BEHAVIOR ANALYSIS OF ELDERLY USERS ON PURCHASING TRANSACTIONS AT THE AMERICANAS.COM WEBSITE

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ABSTRACT

Senior citizens represent a group of Internet users that is constantly growing. They use the Internet for assorted activities such as communication, paying bills, purchases on e-Commerce websites among others. In order to make the online purchase a process that is easy, fast and without traumas, it is important that the websites' interfaces be easy to use by this group of people. Some researches list several usability problems, assess user satisfaction and suggest that small adjustments and better suited functionalities could be implemented to help elderly users, without burdening website development, turning this group of people into more active users in the online purchasing and bringing them to the technological world. The present study aims to evaluate the online purchase process by senior citizens, in order to make recommendations allowing developers to organize e-Commerce websites so that information is better perceived and understood by this group of people.

1. INTRODUCTION

In Brazil, individuals over 60 years of age (ESTATUTO DO IDOSO, 2003) are considered senior citizens. According to the Brazilian Institute of Public Opinion and Statistics (IBOPE), more than 470 thousand senior citizens in Brazil access the Internet. They represent less than 2% of Brazilian Internet users and they are increasingly accessing the virtual world to keep up-to-date, communicate with friends and relatives, access social networks, work, pay bills and have fun. The group of over-65 Internet users has been growing strongly in recent years (IBOPE, 2008).

Technology plays an important role in allowing older people to stay informed and live more independently, but it can turn into a barrier and into a synonym of frustration (EUROPEAN COMMUNITIES, 2006). In general, the development of interfaces does not consider the changes and limitations of physical and cognitive capacities of the natural aging process (ZAJICEK, 2006).

This study intends to evaluate the process of online purchasing by senior citizens and propose recommendations to website developers so that e-commerce websites can better meet the needs of this class of users. The evaluation covered book purchases at the Americanas.com website by five users whose ages varied between 60 and 65 years. This number of users was defined according to the recommendations by Jakob Nielsen in Why You Only Need to Test With Five Users (NIELSEN, 2000) in evaluations where to five users performed small tasks. According to Nielsen's research, five users are able to detect 85% of problems.

2. THEORETICAL REFERENCE

Accessibility is the possibility of any person, independently of physical, motor, perceptive, cultural and social condition or ability, of enjoying the benefits of life in society allowing participation in all activities, including the use of products, services and information, with the least number of restrictions (NICHOLL, 2001; NBR 9050, 1994). Digital accessibility refers to the access to any Information Technology (IT) resource, while Internet accessibility or e-Accessibility refers to all the features of the global network of computers, such as chats, e-mail among others.

The use of a Web interface as a communication mechanism between people and systems in order to execute tasks, requires that the interface be designed focusing on usability and accessibility (FERREIRA and NUNES, 2008). Organizations need to adapt their systems and their hardware so that the computer can be used by people with limitations (HARRISON, 2005). In other words, in order to perform this adaptation, Web page development has to consider the users' different characteristics in the situations they may face (FERREIRA and NUNES, 2008).

Some programs and components such as WNH (Web Navigation Helper) installed on browsers intended to help elderly users to navigate through dialog boxes, improving learning and bringing closer to socialization and digital inclusion (MONTEIRO, 2011).

A recommendation checklist about accessibility and usability for older users was created as a baseline for web interfaces (SALES and CYBIS, 2003) but no reference was found in evaluations focusing exclusively on e-Commerce sites.

3. RESEARCH METHOD

The current research, of an exploratory character, comprised five stages.

(a) Better knowledge of the user profile: this stage purported to provide an information base to guide the other research stages. An initial interview was performed with five persons over 60 years of age among family members and close friends. This interview set the guidelines for the collection of useful information that allowed the researcher to know a little about the profile of future research participants, such as which website they felt most comfortable with. The choice of family members was intentional, since a study with senior citizens demonstrated the importance of "personal" relations within a social collaboration context and showed that the use of voluntary participants within a personal and family context is a useful approach (MONTEIRO, 2011).

(b) Choosing the website: the first phase furnished the data that led to the choice of the Americanas.com website where older users felt comfortable in purchasing goods during the tests (next stage).

(c) Observing users in their context of use: data collection was done by observing the same five users of step (a) utilizing open and closed questionnaires. The open questionnaires were useful in listing the difficulties found during the purchase task, showing priority items needing improvements, while closed questionnaires were useful to get the user opinion about the website used in the research and also to analyze possible mismatches in the open questionnaire's responses. The research was performed in each user's daily use context (at home), where a computer with Internet access was available.

(d) Data analysis: after the task, users were shown a final questionnaire intended to evaluate the degree of difficulty and consequently the risks to the completion of the online purchase, and also to suggest improvements in the information linked to the items traded on the site as well as the functionalities of the purchase system and help in site navigation. Users were free to fill out this field in any way they chose, including suggestions of improvements.

(e) Recommendations to make online purchase easier for senior citizens: based on the observations involving users and the answers to the previous step's questionnaire, a list of recommendations was compiled to improve the usability and accessibility of websites, to make them better suited to senior citizens' needs.

4. LIMITATION OF THE RESEARCH METHOD

The survey was conducted in person after the selection of candidates who could stop participating or even give incorrect information, because the research setting did not represent an everyday situation in their lives, after all they did not buy products in the Internet every day.

5. OBSERVATION OF USERS' BEHAVIOR

5.1 Better Knowledge of the User Profile

Before planning the third stage, which involved the observation of users in the online purchase context, a survey was conducted among the five senior citizens in order to become better acquainted with these persons, their needs, expectations and wishes when using the Internet.

During this first stage it was possible to get the information that would drive the conduction and procedures of the subsequent research stages. Table 1 shows the level of Internet experience of the five users. It reveals that 80% of them have been accessing websites and using e-mails for more than two years.

Table 1: Users' experience with the Internet

Experience in websites and e-mail	Number of users	Percentage (%)
Less than 2 years	1	20
Between 2 and 5 years	2	40
More than 5 years	2	40

5.2 Choosing the website

Participants filled out the closed questionnaire with five e-Commerce website options, the Americanas.com website, as it already had a physical store in the traditional retail market, was the one best known among them, and therefore was chosen to be the object of research where the participants would make a purchase. The likeness with the "Lojas Americanas" trade name, and the proximity of these retail establishments with the users' residences was an important factor in the senior citizen who buys online.

5.3 Observing users in their context of use

A primary requirement for the evaluation was that all users should have an active e-mail account and a credit card to enable the online purchase process. The participants were asked to sign a term of consent to participate in the evaluations. However, in order to avoid embarrassment, it was made clear that the evaluation was focused on the interactions with the website and on the purchase process, and not on the persons' performances (DIAS, 2007).

Each user wrote down the difficulties found during the purchase process. The notes were compiled and subsequently presented so that all could evaluate and rank them by level of importance, priority and risk in completing a purchase at the website.

5.4 Observation of the users buying books

Since the participants had the habit of reading, they opted to buy a book, and also because this item was affordable, easy to buy, easy to exchange and did not require trying out before its purchase. Table 2 shows the difficulties found and the analysis of the risks pointed out by the users, ranking the impact as low, average or high in the product's purchase process.

Table 2: Difficulties found and risk analysis

Difficulties found	User 1	User 2	User 3	User 4	User 5
No zoom	High	High	High	High	High
Small fonts	High	High	High	High	Average
Search results	High	High	High	High	High
Few pictures	High	Average	Average	High	High
Feature to allow reading chapters	Average	Average	Average	Average	Average
Search filter	High	Average	Average	Average	Average
Access to shopping cart	High	Low	Low	Low	Low
Access to product reviews	Average	Low	Low	Low	Low

Too much information on screen	High	High	High	High	High
Payment methods	High	Average	Average	Average	Low
Complete order	High	Low	Low	Low	Low
Inform Zip code, freight and order total	High	Low	Low	Low	Low
Login	High	Low	Low	Low	Low
Inform addresses	High	Average	Average	Average	Low
Close the order	High	Low	Low	Low	Low

6. DATA ANALYSIS

Once the users completed the task, the researcher proposed an evaluation of the degree of user satisfaction of the website's usability assigned a grade from zero to ten. These grades were then tallied and Table 3 shows user grades with respect to six characteristics.

Table 3: Senior citizens' opinion about the website

Subjects	Grades assigned by the users					
	1	2	3	4	5	Average
Usability	4.0	6.0	8.0	8.0	8.0	6.8
Organization	6.0	6.0	6.0	6.0	8.0	6.4
Layout/Graphics	4.0	8.0	8.0	10.0	10.0	8.0
Terminology	8.0	8.0	8.0	8.0	10.0	8.4
Messages	6.0	8.0	6.0	8.0	6.0	6.8
Assimilation	6.0	8.0	8.0	8.0	10.0	8.0

The item that got the most negative review was the website's organization, due to the clutter of information on the screen and in the main menu, making it hard for users to concentrate on the purchase task and to find this function in the website.

Usability and messages to the user were the second worst graded items. Warnings and error messages should be placed in a way to better inform the user in registration and in online order completion.

7. RECOMMENDATIONS TO MAKE ONLINE PURCHASE EASIER FOR SENIOR CITIZENS

A number of improvements should be made and Table 4 presents nine items suggested by the respondents in the open questionnaire, listed in order of priority in order to help in online purchasing.

Table 4: Suggested improvements by users in order of priority to help online purchase

Suggested improvements	Ballots
Bigger fonts	5
Reduce visual pollution	4
More product pictures	4
Require less information from users	4
Index or rank search results, mainly when consisting of more than two words	3
Better layout of items in the menu and on the pages	3
Clearer payment methods	3
Better access to product reviews	2
"*See inside the book*" resource	2

Website fonts should be larger than usual or at least it should be possible to increase their size to facilitate reading. The excess of information required to finalize the product purchase consumed much time and memory of the user. All users stated that if they had fewer screens during the checkout or a feature that would remember the data of the last purchase, this process would be greatly facilitated.

8. CONCLUSION

The data were captured through a participative research where users could give their opinions based on an online purchase task which they performed. This method enriched the research result with respect to the scenario and its problems, besides bringing up improvement suggestions. Qualitative research is more common in Humanities, such as social communications and psychology (TANGARIFE and MONT'ALVÃO, 2005).

The research with senior citizens produced a number of items that should be considered for this type of audience, especially in e-Commerce websites, online services and may be a new niche for companies selling on the Internet. Managers, website developers, marketing agencies, traders and service providers should not ignore senior citizens on the Internet. They should be aware that small adjustments of texts, improvements in functionalities and the constant test of usability do not weigh heavily in website development.

One should keep in mind that tests and user interaction during the development of a Web project are ways to invest in constant improvements and error mitigation. If those improvements take place once the website is in production, the cost and the wear of the involved parts will be greater than if it had taken place during the initial phases.

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