

B2C Websites' Usability for Chinese Senior Citizens

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Abstract. As E-commerce develops fast in Chinese market, so grows the need for online shopping of Chinese senior users. However, The senior users are still the niche market and they tend to be excluded from the “target users”. To design a usability test on existing B2C websites based on the Chinese context, we integrated the User Centered Design into the whole process. A preliminary study with 48 Chinese seniors helped to get insights into the Chinese senior users, which directly guided the development of the usability test protocol. Then we conducted usability tests with 16 participants selected from the preliminary study. According to the results of the usability test, the overall usability performance of the mainstream Chinese B2C websites is concluded and whether the “user-driven usability test” has brought a different perspective is discussed.

Keywords: Usability test, E-commerce, Chinese senior citizens, B2C websites.

1 Introduction

To provide a thoroughly Chinese context-based usability test on existing B2C websites, we integrated the User Centered Design into the whole process of usability testing. The reason for selecting B2C websites rather than C2C websites is that they have a simpler dealer-consumer relationship and they provide more reliable products, thus it is more suitable for seniors to understand and easier for them to try [1].

There already exist various versions of guidelines and principles for senior usability as a result of massive usability tests, especially in western countries. The Nielsen-Norman Group has been conducting extensive research on senior usability. To evaluate usability, they give participants tasks, watch them work, and analyze their behavior. Online shopping is part of the tasks. Their report includes design recommendations based on the behavioral research. The report offers 46 guidelines in the first edition, which increases to 106 ones in the second edition. They have also developed a methodology on how to conduct usability studies with seniors[2].

Additionally, usability studies continuously demonstrate older users frustrations with completing specific tasks. In a study completed by Chadwick-Dias, McNulty, and Tullis, Participants over the age of 55 had significantly longer task duration time than those under the age of 55. Their study suggests that older adults tend to

be more cautious when interacting with a website such as clicking on a link and spent more time reading information before clicking. The study also demonstrates that “older users were often confused as to where they were within the context of the Web site” [3].

However, since East Asians and Westerners perceive the world and think about it in very different ways[4], it is hard to expect that the research results from Westerners can totally apply to East Asians. In China, though there are studies on e-commerce websites usability, the target users are mainly young people. In 2007, Li Chen conducted a usability study on online shopping sites for the elderly, in which the researcher did the requirement analysis of the elders, including user definition, user characteristics, user online shopping requirements and behavior features.[5] However, there is no significant relevance between the content of the usability test and the elders’ requirement analysis: the main elements such as websites and the tasks to be tested are determined by the researcher.

2 Method

To ensure the results reflect Chinese seniors’ needs, the usability test should combine their requirement analysis with the whole usability test process. In our study, we first conducted a preliminary study with 48 Chinese seniors, which helped to get insights into the Chinese senior users; the result determined the elements of the usability test protocol. Under the guidance of the developed usability test protocol, we conducted usability tests with 16 participants selected from the preliminary study.

2.1 User-Driven Usability Test – An Overview

In the process of a typical User-Centered Design, the phase of user profiling (including user requirements collection/analysis) supplies rich contextual information and meanwhile determines the goal as well as the direction of product design [6]. Accordingly, in this study, a preliminary study helps to collect the Chinese seniors’ requirements, so as to develop the usability test protocol on the basis of user needs. Figure 1 presents the process of our user-driven usability test. The main feature is that the research participants make the decision of testing tasks and decide the weight of evaluating factors.

2.2 Collecting and Analyzing User Requirements

In total 48 participants, most from Yangpu and Changning districts in Shanghai, were asked to fill in a questionnaire which consisted of a basic online shopping survey, weighting of online shopping tasks, and if the participant agreed to take part in subsequent tests, a technology screening test. In the basic online shopping survey, participants were asked about which B2C websites they knew, what kind of products

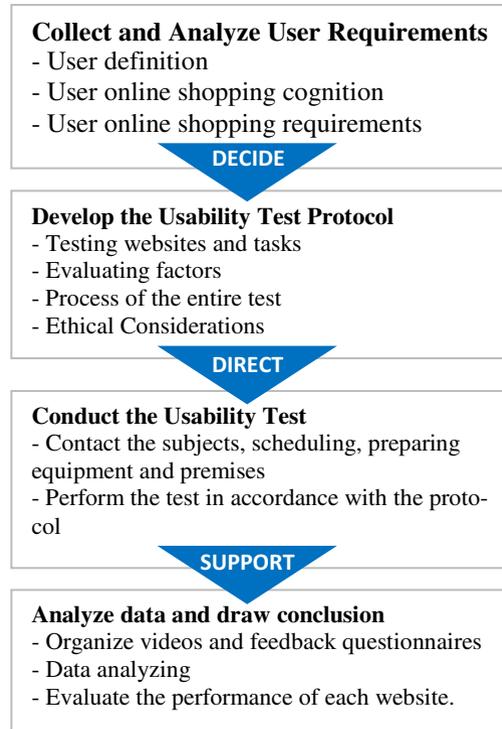


Fig. 1. The process of user-driven usability test

they would like to purchase online but research offline, and what kind of products they preferred to do category research online.

Nielsen has concluded the online shopping tasks as: a) known-item purchase; b) category research; c) bargain hunting; d) browsing for inspiration [7]. To get insights into what kind of tasks the elders would consider important to complete alone, we developed the four types of online shopping tasks to six more detailed tasks with concrete examples (see A-F in the item 2 in Table 1).

In addition, considering that the checkout process has its own uniqueness and is not included in Nielsen's four types of tasks, we added a separate question asking the seniors whether they thought it was necessary to complete the checkout process by themselves or it was just enough knowing how to find the target products and add it to the shopping cart. The participants were asked to choose three tasks they wished to complete alone out of all. The complete shopping tasks for weighting are presented in Table 1. In the technology screening test, the participants were asked to tick all descriptions that match their attitudes towards online shopping and high-tech devices.

Table 1. Questionnaire to identify seniors' needs in online shopping

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1. Which is your attitude towards check out process during online shopping?
 - A. It is enough to know how to find target products and add it to the shopping cart. My children can help me do the check out.
 - B. it was necessary to complete the checkout process by myself.
 2. Which 3 of the tasks are tasks you wish most to complete alone?
 - A. Search for a product that I already researched in real stores and see its price online, such as a Sony TV.
 - B. Search for a daily necessity that my family usually buy, e.g. a box of Milk (24 packs).
 - C. Category research: identify and buy products that best match my needs: price, brand or customer rating.
 - D. Detailed comparison of different products, such as screen size, operating system, producers and so on.
 - E. Bargain hunting, e.g. looking for a discounted radio during the Spring festival offers.
 - F. Browsing for inspiration, see what the site is offering without specific target.
 - G. (not available if A is ticked in the former question) Check out and pay the online order.
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2.3 Developing the Usability Test Protocol

Each part of the preliminary research contributed to the development of the usability test protocol. From the result of the online shopping questionnaire, we chose 3 websites to be tested and decided the length of each test. From the weighting of online shopping tasks, we obtained insights into what tasks the seniors wanted most to perform online. For example, to do category research like comparing cellphones of different brands or to just quickly find the cellphone they already "researched" offline in the stores. From the technology screening test, candidates were classified by different levels of technology familiarity, which would help in future usability test. The development of protocol also took into consideration the ethic perspective of conducting usability tests with senior citizens such as how to lead the seniors to think aloud while performing the test.

2.4 Conducting the Usability Test and Analyzing Data

Under the guidance of the developed usability test protocol, we conducted usability tests with 16 participants selected from the preliminary study. 14 of them have not tried online shopping once, the other two can go shopping online by themselves. The test was divided into three sections: in each section the participants were asked to

perform the one of the three tasks on the three websites one by one. After completing the task on a website, the participants filled in a SUS (System Usability Scale) questionnaire to rate the performance of the tested site. After each section, a list of different factors was given to the participants to assign each factor a weight in a range from 1 to 7. To avoid ambiguous description from the participants, we adopted the prepared lists of factors instead of oral interviews. The collected lists helped identify the relevant weighting of different factors for further data analysis.

Combining the data analysis of the SUS questionnaire and the recordings, we evaluated the performance of each website and get insights into each task. Finally, whether the "user-driven usability test" has brought a different perspective is discussed.

3 Results and Discussion

From the results of the preliminary research, the three best known B2C sites are identified:

- Yihaodian (Yhd.com), an online supermarket
- Jingdong (Jd.com), an online department, famous for home appliances and digital products
- Suning (Suning.com), an online mall for home appliances and digital products

As for online shopping tasks, only 22.9% of the elders thought it was necessary to complete the checkout process all alone, most seniors would just prefer to pick products independently. Figure 2 presents the seniors' preference on all the listed tasks. The 3 most desired tasks are: a) searching for specific items they have researched offline; b) doing category research to help identify and buy products that best match their needs; c) bargain hunting. Furthermore, seniors chose home applications, food & drinks and households as the products they would like to do research offline. And they also chose digital products as the products they preferred most to do research online. Therefore, according to the results of the questionnaire as well as the difficulty of each task, the final testing tasks, are described below:

- **Task 1.** Search for a specific item on the website, e.g. Sony Digital Camera Tx66.
- **Task 2.** Find cellphones with specified price and brand/network/functions, sort the result according to their sales, and then add the one with the highest ratings to the shopping cart from the top three sales.
- **Task 3.** Browse the website and try to find a satisfying bargain, then put it to the cart.

In order to get more accurate feedback, Task 1 and Task 2 are revised into 3 similar tasks, i.e. Task 1 asked the seniors to search for a) digital camera; b) a type of popular biscuit; or c) home use heaters. These tasks were randomly assigned to the participants.

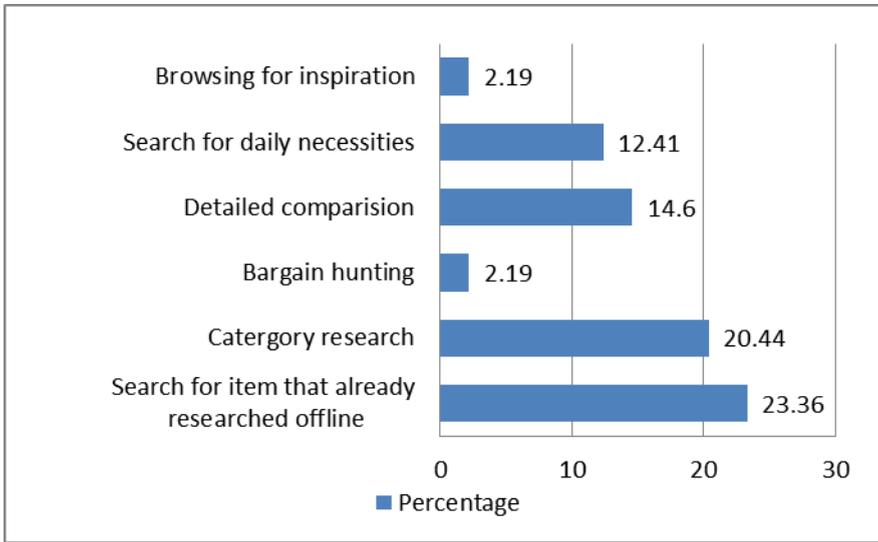


Fig. 1. Tasks seniors wished most to complete alone

During Task 1, the seniors were asked to search for a specific item with an exact model number and specifications, i.e. “Sony Dsc-Tx66 Digital Camera, Red”. 15 participants completed this task. But unexpectedly, Only 3 of the 16 participants tried to use the search box, others all preferred to look for the relevant category through navigation, and then tried to search for the target in the entire product list. After the test most of the seniors expressed their difficulties in inputting Chinese characters with keyboard. The barrier of the Chinese input method made the user read all the text in the navigation. Another reason is that websites such as Suning.com has a light grey search box which is not obvious enough; there is only a magnifier icon beside the search box without any text indicating “search”.

Task 2 was relevantly more complicated, only 7 participants succeeded in setting the right filters to find required products, and 5 succeeded to sort them in price order. Notably, the seniors who tried the search box in Task 1 tended to rely on the search box. They input “cellphone 1000-1500 yuan highest sales” directly in the search box and expected the websites to match their requirements automatically. Of course no websites satisfied such needs, but Jd.com had a relevantly better performance for it could match “cellphone 1000-1500yuan” to cellphones with price between 1000-1500 yuan. However, when the seniors tried to filter the cellphones on Jd.com, they often got confused. The cellphone category page of Jd.com is full of “hot deals” and promoting advertisements (ads), the seniors could not see any of “cellphones” they filtered in the first screen. What was worse, when they tried to find “cellphones” on the page, e.g. clicking the label “1500-2000 yuan”, the page just refreshes and still stays at the top. No hints were given to the users that all the cellphones between 1500-2000yuan were under the hot deal, ads and filters. On the contrary, Suning.com had a

simple and clear category page without picture ads or hot deals, but the problem was that the filters were of light color and many seniors just ignore it.

Another point was, some seniors tried to use the search box while they were in the cellphone category page. They input "Samsung" and click search, expecting the websites to present them with the specific Samsung cellphone, but the result was all kinds of products that belongs to Samsung: Laptops, Cameras and even Fridges.

Task 3 has the least restrictions, all the participants managed to find something they would like to buy. When bargain hunting, the participants tended to ignore the dazzling slider ads but still read navigation and text link first. This makes Yhd.com the highest rated because it highlights "Spring Festival Offers" in the navigation and the participants could easily found bargains. The seniors also suggested that they did not want to click the picture ads announcing "up to 50%" or "buy one get one" because they considered these ambiguous promotional words as lies. Besides, the participants did have the concept that "group purchase" offered cheap and good deal, over 60% of them tried to browse the "group purchase" channel through navigation.

4 Discussion and Conclusion

According to the result of Task 1, the surprisingly high rate of the seniors using navigation to "search" suggested the importance of navigation design. Clear and smart navigation design would help the senior customers a lot. This might differ from countries using alphabetic languages since Chinese seniors have more trouble in inputting characters. It can be also concluded from the task 3, in which people tends to find bargains through navigation instead of the colorful and large slider ads.

Moreover, when seniors are browsing the category page, they wanted to know which of the products are now on sale. A "sale" label might help. Or furthermore, add a filter label "now on sale" so that users can find all the discounted products.

Apart from this, texts prove to be more accessible and reliable than pictures or icons for seniors without much online shopping experience. Adequate text hints help seniors to figure out different functions of an unfamiliar website while dazzling large animation and flash annoy and confuse seniors.

Comparing to previous work, the user-driven usability test offered a different perspective: Test what the user care. It might offer a better understanding when evaluating a general performance of websites, because "the user" is no longer a "persona" but strongly integrated into each phase of the study. And selecting test candidates from people who were involved in preliminary research made the participant have a greater sense of participation. Most of the participants tried to complete the task actively and patiently, even some tasks are quite difficult for non-experienced users. One of the participants expressed that it was great to try these tasks so that they could try online shopping when they went back home.

5 Future Research

There could be various directions for future user-driven usability test on Chinese senior citizens. First of all, due to the scale and time issue, the Task 1, 2 and 3 were performed at the same time. The experience from former tasks affected the users' decision-making in latter. For example, seniors who are expressed by the filter functions in Task 2 would try it again in Task 3 bargain hunting, ignoring the other way to searching for an ideal product. Therefore separate tests with different participants for each task may bring results with subtle difference.

Another research direction is to pay a return visit to the participants, to see whether such an active learning experience would result in continuous attempts and to test if the revised prototypes which adopted the suggestions above really work for the users.

Furthermore, our study has offered the result of user-driven usability test on Chinese seniors. In the future if possible, a comparative research on young users would help to know better the difference between the needs of Chinese seniors and young people and to verify if senior-friendly websites could also benefit Chinese young people.

References

1. Ling, Z.: Exploring the trend of Chinese B2C e-commerce's development. *J. E-Commerce* 31, 22–23 (2011) (in Chinese)
2. Pernice, K., Nielsen, J.: Usability For Senior Citizens: Design Guidelines Based on Usability Studies with People Age 65 and Older. Nielsen Norman Group, <http://www.nngroup.com/reports/senior-citizens-on-the-web/>
3. Chadwick-Dias, A., McNulty, M., Tullis, T.: Web usability and age: how design changes can improve performance. In: *The 2003 Conference on Universal Usability*, Vancouver, Canada, pp. 30–37. ACM, New York (2003)
4. Nisbett, R.E., Masuda, T.: Culture and point of view. *Proceedings of the National Academy of Sciences of the United States of America* 100, 11163–11170 (2003)
5. Chen, L. : Usability Design Research Of Online Shopping Site For The Elderly. D. Shanghai Jiao Tong University (2007) (in Chinese)
6. Dong, J., Salvendy, G.: *Human-Computer Interaction: User Centered Design and Evaluation*, pp.16-20. Tsinghua University Press (2003) (in Chinese)
7. *Ecommerce Usability Improvements*, <http://www.nngroup.com/articles/ecommerce-improvements>