# Heuristic Evaluation to Diagnose Usability Problems on Book Search and Buying Procedures at Online Bookstores

Adriano Bernardo Renzi[1], Sydney Freitas[2]

Rua Alfredo Chaves, 6/202, Rio de Janeiro, RJ, Brazil, 22260-160; Rua Barão de Icaraí, 29/903 Rio de Janeiro - RJ cep 22250 - 110, Brasil

[1] adrianorenzi@terra.com.br, [2] sydneyfreitas@terra.com.br

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## 1.    Context

A Newspaper consumer's rights article entitled "websites: a complicated usage" points some of the uppermost problems and consumers' frustrations during online shopping. Among the problems cited, (1) insufficient information to help consumers understand an specific service or product, (2) lack of priority to attend consumers' needs and expectations, (3) inefficient search tools that deliver irrelevant or invalid results, (4) too many link options that overwhelm users with visual information and (5) not enough help or feedback during online buying procedure, are often pointed out on cientific articles related to usability, user centered design and e-commerce.  (2006, p.314).

According to researchers (Banati 2006, Bedi, Grover, Nielsen 2007, Abras 2004, Preece), usability tests can be used during different stages of websites development. Some techniques can identify users' expectations and help bring the project to the closest possible of users' needs, desires and mental model. This article presents the planning and application of heuristic evaluation on three online bookstores (Travessa, Siciliano and Nobel) with the help of five usability specialists. The evaluation presented here is part of the dissertation *usability on books search and buying procedures at online bookstores* (Renzi 2010) research.

## 2.    Method

According to Nielsen and Molich (1990), heuristic evaluation is a testing technique that allows researchers to find usability problems in systems with interface interaction, using small amount of time and low budged resources. The technique consists of usability specialists evaluating a system based on heurístic usability

principles. According to the authors, only one evaluator is not enough to point out all problems in a system. Through out several testings, Nielsen and Molich verified that different specialists can bring different views of the system and point different usability problems. It is recommended the use of 3 to 5 specialists. More evaluators won't bring more relevant information.

The 10 heuristics principles commonly used in the heuristic evaluation are:
(1)Visibility of system status;
(2) Match between system and the real world;
(3) User control and freedom;
(4) Consistency and standards;
(5) Aesthetic and minimalist design;
(6) Error prevention;
(7) Help users recognize;
(8) Recognition rather than recall;
(9) Flexibility and efficiency of use;
(10) Help and documentation.

Considering previous results from think-aloud protocol and priority matrix, some changes needed to be applied on the heuristics principles to better fulfill the objectives of the research. For example, the heuristics 2 and 9 had been changed to (2) websites relation to users' cultural conventions and brick and mortar bookstores; (9) Flexibility and efficiency to find obscure and specific books. The $10^{th}$ heuristic was also substituted by 3 more heuristics in order to objectively analyse users' expectations on finding and validating books of specifics niche and the possibility of a second book purchase: (10) clear and confirmative information on books of specific niche; (11) clear information regarding delivery, payment, reemburst information; (12) efficiency and consistency of automatic recommendation system.

Traditionally, the technique is applied in 2 steps: (1) contact individually the specialists to explain the objectives of the research, the heuristics, the objects of evaluation and suggested tasks. Each specialist evaluates and points out the heuristic errors in an individual report; (2) all problems are compiled in one document and the specialists have to grade the severity of the problems from 0 (not a usability problem) to 4 (a critical usability problem). But due to the specialists tight schedules to participate in the evaluation, an alternative approach of individual face to face evaluation has been chosen in order to better suit their tight schedules and bring participation with no distortion or hurry. The technique has been applied with the help of an evaluating marking sheet, to facilitate faster marking and notifications, and a voice recorder. Each test was executed at a location that better suited each evaluator. The duration of the sections lasted between 30 minutes to 3 hours.

## 3. Results

The specialists identified 146 usability problems during the heuristic evaluation, in which 47 problems were related to Travessa bookstore, 52 problems were from

Siciliano bookstore and 47 related to Nobel bookstore. Regarding the severity scale, 39 errors were considered critical problems, 77 were pointed as big usability problems, 25 small problems and only 6 were pointed as aesthetical problems.

Automatic recommendations based on author (Travessa) and mistaken relation of books' subjects (Nobel), considered critical problems, diminishing the possibility of finding new related and obscure books. Lack of error prevention (like mistyping) and mistaken results from search system (Siciliano) was also pointed out as reasons for users to give up. Critical lack of error prevention on filling zipcode and important information in small font was also pointed out as a deal breaker on the purchasing process at Travessa. The fact that Nobel online bookstore became part of a bigger website (galeria de compras), resulted in critical problems on the structure of the website, bringing confusing navigation, error search results and frustrating status of the system.

Too much visual information on the 3 homepages was a common place among the specialists as a big problem. Icons with no relation to its functionality and confusing information regarding delivery were also pointed out as misleading.

Minor problems resumes as lack of visual consistency within the websites and with their brick and mortar business ramifications, book cover's bad resolution images and bad placing of relevant information at books' information page.

## 4.    Conclusions

The use of face to face heuristic evaluation seems to be a good alternative choice when dealing with limitation of time availability of the evaluators. The technique shows a faster application and the possibility of discussing the usability issues of the websites in a more profound basis with the specialists. Comparing results of this technique with previous think-aloud protocol testing shows similar expectations and concerns among users and specialists.

A few basic directions were noted throughout the evaluation. For instance, bookstores online are often compared with their brick and mortar ramifications. It is important that online stores reach these expectations as best as possible. The huge amount of visual information at the homepage is noted by all as annoying and often ignored on behalf of more objective functions or links. Even important and useful information were ignored as their appearance looked like promotions.

Many usability problems were related to visual consistency. The most critical related to lack of consistency of links, text styles and fonts. The consistency and clarity of functionality should also extend to icons. It has aslo been noticed the importance of hierarchy of categories and links, in order to facilitate cognitive perception, function understanding and error prevention. Categories by subject should be well planned to help users understand the various options of themes and possibilities to explore. Evaluators pointed out that generalistic subjects affects directly the automatic

recommendation based on subjects, delivering mistaken or superficial results. Over all, visual consistency throughout the site needs to show professional development to increase the user's trust for purchase procedures. Negative results or impossibility of advance from mistyping can bring uncertainties and mistrust. Specialists suggest that clear indication of the error and how to undo it can minimize the problem.

Since searched books have been recognized mostly by cover image and synopsis, visual and text information for recognition of the book should be objective and clear in order to leave no doubt of the choice. Same directives are important at all the steps to fulfill the purchase: relevant information depicted in smaller fonts was considered demeaning of the user's trust and increase the possibility of leaving the store.

Regarding the automatic recommendations the priority is that recommendations for a second book have to relate to the first choice to build up real interest for immediate of future buying intention. Misleading recommendations can bring users to doubt even their first choice.

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