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Usability evaluation of e-commerce on B2C websites in China

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Abstract

With the development of electronic commerce, usability on a website is vital to customers and enterprises from e-commerce websites. However, many of these e-commerce applications still do not meet customers' usability requirements and the web pages need a better human computed interface. An evaluation of business to customer (B2C) websites in China was implemented according to the usability criterion. Two questionnaires were designed and verified to capture the evaluation index when customers operated the B2C websites. The first one was used to choose the appropriate factors in questionnaire scale and the second one was used to evaluate the importance of the chosen factors. Finally, the usability indices were used to evaluate the characteristic of two main China B2C websites. The results obtained would help the designers of B2C electronic commerce to improve their websites.

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1. Introduction

Usability is one of the most important quality factors for e-commerce web sites [1]. The three type of e-commerce, which are business to business (B2B), business to customer (B2C) and customer to customer (C2C) are currently the main channels of business and information exchange on internet. These web sites

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provide products and services to potential customers. However the ease or difficulty that customers experience with these e-commerce applications determines their success or failure [2, 3]. In addition, with the development of electronic commerce in China, more and more e-commerce websites appear, among them Taobao and Eachnet are the most popular B2C websites in China. The challenge of developing more customer friendly e-commerce websites makes it an emergence of method, evaluation technology with which to improve web usability issues.

This paper is organized as follows. Section 2 describes the usability evaluation method and process. Section 3 presents the results obtained from the study. Section 4 discusses the main finding and limitations of this study. Section 5 presents the conclusions and suggests topics for further research.

2. Methodology of Usability evaluation on e-commerce websites

2.1. Purchase process of e-commerce websites

The process flow of merchandise purchase is shown in Fig 1. A potential customer interests a kind of goods. Then he enters an e-commerce website. Firstly, he glances over the whole catalog, search for the goods he want, compare and decide which one is suite for his now needs. Secondly, he contacts the sales person on the website, choosing the one who can provide his with preferential price. Then the sales person confirms merchandise status. Thirdly, the customer fill in registration form to make sure that the goods should be sent in right address. The website and the sales person are required to protect the privacy of customers. At last, the customer chooses his favorite payment type. The delivery information should be monitored among the customers. The sales person and the customer service representative form the website. The customers should fulfill the whole purchase process conveniently and satisfied.

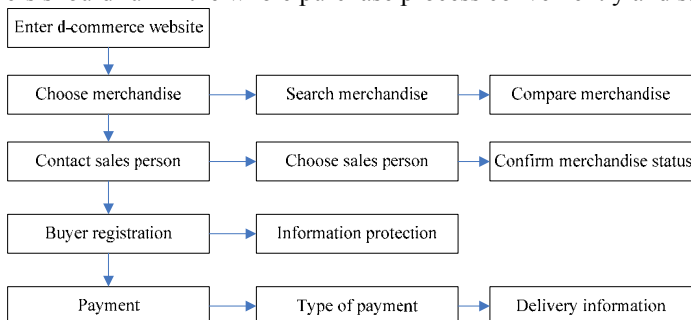


Fig. 1. the merchandise purchase process flow on the e-commerce websites

2.2. Usability evaluation methodology for e-commerce websites

Since e-commerce websites increase greatly in the new era, they face many competitors. Research [4,5] revealed that efforts put into usability design and modification improved the performance of usability on websites one hundred and thirty five percent.

There are different methods can be used to evaluate the websites on its usability [6]. One is called the expert based inspection method. The other is called user based testing method. The latter one is a cognitive process to deal with customers' information on usability. As shown in Fig 2, the whole evaluation process is organized as follows. Firstly, according to references and previous experiences, a set of rough usability indices is gathered as preparation. Secondly, indices screening is done via releasing the initial questionnaire. The data are collected to do reliability analysis so as to cut the unnecessary items in

usability evaluation scale. Thirdly, the subjects are asked for the second and formal evaluation with five grades from very satisfied to very dissatisfied. The data are gathered to analyze. The scores the higher, the importance of usability is. Fourthly, usability criterion and evaluation is formulated as the results of the second questionnaire. Finally, a usability evaluation case between the website of Tabao and that of Eachnet is given to verify the methodology.

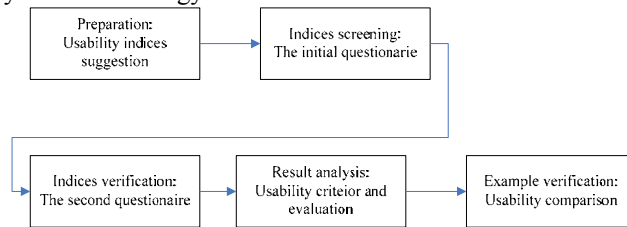


Fig. 2. flow chart of usability evaluation of e-commerce websites

3. Results of usability evaluation questionnaire

3.1. The initial questionnaire result

According to the references and previous experiences, the initial questionnaire with fifteen indices was designed as Table 1. Twenty seven subjects were asked for evaluation these sentences with five grades for 1 to 5.

Table 1. Usability factors for e-commerce websites

Evaluation factors	Evaluation index	Sentence item
Content	Merchandise catalog	The catalog of merchandise attracts me.
Content	Merchandise information quality	I prefer the good information is clear.
Content	Merchandise information updating	I prefer the website with catalog quick update
Content	Customers evaluation information	Evaluation from others helps me to choose goods.
Ease of use	Website layout	Layout of the site affects my desire for consumption.
Ease of use	Merchandise search efficiency	The search system helps me to find the good quickly.
Ease of use	Pay system	I hope the pay system convenient and quickly.
Ease of use	Web page error rate	I am upset because of web page error.
Ease of use	Navigation system	It makes me to browse web page easily.
Promotions	Merchandise promotions	Promotions increase my shopping.
Emotional factors	Website popularity	I prefer shopping in large website.
Emotional factors	Credibility of the seller and the goods	I choose the seller with high credibility.
Emotional factors	Website security	Security in website helps me shopping.
Emotional factors	Privacy protection	Privacy protection makes me shopping.
Emotional factors	Merchandise prices	price is import factor for shopping.

The survey questionnaires were distributed, among 27 copied of all questionnaires, 25 copies were valid, and the effective samples rate was 92.6 percent. The experimental data obtained from this initial questionnaire focused on whether the usability of e-commerce websites effects the customers' satisfaction of shopping and determined which factors should be chosen as indices during usability evaluation. The result of usability indices in the initial questionnaire was shown in Fig 3.

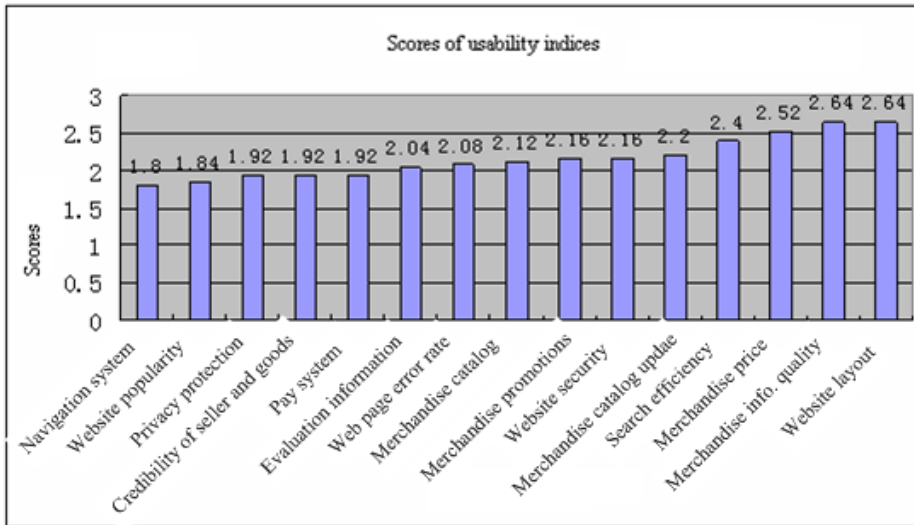


Fig. 3. scores of usability indices in the initial questionnaire

3.2. The second questionnaire result

According to the factors analysis in the initial questionnaire, the indices in Table 1 was reduced and modified. The new usability indices were collected as Fig 4 showed.

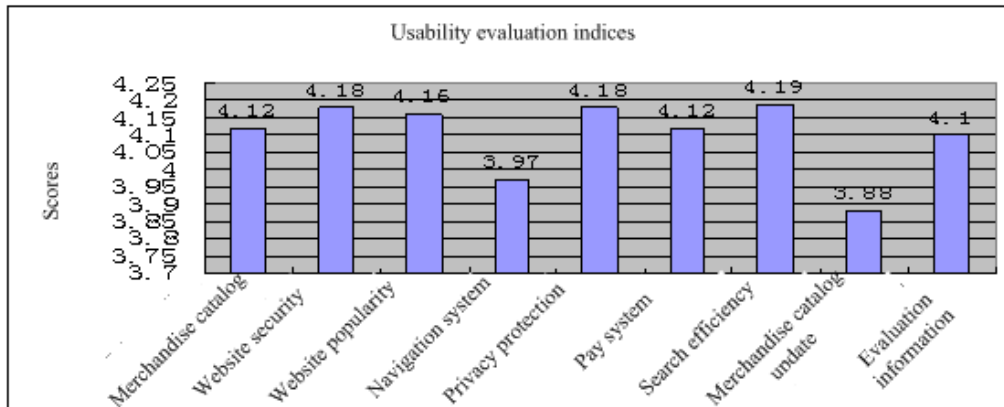


Fig. 4. scores of usability indices in the second questionnaire

4. Conclusion

In recent years, a great number of e-commerce websites have emerged to provide product and information service to customers. The factors summarized in this paper will help to improve usability of e-commerce websites greatly.

According the results of these two step questionnaire, the usability evaluation criterion was put forward in Fig 5.

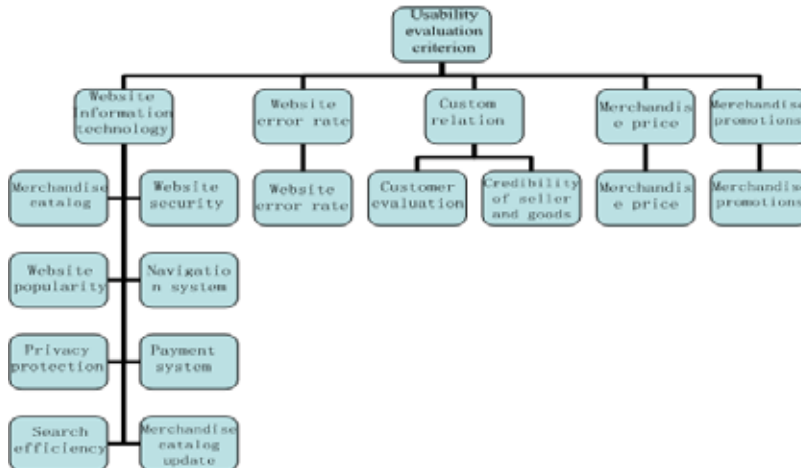


Fig. 5.usability evaluation criterion of e-commerce websites

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