

Gender Differences in Tourism Website Usability: An Empirical Study

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Abstract. The emergence of the Internet and web technologies has made unprecedented effect on the tourism industry. To keep the competitive advantages in the tourism industry, most travel agencies have built their own websites for promotion, marketing, and online transactions. Nowadays, thousands of electronic tourism websites become accessible, providing a variety of online information and services online. Usability has been recognized as a vital factor in the success of tourism websites because usability has been shown to change users' attitudes, achieve users' satisfaction. However, there are limited studies exploring gender differences in usability of tourism websites. It can be arguable that gender differences significantly influence usability design of tourism websites. Thus, this study aims to assess the usability of current tourism websites from a gender difference perspective. The results show significant differences of usability perception between genders. More specifically, the common usability that males require most includes visibility of system status, user control and freedom and efficiency of use. The usability that females require most covers aesthetic design, help and documentation and security and privacy. These findings can provide deep insights into gender differences in usability to support tourism website design.

Keywords: Gender differences · Usability assessment · Tourism websites

1 Introduction

The emergence of the Internet and World Wide Web (WWW) has made unprecedented effect on the tourism industry [1]. To keep the competitive advantages in the tourism industry, most travel agencies have established their own websites for promotion, marketing, and online transactions [2]. Tourism websites can be seen as an interface of electronic tourism where users have their initial interaction with the tourism industry [5]. Today, thousands of electronic tourism websites are accessible, making a variety of online information and services widely available online [1]. Among them, usability is one of the most important factors in the success of tourism websites because it usually affects usage and acceptance, and increases users' interaction with those websites [2]. Past research has revealed the importance of gender to information system usability

(e.g. [3, 4, 19]). However, there are limited studies exploring gender differences in usability of tourism websites. We argue that such lack of studies may hinder the development of more personalized and user-centered tourism websites. Therefore, this study aims to explore gender differences in usability design, focusing on the four specific tourism websites. By doing so, it can provide insights into gender differences in usability to support tourism website design.

Accordingly, the paper is presented as follows: Sect. 2 presents related studies from literature to demonstrate the importance of gender differences to usability in tourism websites. In Sect. 3, an empirical study is designed to explore gender differences in tourism website usability. This allows the detection of gender difference results related to usability of the target tourism websites which are discussed in Sect. 4. Finally, conclusions are drawn and possibilities for future study are recommended in Sect. 5.

2 Study Background

Studies of gender differences in various computer-related systems and online commercial applications are indicated in the literature, such as car navigation systems [4], blog interface [6], mobile commerce [8] and hypermedia learning systems [9]. These studies show that males and females have diverse perceptions, expectations, preferences and performance with computer-related information systems. For example, perceived ease of use is more salient to females [3]. Female have higher expectation of accessible information quality than males [3]. Females prefer blogs whose layouts feature more images than text, while males prefer blogs with a greater proportion of text than images [6]. Moreover, females are more likely than males to seek out discounts and hunt for bargains [4].

Many research (e.g. clinical and experimental research) study the gender from biological differences in the brain scheme, showing lateralization of two hemispheres in human brain [10]. Others focus gender differences on information processing [11], information quality [12], IT adoption [13], online shopping [6], social networking site use [14], online auctions [15] and mediated communication [16]. Within the tourism websites context, the magnitude and presence of gender differences is also highlighted in the recent literature. For example, females have more favorable perceptions of tourism website functionalities and content than males have [7].

3 Methodology

Having indicated the importance of gender differences to computer-related information systems, this paper reports on an empirical study to explore gender differences in tourism website usability. To conduct the study, three research instruments are used, namely a set of tourism website samples, the task sheet and the questionnaire. Four tourism websites: Airbnb, Ctrip, Travelzoo and Yelp are selected for study since these websites are popular, highly used, and of high quality. The task sheet details a set of tasks for users to perform. These tasks are representative activities that users would be expected to perform on tourism websites. The questionnaire is based on Nielsen's

usability heuristics to capture users' perception towards usability of tourism websites. The questionnaire design has three steps. Step one: the existing heuristics are extended by adding three new guidelines: Interoperability; Interactivity, and Security and Privacy to meet tourism website specific needs (see Table 1). Step two: a set of evaluation criteria is developed for each heuristic. Step three: the questions are developed from these associated criteria. Study participants are initially allowed to have free interaction with tourism websites. Therefore, a general perception of tourism websites can be developed. Subsequently, a task-based interaction assigns users to complete a series of tasks. Finally, the users are asked to fill out the questionnaire to express their perceptions for the usability of tourism websites.

Table 1. Usability heuristics

No.	Usability heuristic	Interpretation
H1	Visibility of system status	To keep users informed about their progress
H2	Match between system and the real world	To use the user' language, follow real-world conventions, make information appear in a natural and logical order
H3	User control and freedom	To make undo, redo functions available during interaction
H4	Consistency and standards	To keep the same design features, follow platform conventions
H5	Error prevention	To support users overcome errors, prevent same problem occurrence
H6	Recognition rather than recall	To make information easily remembered
H7	Flexibility, efficiency of use	To consider usage for both novice and experienced users
H8	Aesthetic design	To make minimalist design
H9	Help user recover errors	To precisely indicate the problem, constructively suggest a solution
H10	Help and documentation	To provide help to support user's task completion.
H11	Interoperability	To ensure exchanged information, services work together via different systems
H12	Interactivity	To provide rich interactive and social experience
H13	Security and privacy	To protect users' information and secure personal services

To analyze users' perception of usability of the target tourism websites from the gender perspective, the data collected from the questionnaire was coded using IBM SPSS for windows (version 23.0). The significance value (P) was predefined as less than 0.05. The independent variables were the four tourism websites and the gender, while the dependent variables were the participants' perception.

4 Results and Discussion

4.1 Descriptive Profile

Figure 1 shows the participants' gender information among the four target tourism websites. Note that the distribution of participants' characteristics is equally allocated across the four tourism websites.

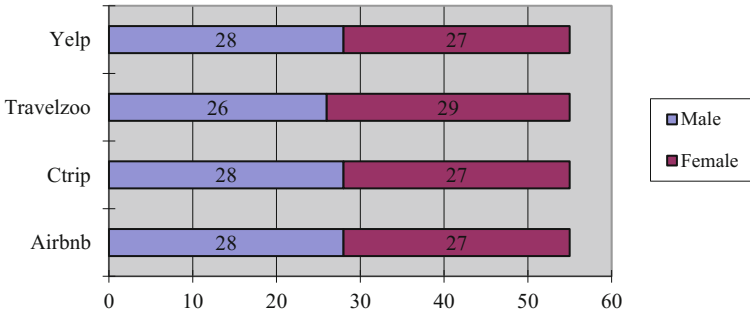


Fig. 1. Participants gender distribution

Additionally, the analysis of the usability heuristics reliability was conducted by calculating Cronbach's alpha. An alpha value between 0.7 and 0.95 shows high reliability [20]. In this study, the alpha values of each usability heuristic were higher than 0.7, showing good reliability (see Table 2).

Table 2. Reliability of usability heuristic

	Airbnb	Ctrip	Travelzoo	Yelp
Usability heuristic (number of items)	Cronbach' Alpha			
H1.Visibility of site status (4)	0.737	0.710	0.758	0.803
H2.Match site and real world (3)	0.740	0.715	0.754	0.771
H3.User control and freedom (3)	0.779	0.703	0.748	0.758
H4. Consistency (3)	0.704	0.721	0.711	0.739
H5. Error prevention (3)	0.738	0.707	0.794	0.743
H6. Recognition (4)	0.701	0.711	0.763	0.701
H7. Efficiency of use (3)	0.784	0.715	0.762	0.730
H8. Aesthetic design (3)	0.704	0.707	0.775	0.753
H9.Help user recover errors (2)	0.737	0.746	0.721	0.786
H10.Help and documentation (2)	0.781	0.745	0.752	0.790
H11. Interoperability (2)	0.746	0.779	0.706	0.786
H12. Interactivity (4)	0.767	0.704	0.755	0.788
H13.Security and privacy (4)	0.788	0.797	0.765	0.721

4.2 Overall Assessment

Overall, the results show that females have the higher scores of the overall usability assessment than males have (see Fig. 2). As a high score indicates a bad overall assessment of usability, it indicates that females have the worse overall assessment of usability. Accordingly, these may imply that females have a higher level of usability requirements than males.

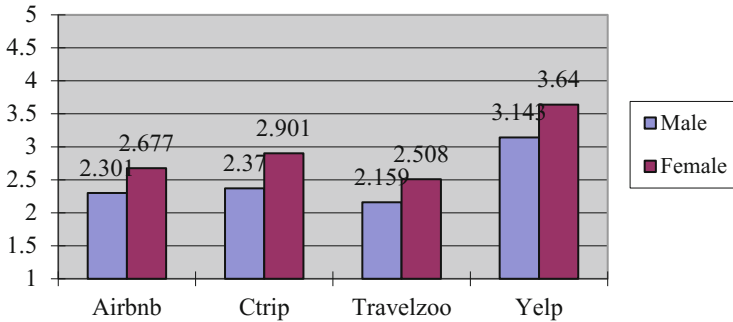


Fig. 2. Participants gender distribution

4.3 Gender Differences to Usability Heuristics

Given the gender difference in the overall usability perception, this section describes the detailed level of gender difference in usability heuristics. Figures 3, 4, 5, 6 shows the significant differences of usability heuristics perception between genders among the four tourism websites.

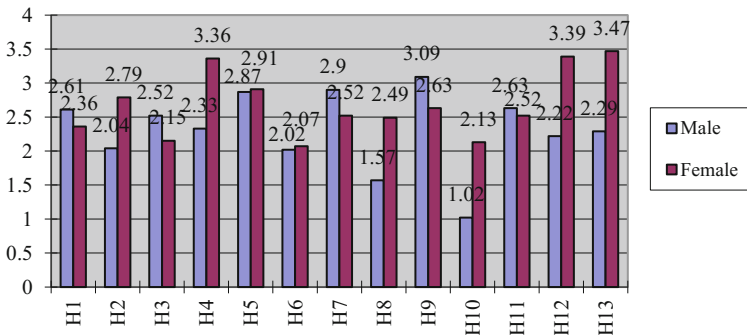


Fig. 3. Gender differences to usability heuristics in Airbnb

Among the four tourism websites, the common usability heuristics that males require most are Visibility of system status (H1), User control and freedom (H3) and Efficiency of use (H7). Visibility of system status is used to keep users visually informed about their progress. It seems that males consider and largely rely on subset

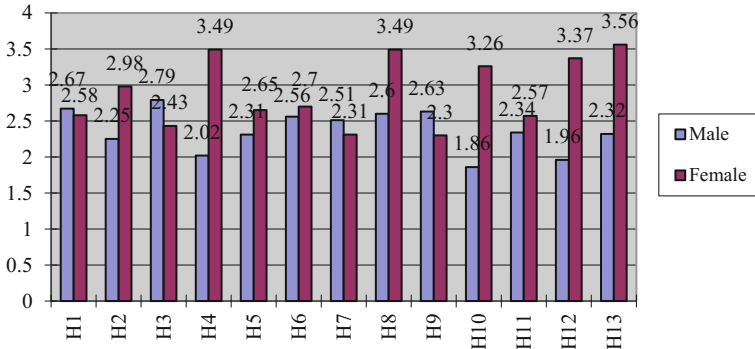


Fig. 4. Gender differences to usability heuristics in Ctrip

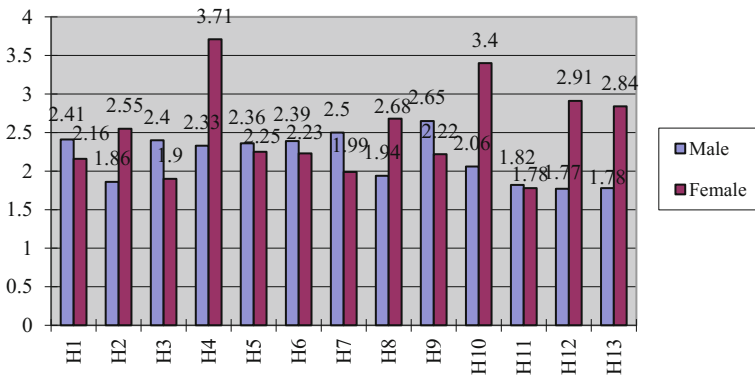


Fig. 5. Gender differences to usability heuristics in Travelzoo

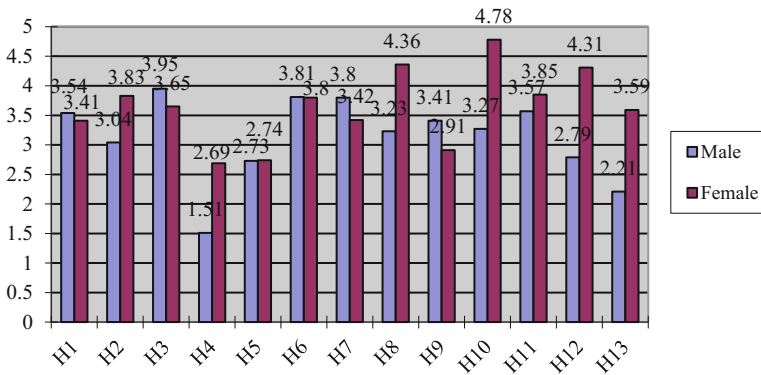


Fig. 6. Gender differences to usability heuristics in Yelp

of highly available visual cues when they interact with tourism websites [18]. User control and freedom is about users having good control and a high degree of freedom. The results imply that males are more likely require control, mastery and self-efficacy to pursue self-centered goals [6]. They normally advantage for spatial navigation through a website and have higher self-reports on sense of direction or spatial confidence [4]. Regarding efficiency of use, it appears that males place a greater emphasis on perceived ease of use and they tend to perceive the link between ease of use and their attributes more strongly than females counterparts [13].

Moreover, the common usability heuristics that females require most are Aesthetic design (H8), Help and documentation (H10) and Security and privacy (H13). Aesthetic design refers to the set of visual design elements of tourism website. It can be seen as apparent usability, which is perceived more quickly than other attributes of usability [17]. Our findings suggest that females are more process-oriented which means females are not limited by the nature of the target technologies (e.g. usefulness of help function, personal information protection), but more open to various possible design aspects (e.g. aesthetic, ease of use and enjoyment). Regarding help and documentation, it implies that females may place greater emphasis on internal and external supporting factors, while males may rely on facilitating conditions. Similarly, females are more concerns and apprehensive about the risk threats associated with online services. As explained by Lin and Chien [4], females are found to have higher computer anxiety than males. Thus, they always ask for a higher level of online service protection.

Furthermore, the significant differences of usability heuristics perception between genders have been identified on each tourism websites. More specifically, on Airbnb, usability heuristics that have the higher scores by males are Visibility of system status (H1); User control and freedom (H3); Efficiency of use (H7); Help user recover errors (H9) and Interoperability (H11), while usability heuristics that have the higher scores by females are Match site and real world (H2); Consistency and standards (H4); Error prevention (H5); Recognition (H6); Aesthetic design (H8); Help and documentation (H10); Interactivity (H12); Security and privacy (H13). Regarding Ctrip, usability heuristics that have the higher scores by males are Visibility of system status (H1); User control and freedom (H3); Efficiency of use (H7); Help user recover errors (H9); while usability heuristics that have the higher scores by females are Match site and real world (H2); Consistency and standards (H4); Error prevention (H5); Recognition (H6); Aesthetic design (H8); Help and documentation (H10); Interoperability (H11); Interactivity (H12) and Security and privacy (H13). As for Travelzoo, usability heuristics that have the higher scores by males include Visibility of system status (H1); User control and freedom (H3); Error prevention (H5); Recognition (H6); Efficiency of use (H7) and Help user recover errors (H9), while usability heuristics that have the higher scores by females are Match site and real world (H2); Consistency and standards (H4); Aesthetic design (H8); Help and documentation (H10); Interoperability (H11), Interactivity (H12) and Security and privacy (H13). For Yelp, usability heuristics that have the higher scores by males are Visibility of system status (H1); User control and freedom (H3); Efficiency of use (H7) and Help user recover errors (H9), while usability heuristics that have the higher scores by females are Match site and real world (H2); Consistency and standards (H4); Aesthetic design (H8); Help and documentation (H10); Interoperability (H11); Interactivity (H12) and Security and privacy (H13).

These findings show that in each target tourism website, females have more usability heuristic requirements, covering a wider range of tourism websites design than males.

5 Conclusion

The development of tourism websites has been rapid. Users can use tourism websites to receive updated travel-relative information and services, share personal experiences and form communities of exchange. Usability should be importantly considered and addressed into tourism website design on the basis of gender differences. This study's results identify a number of significant differences of user perception of usability features between females and males in the tourism websites. More specifically, the results show that females have a wider range of usability requirements than males. This implies that females are more process-oriented, which means females are not limited by the specific nature of usability (e.g. usefulness), but more open to various possible applications throughout the whole process of tourism website usage (e.g. ease of use and enjoyment). However, males are more motivated by productivity-related or task-oriented factors. Furthermore, our results find the significant differences of user perception of the specific usability features between males and females within each target tourism websites. For example, on Airbnb, females are more concerned and apprehensive about the security and privacy than males on tourism websites. On Ctrip, female subjects' fixation spread over a larger area, and they search for more details compared with the male subject. On travelzoo, females focus on particular navigation features, while males approach navigation from a global perspective. As for Yelp, females focus more on establishing and maintaining relationships with people and social contexts than males do. These may provide a better understanding of whether travel agencies should develop their websites that meet users' requirements and preferences based on gender.

This study has limitations. For example, this study considered a small (four) sample of tourism websites, which might provide limited empirical insight. Additionally, it would be interesting to conduct a study that explores users' performance with tourism websites. The results may provide deep insights into users' behaviors, which may better inform tourism website design.

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