement, because of the strong cultural influence. For this reason, colors should always be adapted to the target group.

### **Interaction**

Interaction elements make it for the user possible actively to participate. To every action of the user should a reaction from the system come. Typical dialog elements are navigation toolbars, searching functions, online forms and others. [6] The importance of this component is that the user becomes the feeling that he can control the process of usage and make it appropriate for himself.

### **Motivation**

One product is motivating, when it is to the target group adapted, intuitive usable and clearly constructed; it offers useful information and addresses the user in the proper way. [7, p.179] Moreover, make motivational elements the usage of the product easier and make it more effective. [7, p.179] Motivation can be associated with effectiveness and user friendliness. Another point is that this component of websites has the role to differentiate the product from the concurrence [7, p.179].

## **APPROACH**

Figure 1 gives an overview of the suggested approach in this paper. In the motivation was the problematic that should be solved with this approach revealed. It is the lack of systematic methodology for web design evaluation in such a way so that the result the opinion of the users corresponds. The purpose is in the end to have a feedback, which comes directly from the target group. The two general parts of the suggested approach is the creation of a survey and an analytical technique for the results. The way that this methodology can be evaluated is a discussion with experts in the area of web design. When the opinions of the test people and the experts are the same, then it can be said that this assessment methodology is a proper one. When there is not a strong difference between the two opinions and the experts can give a logical reason for this deviation, then the approach can also be accepted as successful. When there is a drastic deviation, then it does not automatically mean that the survey methodology is not good but that it should be redeveloped and carried out in another way.

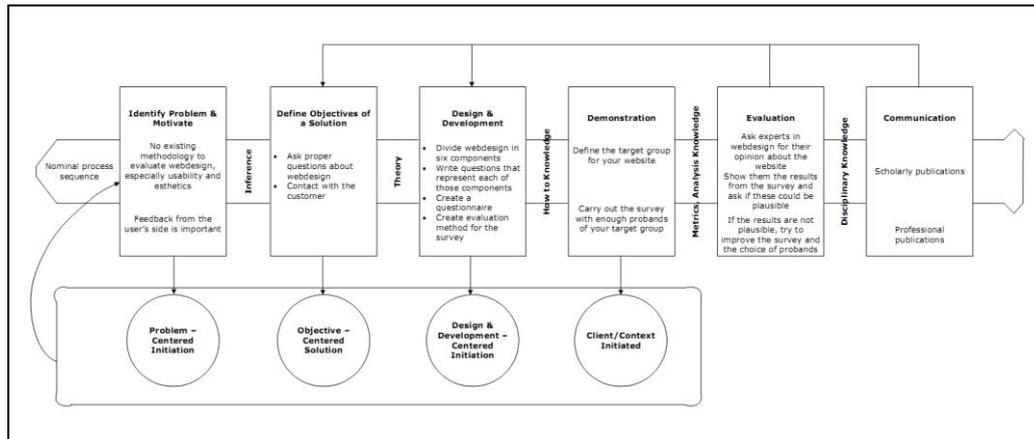


Figure 1. Research Approach

### SURVEY

The basis of the suggested approach is a quantitative research method. The idea is with the help of a survey to evaluate the different components.

The first step is the choice of test people. They should be such people that can be using the website with a big probability. Criteria that can describe the test people can, for example, be: age, gender, job/occupation, hobbies, nationality, income, etc. It should be made a detailed description of the target group that should use the internet site. The example, which is in this paper presented, is the website of a university in Germany. In this example the only important criteria in order the test people to be chosen is job/occupation - scientific employee, student or interested in studies.

The second step is the creation of the questions. They are based on the six components of web design and result from the theory about those. The ready questionnaire, which was used for the example and which is suggested as a sample, can be found in the appendix at the end. Those questions were asked every test person in the form of an online survey. There is a scale for every question as an answer opportunity. The questions are made in such a way so that a note can be given as an answer. (1 is for not good or not corresponding and 5 for good or corresponding by the particular website). The idea is at the end to have one general note for the whole website.

After the creation of the questionnaire comes the problem how much important are the different components. Is the role of the navigation with the same significance like the screen-layout etc.? When you take it for sure that all the components have the same importance, then you will have at the end a not objective note. About the weighting ratio of all the components can also not be made any general statements. Depending on the type of the website can the pictures be more important than the information. The way to find out the weighting ratio is to ask about every component how important it is for the user. These questions also have as an answer opportunity a scale (1 is not important and 10 is really important).

When all these steps are done and the results from the survey are there, then comes the time for the analysis.

### ANALYSIS OF THE RESULTS

The analysis is done by using Microsoft Excel. It is carried out in three general stages. The first step is to work on the results from the questions about the six components of web design. Therefore is the table number one in the appendix. First should all the evaluations be for each component summed. This number should then be written down in the column Sum and the respective row. In the next column - number of questions, should be the number of the asked questions to every component noted. The next thing to be done is to calculate the maximal possible sum of all the evaluations for every component. It is a multiplication of the number of questions that were asked, the number of test people and 5 (the best possible note). The column percentage corresponds the proportion of the sum of notes from the maximal possible evaluation. As last should be a note for every component calculated. It is the respective percentage that is already calculated form 5 (the highest note).

Table 1: Dimension Calculation

	Sum	Number of questions	Maximal possible sum	Percentage	Note
Orientation	1150	7	1925	59,74%	2,99
Navigation	664	4	1100	60,36%	3,02
Information	1043	5	1375	75,85%	3,79
Screen - Layout	1040	5	1375	75,64%	3,78

Interaction	762	4	1100	69,27%	3,46
Motivation	747	4	1100	67,91%	3,40

The second step concentrates on the weighting ratio of the different components of web design. First should be all the weighting numbers that were given for every component summed. After that should these altogether be summed. At the end is the proportion of the sum for each component from the general sum to be calculated. This number represents how should be a note of each component proportional taken for the end note. The result can be obtained from Table 2.

Table 2. Weight Calculation

	Sum	Weighting ratio
Orientation	500	0,19
Navigation	495	0,19
Information	493	0,19
Screen - Layout	389	0,15
Interaction	397	0,15
Motivation	390	0,15
	2664	

The last step is the calculation of the end note. The note for each component should be multiplied with the respective weighting proportion. The sum of these six multiplications is the general note for the website. The end note of the carried out survey in the university can be seen in Table 3.

Table 3. Final Calculation

Endnote	3,39
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### EVALUATION OF THE METHODIC

This last step has the purpose to prove if the suggested methodic is successful or not. The online survey was carried out in a German university and aimed to assess the official webpage of the university. The test people were invited with the help of different social student's networks. At the end were 67 interviews gathered. 12 of them were incomplete, and the other 55 were complete. For the analysis was paid attention only to the fully completed interviews.

Parallel with the survey were also personal conversations with web design experts conducted. The statements of these experts were that the website is good constructed, and there are no significant problems in the different components that should be necessarily corrected.

The worst problem of the survey was to convince enough people to take part in it. That is the reason for the small number of interviews. It is possible that due to that the represented assessment a little deviation from the reality has. The end note that was calculated is 3,39, and it is over the average of 2,5. The notes for the different components mean that the orientation and the navigation elements can be improved. However, the notes of all components are over the average. This means that there are not so important parts in the web-design that should be changed. The conclusion is that there is no difference between the opinion of the experts and the test people.

The conclusion on the basis of this survey is that the suggested methodic is proper. However, in order to be hundred percent safe with this conclusion the survey should be done again with a bigger number of test people.

### OUTLOOK AND SUMMARY

It was a methodology suggested to evaluate web-design so that the results come directly from the target group. Web design was divided into six components and for each of those were created questions. These build together a survey, which should be conducted with the needed test people. For the analysis of the results, a methodic was developed. As an evaluation of the approach, was the suggested survey at one German university carried out. From this evaluation result the following advantages, disadvantages and still open questions.

The survey in general is a methodic that is often used. It is also proper for the assessment of web-design. Its advantage in comparison to technical tests and consultation with experts is the feedback that comes directly from the target group. This method also has like every other its disadvantages. Those can be formulated as open questions for the future.

The optimal number of test people can be calculated with the help of statistical methods. However, what is the best way to find such people and motivate them to take part in the survey. The presented analysis of the results can be used to calculate general note and note of the components. However, how can you be sure that these numbers are plausible and that every participant has done the survey carefully? Can this problem be solved with the usage of some specific questions or is there another technique

that motivates the test people to fill the questionnaire attentively?

These questions are part of the area: Methodic to create and carry out a survey properly. The answers to those later will be an improvement for the now suggested approach.

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