

A Study on the Usability of E-commerce Websites between China and Thailand

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Abstract — Website usability is one of the core factors of evaluating the application level of e-commerce of an area. To study and compare the application levels between Chinese and Thai e-commerce websites, the website usability should be considered first. In this study, an independent third-party online usability testing tool is used to make a test on the e-commerce website between the two countries mainly on 4 indices: accessibility, coding standards, readability and connection speed. The study shows that the level of website usability of Chinese websites is higher than that of Thailand, though not obvious; and both the Chinese and Thai e-commerce websites should lay emphasis on accessibility and coding standards.

Keywords- Thailand; E-commerce Website; Usability; Accessibility.

I. INTRODUCTION

E-commerce has become the trend and tide of nowadays' development. Its development breaks the marketing limitation as well as the national boundaries thoroughly, enabling it become the most active, creative and influential emerging industry, and bringing a revolutionary impact on the production, circulation and consumption. It creates more development chances and spaces for enterprises; meanwhile it plays a key role to and promotes employment, drives the transformation of traditional industries, and boost the global trade growth and trade facilitation. ASEAN, with a group of 600 million consumers, has great potential in marketing. Developing E-commerce will bring infinite opportunities to these developing countries. For the sake of E-commerce cooperation is the most important aspect of the cooperation between China and ASEAN, 2014 China-ASEAN E-commerce summit is held in Guangxi Nanning of China in September 2014 for the first time to commit to promoting the E-commerce as the new field, new power and new highlight that China-ASEAN free trade upgrade[1].

As the major members of the ASEAN, the E-commerce development of China and Thailand serve a role model in promoting regional economic development. Recently, the E-commerce of China and Thailand has made great strides in progress, such as Alibaba, Tmall, and Jingdong in China, Weloveshopping, Tarad, and Thaitrade in Thailand. To analyze the level of E-commerce application in both countries, first, we have to analyze the availability of E-commerce sites of both countries. Generally speaking, there are three methods to research the sites' availability. Firstly, with the help of eye-movement and other scientific instruments we use eye-tracking technology to accomplish the test of sites' availability[2]. Secondly we collect and analyze the data of availability index which have been set up through questionnaires[3]. Thirdly making use of the third-party availability testing tools[4], we test some availability index. The third method is used in this article. With the independent online availability testing tools, we

systematically test the multi-index of various E-commerce in China and Thailand, discuss the level of E-commerce sites availability of both China and Thailand at present, and research the E-commerce on the comparison of China and Thailand, to urge the construction of E-commerce in both countries more standardization and humanization.

II. TESTING EXPERIMENT OF CHINA-THAILAND E-COMMERCE WEBSITE USABILITY

A. Data Sources

Along with the search engine Baidu(www.baidu.com), the keywords E-Commerce Website, B2B and B2C were used to retrieve Chinese civil e-commerce websites for test objects; and with Thailand, E-Commerce Website, B2B and B2C being the keywords, the search engine Google(www.google.com) was used to do the retrieval on Thai websites for test objects. The test objects were the websites should be retrievable and publicly-accessible, those were not accessible can't be test objects of this test. Considering that there is a gap between Chinese and Thai economic aggregates, and for the convenience of the crosswise comparison, we on one hand categorized both Chinese and Thai websites into two types, which were the B2B and B2C types; on the other hand, we picked each type 10 samples for Thai websites, while for Chinese websites, we in the end chose each type 30 samples and in total 60 samples to do the test.

B. Research Method

In consideration of the cost and the size of experiment, this paper merely focused on the key indexes that affect the website usability, they are accessibility, readability, connection speed and coding standards[5]. Researchers used some analysis tools such as WAVE3.0, Juicy Studio Readability Test, Internet Supervision Url Check and W3C Markup Validation Service to finish the test specifically, and the results consists mainly of the test reports to the 4 usability indexes. The test time was from Mar 1st 2015 to Mar 20th 2015. Using Excel to record the 4 usability indexes

respectively of 60 Chinese websites and 20 Thai websites, the sample averages have been calculated, and the descriptions and comparative analysis has been completed.

C. Experimentation Process and Results

i) The Accessibility Test of Websites

The accessibility of websites is about the maximum of its users. Research and tests of accessibility are for expanding the user range as much as possible, and for websites adaptability to any users in any kind of environment.

(1) Test Tool: WAVE3.0(<http://wave.webaim.org/>)

As a free test tool of websites accessibility, WAVE is used to evaluate the accessibility and compatibility problems of websites. And as a highly customizable tool, it adopts a graphical model rather than provides users a complicated technical report to present users the compatibility problems. WAVE adopts the WCAG1.0 with Section508 usability rules as the test criteria.

(2) Test Results

For Chinese e-commerce websites: the B2C websites have the most average accessibility mistakes, which are 83.5 mistakes; while the B2B websites have the least average accessibility mistakes, which are 60.38 mistakes; and the overall averages are 71.94 mistakes.

For Thai e-commerce websites: the B2B websites have the most average accessibility mistakes, which are 95.25 mistakes; while the B2C websites have the least average accessibility mistakes, which are 52.50 mistakes; and the overall averages are 73.88 mistakes.(See Table I)

TABLE II STATISTICS OF ACCESSIBILITY MISTAKES OF CHINESE-THAI E-COMMERCE WEBSITES

Websites Type	(China)Average Accessibility Mistakes	(Thailand)Average Accessibility Mistakes
B2C	83.50	52.50
B2B	60.38	95.25
Overall Averages	71.94	73.88

ii) The Coding Standards Test of Websites

(1) Test Tool: W3C Markup Validation Service(<http://validator.w3.org>)

W3C Markup Validation Service is a great test tool of websites codes. It can carry out the code test of both HTML and XHTML websites and find out the syntax errors and label them, for example, whether the Java applications provide replacement text for developers, whether incorrect versions of frame format is used in applying frame structures, or whether the definition of color values are normative, or even the combination use of website backgrounds and text color attributes can be tested; and this tool can also analyze websites in single page.

(2) Test Results

For Chinese e-commerce websites: the B2C code presents maximum average mistakes, which are 480.33 mistakes; while the B2B code presents minimum average mistakes, which are 123.17 mistakes; and the overall averages are 301.75 mistakes.

For Thai e-commerce websites: the B2C code presents maximum average mistakes, which are 421.83 mistakes;

while the B2B code presents minimum average mistakes, which are 348.00 mistakes; and the overall averages are 384.92 mistakes. (See Table III)

TABLE IV STATISTICS OF CODE MISTAKES OF CHINESE-THAI E-COMMERCE WEBSITES

Websites Type	(China)Average Code Mistakes	(Thailand)Average Code Mistakes
B2C	480.33	421.83
B2B	123.17	348.00
Overall Averages	301.75	384.92

iii) The Connection Speed Test of Websites

(1) Test Tool: Internet Supervision Url Check(<http://www.Internetsupervision.com/scripts/urlcheck/check.aspx>)

Connection Speed is one of the most important indexes to reflect website usability. It refers to the average speed of the periodical website connecting to servers all around the world, and through these servers it can test the load time of target websites, by which can ascertain that whether visitors can open the target websites quickly and smoothly. The tool chose 8 city servers in 6countries automatically for the test with a connection speed of 100Kbytes, and the response time can show the link connection speed; the longer time the websites takes, the slower the speed is.

(2) Test Results

For Chinese e-commerce websites: B2B links are the slowest with a speed of 2.39 seconds; B2C links are the fastest with a speed of 1.81 seconds; and the overall average is 2.10 seconds.

For Thai e-commerce websites: B2C links are the slowest with a speed of 7.35 seconds; B2B links are the fastest with a speed of 2.29 seconds; and the overall average is 4.82 seconds. (See Table V)

TABLE VI STATISTICS OF CONNECTION SPEED OF CHINESE-THAI E-COMMERCE WEBSITES

Websites Type	(China)Average Connection Speed(second)	(Thailand)Average Connection Speed(second)
B2C	1.81	7.35
B2B	2.39	2.29
Overall Averages	2.10	4.82

iv) The Readability Test of Websites

(1) Test tool: Juicy Studio Readability Test(<http://Juicystudio.com/services/readability.php#readingresults>)

Website readability means that the value of reading and appreciating, and the education levels that it reaches when reader draw their attention to it and comprehend it, besides, the grammar and spelling mistakes are also taken into account. The results mainly involve 3 indexes; they are Gunning-Fog Index, Flesch Reading Ease Index and Flesch-Kincaid grade level Index. The Gunning-Fog Index or Fog Index for short, which is divided into 12 levels, showing roughly the education year readers need to comprehend the text of websites, and the smaller the index is, the easier the text is. The Flesch Reading Ease Index is a score index to evaluate the text by centesimal system, and the higher the score is, the easier for reader to understand. And the Flesch-Kincaid grade level Index uses American education level to assess the score of the text, which means if the text scores 7,

then those whose education level are approximately equal to grade 7 can understand it; most standard texts can score 7.0~8.0 of this index.

(2) Test Results

For Chinese e-commerce websites: the B2B websites scores the highest of Fog index, while the B2C websites scores the lowest, and the average Fog index is 7.49; as for Flesch Reading Ease index, the B2C websites scores the highest, with the B2B websites scoring the lowest, and the average is 70.45; and for Flesch-Kincaid grade level index,

the B2B websites get the highest score, while the B2C websites get the lowest score, with a average of 3.99.

For Thai e-commerce websites: the B2B websites scores the highest of Fog index, while the B2C websites scores the lowest, and the average Fog index is 8.65; as for Flesch Reading Ease index, the B2C websites scores the highest, with the B2B websites scoring the lowest, and the average is 64.21; and for Flesch-Kincaid grade level index, the B2B websites get the highest score, while the B2C websites get the lowest score, with a average of 4.93. (See Table VII)

TABLE VIII STATISTICS OF WEBSITE READABILITY OF CHINESE-THAI E-COMMERCE WEBSITES

Website Types	(China) Website Readability			(Thailand) Website Readability		
	Gunning-Fog Index	Flesch Reading Ease	Flesch-Kincaid grade level	Gunning-Fog Index	Flesch Reading Ease	Flesch-Kincaid grade level
B2C	6.13	82.88	2.16	8.20	66.79	4.43
B2B	8.85	58.02	5.82	9.10	61.63	5.43
Overall averages	7.49	70.45	3.99	8.65	64.21	4.93

III. DATA ANALYSIS AND DISCUSSION

Error of websites accessibility: the errors of B2B websites in China and B2C websites in Thailand are lower than overall mean, that is to say one type of website of both countries construct better than another. From the overall mean, we can tell that the accessibility errors of E-commerce sites of the two countries are both around 70, which means that the standardization construction of E-commerce in both countries still need to be strengthened.

Standardization of website code: Grammar errors of websites were found the most in B2C websites and the less in B2B websites in China. The gap of overall mean of E-commerce sites between the two countries is not big, which shows us that both countries pay less attention to the international standardization of availability construction when developing E-commerce sites code. Many grammar errors in the website content impact the availability, which should be taken seriously and improved.

Link speed: The network environment of the whole country or area was reflected by how fast the link speed is. We can tell from the testing result that the link speed of B2B websites in Thailand almost equal to the overall mean of China. Generally the speed of E-commerce in China is faster than that of Thailand but just in an acceptable range. It is clear that both countries take it very seriously to construct the network environment of server broadband of E-commerce sites.

Readability of content on websites: according to the three index testing data of availability, except that the gap in B2B websites is not big, the readability as a whole of E-commerce in China is obviously better than that of Thailand, among of them B2C websites are more outstanding. That explains the Chinese B2C websites are more legible, readable and enjoyable. It can be understood by those who have been well-educated, which highlights the legibility of those websites.

IV. CONCLUSION

To analyze the application level of China and Thailand in comparison, first of all we have to test the availability of E-commerce sites of both countries. Although as we can see from the search that the number of E-commerce site in China is far more than that of Thailand, we should pay more attention on the website construction itself. From the availability of four index on testing, China's E-commerce sites perform better than Thailand's, but not obviously, that is to say, the availability of both countries' E-commerce sites are at the same level. The biggest problem that exists in both countries on E-commerce is the availability of websites, more error in code construction and the language of the websites' construction lacking of standardization.

Because of cost and operability, what we test didn't take it into account that classifying the E-commerce according to industries, and not the various regional differences within the country as well as the website version of the language. We only choose four indexes of them in this article, so there must be some limitations. We will constantly supplement and perfect the test indicators in the future, regularly testing the availability of the website, finally reach the goal of boosting operators to strengthen its construction constantly, and increase the impact and availability of E-commerce sites in both China and Thailand.

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REFERENCES

[1] <http://events.iresearch.cn/itconference/212/>.
 [2] Yujing Zeng, Tong Zhang, Yi Chen, "Eye tracking technology applied in Webpage usability evaluation", Chinese Journal of Ergonomics, vol.18, pp. 83-86, 2012.
 [3] Jinling Chang, Guoping Xia, "Usability Evaluation of B2C E-Commerce Web Site", Journal Of The China Society For Scientific and Technical Information, vol.24, pp. 237-242,2005.

- [4] Chunguang Weng, Hong Mei, "Website Usability of Open Access Journals Home and Abroad: A Comparative Study Taking Medical Journals as an Example", *Journal of Intelligence*, vol.32, pp. 117-120, 2013..
- [5] Chang Liu, Kirk P. Arnett, "Exploring the Factors Associated with Web Site Success in the Context of Electronic Commerce", *Information & Management*, vol.38, pp.23-33, 2000.