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TESTING THE USABILITY OF COMPANY WEBSITES

Summary: A website is an important tool in developing company image and company identity; a new way to secure company share in e-commerce. As a unique ‘spot’ in a virtual space of an enterprise, it often decides on economic effectiveness of e-business and customer relations. A range of modern methods are presented, used in the evaluation of website utility and content. The tests allow for improving the functional and operational values of company websites in all phases of webpage lifespan – from initial design guidelines to everyday operation.

Key words: company websites, website usability, website life span.

1. Introduction

Internet website is an important tool for developing the image and identity of a modern company, a new way to secure company share in e-commerce. As a unique ‘spot’ in a virtual space of the enterprise, it often decides on economic effectiveness of e-business and customer relations. In the face of rapidly growing competition, also on e-business level, proper design, layout, implementation and operation of a company website is of particular significance. Websites that feature content adjusted for the needs and expectations of customers, with proper functionality and top efficiency, will attract customers (both existing and potential) by offering them convenient communication with the company, sharing knowledge and information, providing an efficient platform for electronic transactions, contact and post-sale services, offering participation in virtual communities, and so on. A company website should also, and above all, induce positive emotions, so that the customer can enjoy this form of contact and take interest in revisiting the site. As demonstrated in many research studies, bad design, inadequate functionality or low usability of a company website may negatively affect the overall image of the company in real world [IMAW06; KALB08; NILO07]. In order to attain and maintain proper (top level) usability, the company website must be subject to sustained monitoring in terms of website utility value. Many instruments can be used to that effect, among them the tools for testing website usability. This paper discusses some of the modern methods for conducting such tests.

Testing the usability of company websites may be done at all the fundamental stages of website life span: from initial guidelines, through design, implementation and test run, up to everyday operation, adjustments and further website development. Some of the methods discussed herein are better suited for initial planning and design phase, while others can be used to greater effect during website operation and development.

2. Functionality vs. usability of Internet websites

The terms ‘functionality’ and ‘usability’ are often used synonymously in both professional literature and everyday practice. However, the most recent trend among IT specialists is to narrow the term ‘functionality’ to represent the number of basic and optional functions available as well as substance (software) used. The functionality feature in this sense is rather quantitative in nature, as it is fairly easy to procure a list of such functions in respect to the website main subject or content. On the other hand, usability can be perceived as more of a qualitative feature – it is employed to assess (measure) the convenience of website use in terms of ease and availability of particular functions as well as properties of ‘behind the scene’ software used in website operation. Professional literature [NIEL03; NILO07; BIOD08] presents the following fundamental constituents of usability (after J. Nielsen):

- *learnability*, understood as intuitive (low learning curve) process of learning the basic functions of the website during initial contact,
- *memorability*, ease in identifying (remembering) various ways of using the website, as a factor that greatly improves user proficiency in using the website,
- *efficiency*, referring to (user) productivity in using the website,
- *errors*, in terms of the number of errors made by the user in website navigation, clarity of error messages generated by software, ease in solving the problems encountered (from user’s perspective),
- *satisfaction*, subjective sense of user satisfaction from website use.

As demonstrated in a study conducted on a representative sample of more than 1800 Internet users [IMAW06], qualitative functionality of a website is associated with the following: frequent updates, website content, available functions, additional information. Polish respondents report, among others, the following valued features (in the order of response frequency): loading times, ease of navigation, initial impressions (design, content layout).

3. Selected methods of testing company website usability

In practice, testing website usability at design and everyday operation phases involves a range of methods: direct contact with users, group sessions, eyetracking, click-tracking (mousetracking), pre-project test, control checklists, parameterized checklists, navigation stress tests, expert evaluation, and others (see: [NIEL03; NILO07; BIOD08]). Those methods are briefly characterized below.

Direct user contact

This method can be used both at design and development stage and at the stage of website implementation and operation. At the design stage, users are presented with a website prototype and asked to perform certain tasks (operations). Tests are monitored by design personnel either directly or via webcams. Completed tests are then discussed with the users in order to identify a list of problems and defects to be addressed before the final version of the website comes online. In case of current operation tests, users are asked to comment on website looks, functionality, information layout, navigation and general website operation. The resulting opinions are then used to improve website usability.

Group sessions

In group session testing, a group of users (5-8 persons) express their opinions on existing website solutions or intended design changes. Users often come out with their own ideas for improvement. Opinions, after verification, serve as a basis for introducing necessary design changes. The weak point of this approach is that the narrow sample of users in a testing group does not represent the opinions of wide population of Internet users. Moreover, testers must be aware of the fact that ‘covert’ leaders (i.e. strong personality types) may sometimes influence or dominate the opinions of others. The strong point of this method is the relative facility of gathering user opinions.

Eyetracking

Eyetracking is one of the most technologically advanced methods of testing user website interaction. In a testing laboratory, users are equipped with special eyewear devices that track eye movement during website navigation. Results are presented in the form of ‘thermal maps’ of all web pages visited. Thermal maps allow to identify focus elements of the page, direction and path of eye movement, or elements that are skipped or passed over. This method can help redesign page layout by reordering the navigation elements and their localization, to better suit their relative importance. An example of eye-tracking map is shown on fig. 1.

Clicktraking (mousetracking)

The idea behind this method is similar to eyetracking. In mousetracking, special background software process is used to record the on-screen movement and clicks of the mouse pointer during website navigation. The resulting ‘thermal map’, analogous to the one produced by eye-tracking devices, represents the areas of pointer focus and website click-paths. The most important shortcoming of this method lies in the fact that the user does not necessarily mouse-hover over the areas that draw his/her interest on the page. On the other hand, this method may be employed in every setting, tracking mouse pointer movement for each and every visitor, even on the most frequently visited websites, yielding effective results for the whole user population.

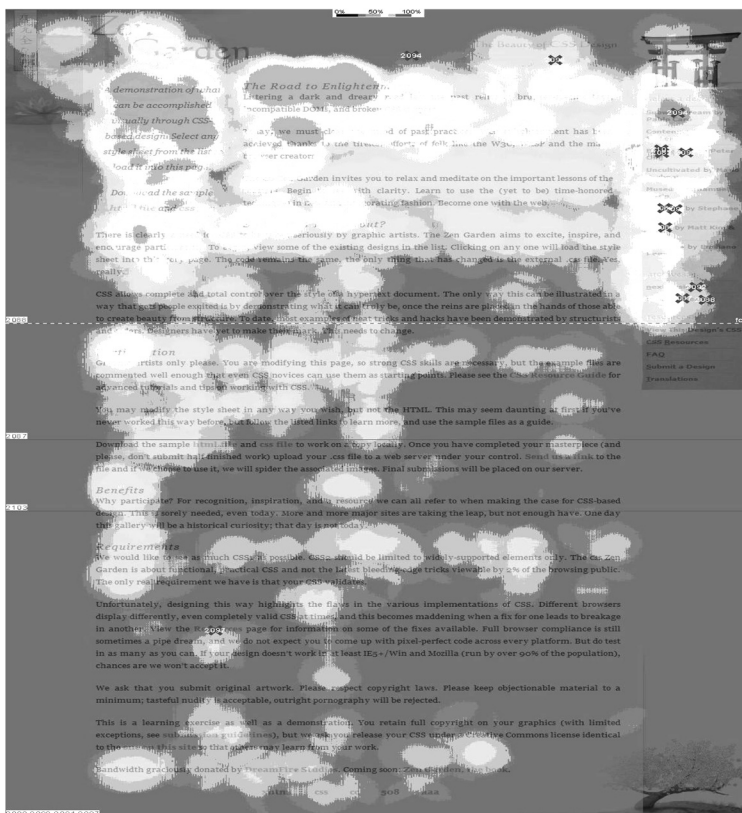


Fig. 1. An example of a ‘thermal map’ generated during an eyetracking session

Source: [EYET08].

Pre-project test

This method is used in the phase of website design, with the main purpose of improving website and web page navigation. A group of users is presented with a software application that allows them to freely reposition, sort and categorize all elements of the website. In this method, two approaches are used. The first is based on a predefined list of elements (closed set), the second allows users to come forth with their own ideas. For reliable results, the group of (potential) users should be fairly large and representative. The application generates statistical reports in relation to constituent elements and their user-suggested locations. In essence, this method produces results similar to the maps generated by aforementioned tracking methods. Test results are presented in the form of an ‘image’, a preliminary layout representing user preferences. This testing method may also be done in an ‘analog’ fashion, i.e. putting website element names on pieces of paper to be then rearranged on a table or a magnetic board.

Control checklist

This method is used for the usability evaluation of existing websites. Users are presented with a list of *a priori* evaluation criteria and asked to pass their opinion to each, using simple answers of ‘yes’, ‘no’ or ‘I don’t know’. By assigning numerical values to user responses, testers calculate statistical reports relating to importance and relevance of each criterion. The method is fairly straightforward from users’ perspective, as it does not require them to contemplate the validity of selected criteria. However, there is a certain error margin involved in this approach, since the checklist may lack some of the problems and features important for the user and, consequently, for the designers. The most exhaustive checklists may include well above a hundred evaluation criteria [NILO08]. This type of research may be carried out online on a large population of website users, which makes it a valuable tool for testing purposes. Below is an example of a control checklist (quoted after [BIOD08, pp. 45-46]):

1. Website reading:

- navigation elements are easy to identify,
- each page is clearly marked in the website structure,
- navigation is predictable and each page features identical navigation tools.

2. Navigation:

- all sections are directly accessible from homepage,
- alternative methods of navigation are provided,
- navigation is consistent throughout the website,
- homepage can be accessed directly from every page,
- main navigation elements are present on every page,
- essential information is located higher in the website structure, less important information is presented on lower levels of website structure,
- information presented in a given section is consistent in substance,
- each page provides links to less substantial information resources (not only to homepage).

3. Labelling:

- links are marked with proper, mutually exclusive labels,
- language used is clear and comprehensible,
- navigation is consistent,
- link labels provide clear information on linked target,
- subtitles are linked to labels.

4. Visual appeal:

- navigation options are noticeable,
- navigation elements are legible, functional and intuitive,
- navigation structure is clear on each page,

- content is presented with proper white space,
- colour coding is used to identify navigation structure.

5. Browser integration:

- all browser functions are operational, including the ‘go back one page’ function,
- page address name corresponds with page content,
- URL addresses correspond with website structure,
- all links are valid and operable.

Parameterized checklist

This method is a variant of the above. The difference is that in parameterized checklist method, users assign ranks (e.g. 1-3) to specific usability features of the website under scrutiny, and then provide assessment (e.g. in the range of 1 to 10) of usability value to each feature’s elements using a predefined, detailed checklist. This approach allows to avoid subjective, *a priori* ranks and usability values assigned by designers (or website administrators). As a result, the responses are more representative in terms of user needs and expectations related to the usability of the website under study. This method was used to good effect in [IMAW06]. One interesting observation from this research study is that websites of IT-sector enterprises (i.e. prepared by skilled and experienced design teams) tend to be on par with those used in other companies (i.e. authored by less-experienced teams). This leads to the conclusion that professional webmasters are not always well-equipped to cope with proper definition of objective usability principles and features in design and practical application.

Navigation stress test

This method is a useful tool for testing website navigation. Black-and-white printouts of all pages are prepared. Users are then presented with a list of simple questions regarding website navigation and asked to mark their responses on printouts using special symbols. Questions relate to such issues as the name and content of the website, distribution of content into sections, navigation (hierarchy up, hierarchy down, homepage), links layout, and so on. It is worth noting that this method postulates preference for users that are neither familiar with the original website nor interested in using it on regular basis – such an approach offers unbiased, objective results. Nonetheless, a research sample should include users that are fairly experienced and skilled in Internet use.

Expert evaluation

This method, as the name suggests, is based on subjective assessment of an expert in the field¹. A skilled professional, drawing from own experience and skill in web de-

¹ This method of website usability testing is used to good effect by W. Chmielarz, (see e.g. [CHMI04; CHMI08]).

sign and navigation, prepares heuristics to be used in evaluation of the webpage under scrutiny, employing a predefined marking scale. Examples of such heuristics² include: coherence and accord with standards (of typical websites in operation), system monitoring and reporting (supervising user operations), use of ‘standard’ terms (navigation, operation, functions), control and facility of use (e.g. undo in online forms), adaptation to user skill level, error reporting and support, help system, cleanliness and simplicity of design. The principal rule in expert evaluation is that the website under scrutiny should be as close to website ‘standards’ as possible, this making it accessible to an ‘average’ user.

4. Conclusions

As reported in some research studies (e.g. [IMAW06]), an average of 15% of websites in operations are considered by Internet users as well-designed, both in terms of functionality and usability. The obvious conclusion is that the remaining 85% of websites require a certain degree of updating and redesigning. Testing the usability of websites should be carried out on each stage of website lifespan – from initial design guidelines to everyday operation and development. Such tests may then be used to establish strong and weak points of the company website, its accord with commonly accepted ‘standards of use’ as well as new trends and directions for further development. As such, tests of website usability may prove to be an important tool for reinforcing company position in the competitive e-business environment.

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² See [BIOD08].

TESTOWANIE UŻYTECZNOŚCI WITRYN INTERNETOWYCH

Streszczenie: Witryny internetowe są istotnym narzędziem kreowania tożsamości i wizerunku współczesnego przedsiębiorstwa, jego nowym środkiem udziału na e-ryнку. Są „miejscem” w wirtualnej przestrzeni, niekiedy rozstrzygającym o efektywności przedsięwzięć e-biznesowych firmy, o jej kontakcie z klientami. W artykule zaprezentowano szereg współczesnych metod stosowanych w ocenie wartości użytkowej witryn przedsiębiorstw. Testy te służą doskonaleniu wartości funkcjonalnej i użytkowej we wszystkich fazach realizacji witryn: od założeń projektowych do fazy bieżącej ich eksploatacji.