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Assessing User Perceptions of Trust and Security in Manipulated Versions of Low Trust and High Trust Tourism Websites

The aim of this study was to investigate how perceptions of security and trust are involved in user evaluations of tourism websites and whether manipulations to heighten or lessen trust features could predict trust perceptions. Seven websites were manipulated to produce low and high trust versions, with the original used as a control version. Four trust manipulations were used based on the literature: level of currency, credibility, craftsmanship and trust logos. Fifty-six participants viewed one version of each website for 6 seconds and submitted an immediate rating of trust for each site. Following this, an 11-item self-report measure was completed for each website, to collect more considered perceptions of trust, appeal, security and usability. Self-perception measures of trust disposition and concern for information privacy were also collected. The analyses showed that the presence or absence of trust features reliably led to higher and lower perceptions of trust respectively. Also, those scoring higher on trust disposition gave higher trust ratings. We conclude that websites can be reliably designed to engender more or less perceived trust, however individual differences need to be considered. This preliminary research is limited by studying just four factors and further research is needed to manipulate other website features.

Key words: trust, privacy, security, cybersecurity, personality, credibility

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Introduction

Increasingly, websites contain misleading or incorrect details and companies are facing pressure to create trustworthy websites. However, research is needed that experimentally manipulates individual features to explore how they affect trust in websites (Pengnate & Sarathy, 2017). Trust is an essential pre-requisite for human interaction and has become especially important in the digital world where an initial evaluation of trust will determine whether online interpersonal interactions or commercial transactions take place. Research on trust is published in a number of discipline areas and in this article we will consider psychological research (highlighting interpersonal trust and individual differences regarding disposition to trust) and human-computer interaction (HCI) research (e.g. techniques used by software designers to enhance trust and security). Within tourism, trust is an important antecedent for whether a consumer will continue to explore a website, and ultimately can affect their willingness or intention to purchase a product or service (Lynch, Kent, and Srinivasan, 2001). It can be more difficult to build trust online due to the impersonal nature of online transactions and an increase in the opportunity for fraud via sophisticated technological means. The trustworthiness of vendors or websites cannot be assessed by the cues used offline, that is, verbal, non-verbal and other environmental cues. Therefore, trust cues needs to be built-into websites to compensate; termed ‘trust triggers’ (Lumsden & MacKay, 2006). Online consumer trust levels can be affected by a number of factors, those relating to website features and consumer attributes will now be reviewed.

Website features

The information provided on the homepage should allow the customer to build up a picture of the vendor and this is achieved through both style and content. Based on a questionnaire survey, Cheskin Research (2000) proposed that e-commerce trust is communicated by six website features: seals of approval;

credibility (based on reputation); presentation (good design connoting quality and professionalism); fulfilment; navigation and technology. Briggs et al (2002) summarised many of the positive and negative factors regarding the perception of trust in websites and based on these we now review studies that have investigated four specific website features which are considered the most significant and are manipulated in our study.

Professional appearance

Fogg et al (2001) highlight the impact of an unprofessional appearance of a webpage on user perceptions and found that users were wary of continuing to explore an unprofessional site and stated that key indicators of this were spelling mistakes and broken links. Similarly, Elliot & Speck (2005) identified what they called a 'professional style', which was formal and contained no spelling or grammatical errors. Chen & Dhillon (2003) highlight situational normality as one of four key website features which influence trust the most; they define sites that achieve this by adopting a 'professional look' and liken this to the e-version of a business suit.

Currency

Currency relates to all details about the website being up-to-date and accurate. This contributes to a perception of normality. Chen & Dhillon (2003) concluded that currency of a website was a pre-requisite for credibility and trust. Currency can also relate to date-specific items such as new promotions, new events and items that refresh content such as season-specific colours and text. Such indicators signal a vendor's commitment to stay current and up to date. Indicators that the site is not current reduce the perception of vendor credibility.

Credibility

Chen & Dhillon (2003) focused on the credibility of e-vendors, communicated via an 'About us' tab or indicators within the content of a web-page. An important way to do this is for the vendor to highlight the company history and values, e.g. company policies regarding security and privacy to encourage positive judgments of trust to be made. The provision of contact details has

been shown to make people act more responsibly and therefore customers can gain recompense if something goes wrong.

Quality-assurance logos

According to Head & Hassanein (2002) there are four types of indicator of quality assurance (word of mouth, watchdog, certificate authorities and seals of approval). They developed a model which included four phases of building online trust and specifically highlighted ‘seals’ as a mediating factor. Chen & Dhillon (2003) also conclude that return policies, privacy policies, and third party assurances are key in assuring the customer that the vendor is trustworthy.

Consumer attributes

Levels of trust in websites are sensitive to individual differences regarding consumer characteristics; here we will cover two important factors.

Trust disposition

Cheshire et al (2010) identified positive correlations between disposition to be trusting with ‘general website’ trust and ‘familiar website’ trust. Also, they found that the positive effect of technology competence erased the effect of caution towards general websites but not familiar websites. Wu, Hu & Wu (2010) have also investigated disposition to trust and used three questions to measure this; these are used in our study.

Concern for security and privacy

Van Slyke, Shim, Johnson & Jiang (2006) assessed consumers' concerns for information privacy (CfIP) and willingness to engage in online transactions. Concern for information privacy affected risk perceptions, trust, and willingness to transact for a well-known merchant, but not for a less well-known merchant. Shim et al (2004) identified four aspects regarding user concerns towards security and privacy: information privacy, concern for access; errors, and secondary use of personal information.

Rationale

Previous research has used methods such as online surveys and focus groups and interviews, however there is a lack of research using an experimental

methodology in a controlled environment to determine how different website features affect user perceptions of trustworthiness. Our study aimed to investigate how specific factors affected user's perceptions of websites; by manipulating features related to trust highlighted in the literature review.

Method

Fifty six participants (14 males and 42 females) between the ages of 18 and 71 (mean 32.6 years) were recruited from University staff and students and from the local community. Participants viewed seven websites including a mixture of original pages (the controls), and manipulated high trust and low trust versions. Seven websites were selected and piloted so that a range of travel website categories was used, representative of the wider travel industry. These covered: a flight company; a travel agency; hotel accommodation; self-catering accommodation; bespoke holidays; youth holidays, and tourist information. Screenshots were taken of the selected websites and the original pages were manipulated to produce high trust versions, in which trust factors were enhanced, and low trust versions, in which trust factors were degraded regarding the identified four trust factors, as follows:

- 'Quality-assurance logos' were added or removed to degrade or enhance trust (respectively);
- 'Credibility' was degraded by removing an 'about us' link and enhanced by adding the link;
- 'Currency' was manipulated by adding obsolete date cues, removing date cues or adding up-to-date cues;
- 'Professional appearance' was degraded by misaligning text and images.

An image was displayed for six seconds (HCI research has previously shown this to be sufficient to assess websites) and the participant then pressed a keypad containing three buttons to indicate their immediate rating of the website: 1='not very trustworthy', 2='quite trustworthy' and 3='very trustworthy'. This was then repeated for seven images, shown in random order. A web-site perception questionnaire was then completed to collect more detailed user perceptions of each website. This contained 11 items addressing, perception of each site's trustworthiness, appeal, security and usability. Printed A4 colour

copies of the viewed websites were used for reference for completing this questionnaire. A demographic and self-perception questionnaire was also completed containing 14 questions addressing gender, age, frequency of computer use, experience with e-commerce and other items gathered from key articles. Three items were taken from Wu, Hu & Wu (2010) regarding disposition to trust; four items were used from Shim et al (2004) regarding CfIP, and the remaining items related to reasons given by consumers for not buying online. For each of the items, participants were asked to indicate the extent that they agreed or disagreed on a 5-point scale.

Results

Instant ratings

TABLE I. INSTANT RATINGS OF WEBSITE PERCEPTION FOR THE THREE CONDITIONS

Website Manipulation	Trust Rating		
	1 (low)	2 (medium)	3 (high)
Low Trust	44	62	20
Control	37	54	37
High Trust	26	52	48

Table 1 shows that Low Trust websites were less likely to attract high trust ratings (i.e. a rating of 3), while control websites were most likely to attract a medium rating of 2, and High Trust websites were least likely to attract a low trust rating (i.e. a rating of 1). A Chi2 test showed that the values observed in Table 1 were not significantly different ($p > 0.05$) to those values expected ($\chi^2 = 0.0019$, $df=4$). However, a post-hoc analysis was conducted, comparing just Low Trust and High Trust websites for ratings of 1 or 3 (to remove control websites and those attracting a medium rating); a Chi2 test showed that observed values were significantly different to those expected at $p < 0.01$ ($\chi^2 = 8.186$, $df=1$). That is, participants gave significantly higher ratings of trust to the High Trust websites, compared to Low Trust websites.

Website perceptions questionnaire

Data from eight of the items collecting participant perceptions for Low Trust, Control and High Trust websites are aggregated and displayed in Table 2; three items from the 11-item questionnaire are excluded as they are unrelated to trust.

TABLE 2. AVERAGE WEBSITE PERCEPTION RATINGS ON A SCALE OF 1 (LOW) TO 5 (HIGH)

Website Perception Items	Website Manipulation		
	<i>Low</i>	<i>Control</i>	<i>High</i>
1. This website appears to be sincere and honest	3.20	3.45	3.58
2. I would be more likely to make a purchase / seek information from this site	2.91	3.17	3.39
3. I have a positive feeling about this website	2.90	3.12	3.41
4. This company would keep my personal information secure	2.67	2.75	3.10
5. This company would have good customer service	2.89	3.03	3.30
6. This company appears trustworthy	3.10	3.25	3.52
7. There is too much uncertainty associated with shopping from this company	2.74	2.6	2.42
8. This is a beautiful webpage	2.77	2.85	2.92

Perceptions relating to trust

It was predicted that as the trust features increased, websites would be more likely to be perceived as more trustworthy, sincere and honest. It can be seen from Table 2 that when perceptions of all seven websites were combined, the Low Trust manipulation produced the lowest perception of honesty (item 1) and the High Trust manipulation produced the highest perceptions. Table 2 also shows that when perceptions of all seven websites were combined, the Low Trust manipulation produced the lowest perception of trustworthiness and the High Trust manipulation the highest perception of trustworthiness (item 6).

Perceptions relating to appearance

It was predicted that websites would be more likely to be perceived in positive ways, as the trust features increased. It can be seen that participants were more likely to perceive a website as beautiful as trust features increased (item 8). It can also be seen that participants were more likely to have a positive feeling about a website as trust features increased (item 3).

Perceptions relating to security and privacy

It was predicted that websites would be more likely to be perceived as more secure and private, as the trust features increased. It can be seen that

participants perceived personal information would be kept secure (item 4) as trust features increased. It can be seen that participants perceived that there would be good customer service as trust features increased (item 5). The negative phrasing of item 7 means that agreement indicates that more uncertainty would be associated with shopping from that website. As predicted, participants were more likely to perceive less uncertainty as trust features increased, and as can be seen the High Trust websites showed the lowest scores.

Behavioral intentions

To explore the extent that consumer perceptions of trust related to intention to purchase, it was hypothesised that participants would be more likely to purchase or seek information from a website as trust features increased. The data for item 2 in Table 2 show this trend.

Consumer attributes

The 14-item self-perception questionnaire contained items on disposition to trust, concern for information privacy, and items relating to reasons given by consumers for affecting their decisions to buy online. The distribution and mean responses for each statement are presented in Table 3.

TABLE 3. LEVEL OF AGREEMENT WITH EACH STATEMENT, FROM 1 (STRONGLY DISAGREE) TO 5 (STRONGLY AGREE)

Self-Perception Items	Mean	Standard Deviation
a. Delivery costs or times would dissuade me from buying something online	3.59	1.23
b. Security concerns influence my decisions to purchase online	3.79	1.11
c. Privacy concerns influence my decisions to purchase online	3.48	1.16
d. I need to feel trust in the website or vendor to purchase online	4.43	0.60
e. It is sometimes important to see and touch products before deciding to purchase	4.0	0.93
f. I enjoy going shopping in high streets and/or shopping centres	3.68	1.28
g. I tend to count upon other people	2.38	1.04
h. I generally have faith in humanity	3.48	0.99
i. I generally trust other people unless they give me reasons not to	3.93	0.71
j. I generally want to know a lot about a company before I buy online	3.52	0.99
k. It usually bothers me when companies ask me for personal information	3.86	1.07
l. Companies should devote more time and effort to safeguarding personal information	4.45	0.68
m. Companies should have better procedures to correct errors in personal information	4.07	0.73
n. Personal information should never be used for any other reason	4.64	0.82

The responses to items g, h and i were averaged to produce a measure of disposition to trust (mean 3.26, SD 0.63). The responses to items k, l and m, and n were averaged to produce a measure of concern for information privacy (mean 4.25, SD 0.61). By comparing these means it can be seen that the participants in this study were slightly more trusting than average but were very concerned about their own privacy. It can also be seen from Table 3, that of the other items not included in these two measures the highest scoring was item d, with a mean of 4.43 (I need to feel trust in the website or vendor to purchase online). This item was perceived of more importance than the other items on delivery costs, security and enjoyment of offline shopping.

Conclusions

The results indicate that the presence and absence of trust features reliably led to higher and lower perceptions of trust respectively. Therefore, this research demonstrates that websites can be reliably designed to engender more or less perceived trust. This information can be used by website designers to design trust into websites, and conversely can also be used to identify websites which may be fake and help in the combat against fraud. As such the results have important implications for the security industry. The role of individual differences appears important, for example as predicted those participants scoring higher on trust disposition giving higher instant trust ratings (Table 1). Further analyses are needed to explore whether the disposition to trust or CfIP measures are related to participants' detailed perceptions of the websites (Table 2). Additional analyses could also explore whether any of the self-perception measures (Table 3) correlate with the detailed website perceptions. In future research we will also relate consumer perceptions of trust to intention to purchase, and possibly actual purchase behaviour (Kim, Kim & Park, 2010). This preliminary research requires further extension and replication and other features such as website familiarity need to be manipulated. Further research is

planned to test the efficacy of manipulating trust features of social media messages, again based on features identified within the published literature. Such research will have important implications for the security work around deception and fraudulent activities within the tourism industry.

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