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## Effectiveness of accessibility information on hotels' websites: a quasi-experimental design

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## **Effectiveness of accessibility information on hotels' websites: a quasi-experimental design**

### **Introduction**

In the United States, about 26% of adults have some type of disability; and among them, people with mobility-related disability account for the largest group (CDC, 2019). Like people without disabilities, people with disabilities often need to travel for business, education, health or leisure, but limited mobility may make travel more difficult and thus hinders people's full participation in society. Nonetheless, people with disabilities spend \$13.6 billion on 31.7 million trips per year in the U.S. (Grady & Ohlin, 2009). As a large potential tourism market, people with disabilities have not received full attention from the hotel industry. Studies have found that it is common to find hotel employees who do not understand the needs of guests with mobility disabilities nor are knowledgeable about the accessibility features of their properties (Darcy & Pegg, 2011; CENELEC, 2011). The literature shows there is a major gap between what hospitality services offer and what they communicate to consumers (Cole, Svetina, & Whiteneck, 2019). For example, a guest may be told the room is accessible when booking the room but find out it is not accessible to wheelchairs once they get there. The issue is exacerbated when guests with limited mobility try to book the room online because accessibility-related information presented on the hotel website oftentimes lacks details and thus, guests have to call the hotel to confirm that everything is right for them (Kim, Stonesifer, & Han, 2012). This study developed a set of accessibility information relevant for people with mobility disabilities and it intends to examine the effectiveness of such information in enhancing guests' satisfaction and their intention to book the hotel online without having to call the hotel.

Generally, information presented on a website is considered one of the most important website design characteristics (Gretzel et al., 2000; Chung & Law, 2003). Quality of the information is a crucial dimension in website evaluation, which includes relevance, accuracy, comprehensibility, and completeness (Elling, Lentz, de Jong, & van den Bergh, 2012). Information accuracy has been widely studied since it is regarded as the foundation of quality hotel websites (Wang et al., 2015; Wen, 2009, 2012). More research is needed, however, to understand the comprehensibility and completeness of the information presented by hotel websites, especially regarding the accessibility information. Additionally, little research has been done to examine the effectiveness of information presentation format online. Research has shown that other than text information, pictures can also influence purchase intention on the website since pictures add tangible cues that make customers feel more present with the hotel products and services (Jeong & Choi, 2005). It is not clear, however, if accessibility information presented in an interactive/searchable format would be different from static text and pictorial format in their influence on guests' evaluation of the online information. This study aims to examine the perceived effectiveness of the additional accessibility information presented on hotels' websites and whether the formats of how accessibility information is presented online can affect the effectiveness of such information as perceived by guests with limited mobility.

Though evidence in the literature indicates general consumers may only seek basic information from hotel websites, such as reservations and availability (Ip et al., 2011; Leung et al., 2013), the online search behavior of people with disabilities is likely to be different. Information about the

accessibility features of the visited area is vital for wheelchair users during their decision-making (Yau et al., 2004). Some people with disabilities, particularly wheelchair users, choose not to travel or stay at hotels if they do not find sufficient accessibility information they need (Guerra, 2003). Thus, it is crucial for hotel websites to provide adequate accessibility information that gives confidence to people with disabilities when booking rooms online (Darcy & Daruwella, 1999; Guerra, 2003; McKercher et al., 2003). As the first point of contact in guests' hotel experience, a hotel website with adequate accessibility information can contribute to the hotel's inclusive environment, and thus, increase demand from guests with disabilities.

## **Methodology**

### *Design*

The study employed a quasi-experimental pretest-posttest research design using customer evaluation data through an online survey. A quasi-experimental research design is often employed when a true randomized design cannot be accomplished because of time and practical issues (Trochim & Donnelly, 2001). The study aims to test the effectiveness of a set of lodging accessibility information (e.g. bed height, space in bathroom, entry to roll-in shower) important to guests with limited mobility (hereinafter referred to as "AccInfo").

### *Procedure*

Five hotels provided AccInfo for the study. The AccInfo were presented in the following formats: interactive format with pictures, interactive format without pictures, static text format with pictures, or static text format without pictures. Participants were first asked to evaluate one of the hotel's existing accessibility information on the website (Hotel A) and rate their overall satisfaction with the hotel's existing accessibility information online and their intention to book the hotel online without calling the hotel for more information. Next, participants were asked to evaluate the hotel's website with AccInfo (Hotel B) and answer the same set of questions

### *Participants*

Participants were recruited through a newsletter sent by a spinal cord injury association in the United States. Participants were over 18 and living with spinal cord injury. A unique link of the survey was sent to participants through Qualtrics. Of the 497 surveys sent out, 393 completed surveys were valid, resulting in a response rate of 79%.

### *Measures*

Survey questions included evaluation of hotel website accessibility information, overall satisfaction with the hotel website information and intention to book the hotel online without calling the hotel. To evaluate the hotel website information, the study employed question items measuring the completeness and comprehensibility of the information. These items were adopted from multiple existing scales designed to evaluate information quality on websites (Barnes & Vidgen, 2002; Elling et. al, 2012). The items were minimally modified to fit the hotel information setting, with 7 points on the scale (1 = strongly disagree; 7 = strongly agree). Overall satisfaction with the accessibility information was measured by a 10-point single item (1=extremely dissatisfied; 10=extremely satisfied). The intention to book the hotel online without calling was measured on a 10-point item with 1 = not at all likely and 10 = extremely likely. The changes in satisfaction with the accessibility information and intention to book were calculated by using Hotel

B (posttest)-the hotel website with AccInfo accessibility information added, minus Hotel A (pretest)-the hotel website before AccInfo was added.

### *Data Analysis*

IBM SPSS Statistics 26 was used for data cleaning and statistical analyses (SPSS Inc., 2018). Descriptive statistics were used to depict participant characteristics. Since the study used a pretest-posttest design, paired t-tests were conducted to analyze the effect of additional accessibility information from AccInfo on participants' evaluation of the hotel accessibility information. Next, Analysis of Variance (ANOVA) was conducted to test the effects of different information presentation formats on the pretest and posttest changes of satisfaction level and intention to book. Multivariate analysis of variance (MANOVA) was performed to test whether the different formats of information provided can affect the evaluation, satisfaction and intention to book Hotel B.

### **Results**

The average age of the respondents was 46.13 (SD = 13.707), ranging from 20 to 76 years old. On average the participants had been living with spinal cord injury for 16 years (SD = 13.6, ranging from less than a year to 65 years), while almost 50% of the respondents had been injured for less than 10 years. Of the 393 participants, 59.3% of them were male and most of them were Caucasian (81.4%). Over 46% of the participants were living on disability, 29% of the participants were working full-time or part-time, and 15% of were retired. Most of the participants (62%) were married or living with a partner, while 36% of them have divorced, separated, widowed or never married.

Most of the participants (60%) were paraplegic (both complete and incomplete) while the rest were tetraplegic. Almost half of the participants (49.1%) used manual wheelchairs in their daily life, and 47.3% of them used power chairs or scooters. About 20% of the respondents perceived themselves as independent in daily life, 26% of them needed low support, 34% of them needed moderate support, while 20% of the respondents needed severe or profound support in their daily living. The majority of the participants have stayed in hotels within the last year (73%), while only 3% of the participants have never stayed in a hotel before.

### *Effectiveness of the AccInfo on the changes of satisfaction and booking intention*

To assess the effectiveness of the AccInfo, paired-sample t-tests were conducted on items measuring the completeness and comprehensibility of the accessibility information, satisfaction of the information, and intention to book the hotel. Table 1 demonstrates the results of the paired-sample t-tests on the pretest (Hotel A) and posttest (Hotel B) scores. After being exposed to the additional accessibility information provided by AccInfo, participants confirmed that they had higher assessment on the completeness of the accessibility information, comparing Hotel A's website (M = 3.57, SD = 2.28) and Hotel B's website (M = 5.49, SD = 1.79,  $t(390) = -15.34, p < 0.001$ ). The respondents rated Hotel B's website (M = 5.98, SD = 1.39,  $t(386) = -15, p < 0.001$ ) as more comprehensive than Hotel A's website (M = 4.16, SD = 2.17). After adding detailed accessibility information onto the hotel website (Hotel B: M = 8.1, SD = 1.89), the participants showed significantly higher satisfaction than that for pretest hotel (M = 5.67, SD = 2.74,  $t(392) = -16.04, p < 0.001$ ). Participants were statistically more likely to book Hotel B online without having to call the property (M = 7.27, SD = 3.05,  $t(388) = -15.61, p < 0.001$ ) than Hotel A (M = 4.37, SD = 3.61).

Table 1. Results of paired samples test on pretest (hotel A) and posttest (hotel B)

Hotel A - Hotel B	Mean diff.	SD	SEM	95% CI Lower	95% CI Upper	t	df	p
Completeness of the accessibility information	-1.92	2.47	0.13	-2.16	-1.67	-15.34	390	0.00*
Comprehensive of the accessibility information	-1.83	2.40	0.12	-2.07	-1.59	-15.00	386	0.00*
Satisfaction with the accessibility information of the hotel website.	-2.43	3.00	0.15	-2.73	-2.13	-16.04	392	0.00*
Likely book the hotel online without calling	-2.90	3.66	0.19	-3.26	-2.53	-15.61	388	0.00*

\* significant at  $p < 0.05$

*Influence of different formats on the changes in satisfaction and booking intention*

To understand whether the changes from pretest to posttest are affected by the different formats of AccInfo presented to participants, two separated ANOVA tests were performed on the changes of accessibility information evaluation, satisfaction and intention to book the hotel online. Table 2 shows that picture,  $F(1, 385) = 0.9, p = 0.343$  and static or interactive format of the accessibility information,  $F(1, 385) = 1.91, p = 0.168$  did not have a significant impact on the changes of satisfaction on hotel's accessibility information. However, a significant crossover interaction effect was detected,  $F(1, 385) = 4.86, p = 0.028$ . After analyzing the interaction plot, the significant interaction effect suggested that the effect of pictures depended on the format of AccInfo, meaning without pictures, changes of satisfaction were high when using the interactive format of AccInfo ( $M = 3.26, SD = 0.36$ ).

Table 2. Result from ANOVA with Dependent Variable: Changes in satisfaction of hotel accessibility information

Source	Type III Sum of Squares	df	Mean Square	F	p
Pictures	8.042	1	8.042	0.90	0.343
Static or Interactive	17.039	1	17.039	1.91	0.168
Picture * Static or Interactive	43.378	1	43.378	4.86	0.028*

\* significant at  $p < 0.05$

However, the ANOVA on the changes in intention to book the hotel online without calling (Table 3) did not find any significant interaction effect  $F(1, 385) = 2.146, p = 0.144$ . Nor did the picture  $F(1, 385) = 0.094, p = 0.76$ , static or interactive format accessibility information  $F(1, 385) = 1.135, p = 0.287$  have any significant main effect on the intention to book the hotel online.

Table 3. ANOVA result with dependent variable: Changes in intention to book the hotel online without calling

Source	Type III Sum of Squares	df	Mean Square	F	p
Pictures	1.252	1	1.252	0.094	0.760
Static or Interactive	15.173	1	15.173	1.135	0.287
Pictures * Static or Interactive	28.691	1	28.691	2.146	0.144

*Influence of different formats on evaluations of AccInfo*

To find out whether pictures and the forms of the information page would affect participants' evaluation of the information from AccInfo, MANOVA was performed with posttest scores of the completeness of accessibility information, satisfaction of the hotel accessibility information, and intention to book the hotel online as the dependent variables. Results of MANOVA revealed no significant interaction effect,  $F(3, 381) = 0.4, Pillai's Trace = 0.003, p = 0.753$ ; however, the combined evaluation of the completeness, satisfaction and intention to book hotel with AccInfo were significantly affected by both pictures ( $F(3, 381) = 3.605, Pillai's Trace = 0.28, p = 0.014$ ) and by static text or interactive forms of information ( $F(3, 381) = 3.549, Pillai's Trace = 0.027, p = 0.015$ ).

The univariate follow-up tests (Table 4) between the "With pictures" and "No pictures" groups show that in the posttest, the participants provided significantly higher evaluations of the hotel's accessibility information ( $F(1, 383) = 6.26, p = 0.01$ ) when pictures were presented. They were also more likely to book Hotel B with AccInfo information directly online without calling ( $F(1, 383) = 4.6, p = 0.03$ ). The completeness of the information rating increased when pictures were provided ( $F(1, 383) = 10.16, p = 0.00$ ). The univariate follow-up test with different forms of AccInfo (interactive or static text) suggested when information was provided on a single PDF file, significant difference was found on the intention to book hotel online ( $F(1, 383) = 4.44, p = 0.04$ ) and the completeness of the information ( $F(1, 383) = 7.7, p = 0.01$ ). However, participants' satisfaction level with accessibility information was not significantly different between interactive or static text format.

Table 4. Univariate tests results

Dependent Variables	Mean		Mean Diff.	Univariate analysis	
	With Pictures	No Pictures		F	<i>p</i>
Satisfaction with the accessibility information of hotel B	8.38	7.88	.506*	6.26	0.01 <sup>a</sup>
Likely book hotel B online without calling	7.66	6.96	.696*	4.60	0.03 <sup>a</sup>
Completeness of the information	5.82	5.22	.602*	10.16	0.00 <sup>a</sup>
	Interactive	Static			
Satisfaction with the accessibility information of hotel B	8.06	8.19	-0.127	0.40	0.53
Likely book hotel B online without calling	6.96	7.65	-.683*	4.44	0.04 <sup>a</sup>
Completeness of the information	5.26	5.78	-.524*	7.70	0.01 <sup>a</sup>

\* indicates significance after controlling the multiple comparison issue with Bonferroni method. Based on marginal means.

<sup>a</sup> indicates significant univariate ANOVA results,  $p < 0.05$

## Conclusion and Discussion

The current study utilized a pretest-posttest quasi-experimental design to test the effectiveness of AccInfo, detailed hotel accessibility information, as perceived by guests with spinal cord injury, their overall satisfaction with the hotel's accessibility information, and their intention to book the hotel online. After being exposed to the additional accessibility information provided by AccInfo, the participants showed significantly higher evaluation of and satisfaction with the hotel's accessibility information. The participants were also more likely to book the hotel online without calling. These findings demonstrate that implementing AccInfo is effective in increasing the satisfaction of guests with mobility impairment and their intention to book the hotel online.

The results from ANOVA suggest the changes of satisfaction and intention to book online were not affected by the formats of AccInfo presented. However, if the accessibility information is presented without incorporating pictures, guests showed higher satisfaction with AccInfo in the interactive format.

The MANOVA results found that when the accessibility information is presented with pictures, participants are more likely to rate the website information as complete, demonstrate higher level of satisfaction, and are more likely to book the hotel online. This finding aligns with a previous study that suggests combining pictures with text can improve the evaluation of the website (Van Rompay, De Vries, & Van Venrooij, 2010). The current study also finds that when the information is provided in the static text file, participants think the information is more complete than the interactive web page. A possible explanation is that AccInfo's interactive web page contains

multiple tabs and navigations are needed to find all the information. However, the static text format presents all information in one single PDF file. Therefore, participants can easily view all the information in the PDF file by scrolling down and quickly search for the information they need. The finding suggests that for future updates of AccInfo, the design of the interactive page needs to be more streamlined. The univariate follow-up test finds that information on the static format increases the intention to book the hotel online more than the interactive view. This may be because the PDF file was directly linked to the hotel's own website, thus providing easy access to book the hotel online. To increase the likelihood of booking directly online, the AccInfo interactive page needs to include booking options.

### *Limitations*

The study presented an effective tool for hotels to provide accessibility information by implementing AccInfo. However, the study still has a few limitations. We chose a very similar hotel as Hotel A for these two hotels. Although all the hotels selected in the study were all limited-service hotels, their original website may have some different features that could confound the test results. For example, some hotels' original websites had a gallery full of pictures of different features of the hotel, while others only had limited pictures. The participants in the quasi-experimental design were limited to people with spinal cord injury. Future studies are needed to address different needs of guests with other types of disability in order to provide guidelines for lodging facilities to provide a more inclusive lodging environment for people with disabilities.



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