"IN WEB WE TRUST": ESTABLISHING STRATEGIC TRUST AMONG ONLINE CUSTOMERS

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Abstract

Electronic commerce (e-commerce) provides an important chance for established large companies to gain more customers as well as for new small companies to have a good start and rapid growth. However, establishing *trust* between customers and companies through web interface, a key component of successful e-service, is not as easy as through human-buyer-human-seller interaction. In the past few years, a number of experiments have been conducted in order to determine the factors that influence customers' trust in online businesses. The goal of our experiment was to establish which features that appear on commercial websites are *trust-inducing*. Our study focused on three independent variables: *customer service* (limited and extensive), *testimonial* (self and external) and *security features representation* (graphics and text). We designed the homepages of eight web sites with all combinations of treatments of the three independent variables. Each of the 52 subjects reviewed all the eight homepages and gave them a relative rank of trustworthiness. After the experiment subjects answered additional e-trust related questions. The experiment results and the survey support the belief that specific customer service commitments, third party testimonials and graphic security representations are important in establishing strategic trust among on-line customers.

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1. INTRODUCTION

Establishing trust between customers and companies through web interfaces, a key component of successful e-service, is not as easy as through human-buyer-human-seller interaction. The risks associated with e-commerce can be broadly classified into the following categories:

- *business practices*. Whether a company will carry out its orders for products and services as it claims and whether there are product guarantees.

- *information protection*. Customers seek assurances that they have reached a properly identified WWW site, and that the company will protect private customer information.

- *transaction integrity*. Customers involved in e-commerce seek assurance that the company has effective transaction integrity controls. Trusted companies have a history of processing transactions accurately, completely, and promptly, and of appropriately billing its customers.

A number of experiments have been conducted to determine the factors that influence customers' trust in online businesses. Lee, Kim and Moon found that comprehensive information about the products, values shared with other customers and diverse means of communication can effectively increase trust, which in turn can increase customer loyalty [9].

According to Egger's research [4],[5], trustworthiness often depends upon the strength of a brand name, i.e. its reputation. In addition, consumers should be informed about the vendor's privacy policy, e.g. why vendors might require unusual personal details and what happens to confidential information after the transaction. Customers' judgment of trustworthiness can also be aided by the involvement of independent parties. Moreover, a valid legal framework that supports the transaction may also be a determinant of customers' trust.

In 1998, AT&T Laboratories conducted an experiment [1] to determine the nature of online privacy concerns. They established that privacy seals, policies and the type of information disclosed are important factors in online trust. Their study, which covered a sample of 381 Internet users, had these major findings were:

- Internet users are more likely to provide information when they are not identified
- Some types of data are more sensitive than others.

- Internet users dislike automatic data transfer.
- A joint program of privacy policies and privacy seals seemingly provides a comparable level of user confidence as that provided by privacy laws.

The study by Cheskin Research [2] determines the elements that communicate trust in e-commerce sites, based on customers' and experts' feedback. The 6 fundamental forms to communicate trust are: brand, navigation, fulfillment, presentation, up-to-date technology, and seals of approval. A second study by Cheskin Research [3] investigates which are the most recognizable and trusted symbols of online security and identifies the most trusted web sites.

A report by the Nielsen-Norman Group [10], based on usability testing with 64 customers, found that they expect

- Succinct and readily accessible information about the company
- Fair pricing, fully revealed
- Sufficient and balanced product information
- Correct, timely, professional site design
- Clear and customer-friendly policies
- Appropriate use of personal information
- Trustworthy security
- Access to helpful people

Kollock points out that trustworthiness of the web-site is essential for the success of a business transaction separated in space and time[8].

Fogg et al. conducted an online study in which more than 1400 people answered questions concerning credibility of websites. This study found trustworthiness to be one of the five key components of general credibility of a website. It advises web-designers to honestly represent the nature of the website[6].

These issues are helpful, but need to be converted into specific design guidelines. Based on Fukuyama's political concepts[7] and Uslaner's[12] study of the linkage between Internet usage and trust, Shneiderman defines e-commerce trust as a "positive expectation about the future based on past performance and truthful guarantees". His proposed design guidelines to establish trust in e-commerce include [11]:

- Provide clear guarantee with compensation
- Get certificates from third parties
- Provide and enforce privacy and security policy
- Disclose patterns of past performance
- Provide references from past and current users

- Support dispute resolution and mediation services

These are merely conjectures, which are the basis for experimental studies such as this one.

The importance of certificates of trust from third parties has generated activity for several organizations. They provide certificates of trust and seals of approval for e-commerce web sites:

- TRUSTe (www.truste.org) is an independent non-profit organization dedicated to building consumer trust and confidence in the Internet. Their privacy seal program is an online branded seal which is awarded only to sites that adhere to the TRUSTe set of privacy principles for disclosure, access and security.

- BBBOnline (www.bbbonline.org) is a subsidiary of the Council of Better Business Bureau. Its mission is to promote trust on the Internet through the BBBOnline Reliability and Privacy Seal programs. The first confirms that the company follows good customer service practices and the second confirms that the company stands behind its online privacy policy and has met the program requirements regarding the handling of personal information.

- Verisign (www.verisign.com) provides through its site trust services a seal of assurance for e-commerce sites that meet disclosure, integrity and protection criteria.

- WebTrust (www.cpawebtrust.org) is a set of principles and criteria for business-to-consumer e-commerce, developed by the public accounting profession. The WebTrust seal of assurance is a symbolic representation of a practitioner's objective report.

- Chamber Seal (www.chamberseal.com) provides an online trust seal issued by the Chamber of Commerce. It assures that the holder of the seal is a real and legitimate business with a physical presence at an identifiable location and that this information has been verified by a trusted third party – the local Chamber of Commerce.

Critics point out that these attempts at voluntary regulation are flawed because the enforcement is weak. The value of a certificate of trust may grow if these organizations review and publicly disseminate their findings of improper activities. Also they can serve a positive role by promoting best practices and encouraging truthful reporting.

2. EXPERIMENT

2.1. Introduction and hypothesis

Our experiment is designed to determine what features are important in inducing strategic trust among online customers, which factors will most likely make a business-to-customer e-commerce website trustable and persuasive to the extent that customers will purchase from the website. We hypothesize that in addition to standard usability issues, these three issues will influence trust: extensive customer service, external testimonials and graphical representation of security and privacy policies.

According to our hypothesis the most trusted page is the one containing an external testimonial, a detailed customer service statement with contact information, and graphic seals.

2.2. Variables

We chose three common strategic trust inducing features from real websites that were not thoroughly studied in previous experiments, but are considered to be important for an e-commerce site's trustworthiness. We changed one independent variable according to the pilot study results. The amount of personal information that was initially selected as one of the independent variables was not a factor in web page's trustworthiness. All subjects said they can always give fake personal information, except for the necessary shipping and billing information The final independent and dependent variables are as follows:

2.2.1. Independent variables

Customer service (2 treatments)
- *Limited contact information.* Only email address is provided.
- *Extensive contact information.* Email address, telephone numbers, real store addresses are provided.

Fig. 1. Limited and extensive customer information

Testimonial (2 treatments)

- *Self-testimonial*. The web site provides self-testimonial.
- *External testimonial*. The web site has external testimonial from some well-known magazines and a Feedback Forum.
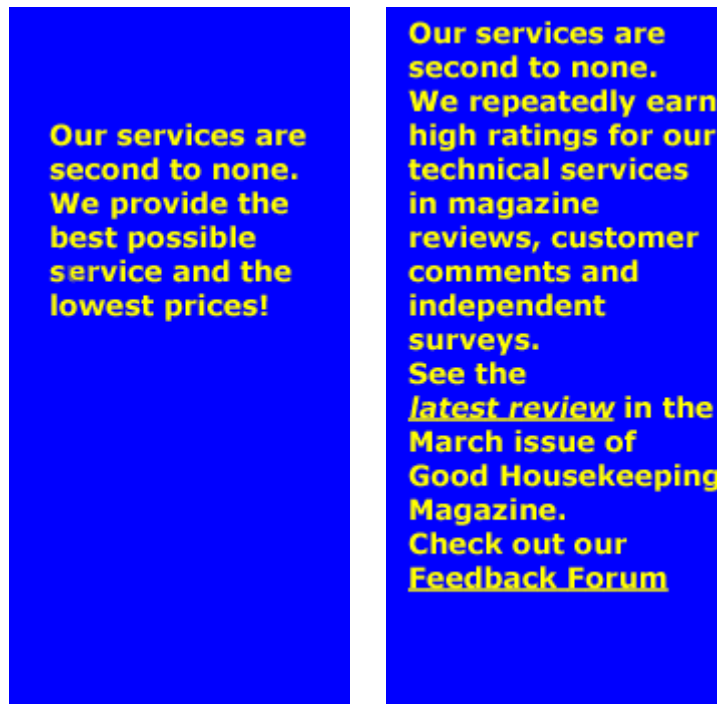
Fig. 2. Self and external testimonials

Security features representation (2 treatments)

- *Graphics*. We used real seals from websites that provide external testimonials and verify site's security, and designed seals for self-testimonials and privacy policy.

- *Text*. The testimonial is represented as text.

Fig. 3. Seals and their textual equivalents

We designed 2 x 2 x 2 = 8 web pages with different combinations of treatments of the three independent variables, as shown in the table below:

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Page #	Customer service	Testimonial	Seals
1	extensive	external	graphic
2	extensive	external	text
3	extensive	self	text
4	limited	external	text
5	extensive	self	graphic
6	limited	external	graphic
7	limited	self	graphic
8	limited	self	text

Table 1. Combinations of features in the web pages

2.2.2. Dependent variables

Relative rank of trustworthiness: each subject estimated trustworthiness of each of the eight web pages on a scale from 1 (least trustworthy) to 9 (most trustworthy). Subjects were asked to rate the pages according to their readiness to buy from the site and provide their personal information and credit card number. The pages were presented to the subjects in a random sequence, but the subjects could re-visit each page. Subjects were timed and observed during the evaluation.

2.3. Subjects

We chose subjects who are comfortable with computers and have been Internet users before the experiment. Six undergraduate and 46 graduate students from the University of Maryland participated in our study. Our subjects consisted of 34 males and 18 females between the ages of 20 to 37. The majority of the subjects are computer science majors. There were also physics, economics, art history, library science, electrical engineering, mathematics, mechanical engineering, French and biochemistry majors.

We conducted a within subjects experiment. No training was required. Prior to the experiment, our subjects were given instructions about the purpose of the experiment, their tasks, and the procedure of experiment.

2.4. Materials

The following materials were used to conduct the experiment:

- The simulation of eight commercial web sites based on a WinNT server. The results of the evaluation were automatically entered into the MSSQL database.
- Post-experimental questionnaire.
- Written and oral instructions.

2.5. Procedures and problems

Subjects were presented with the experimental interface that is divided into two frames. The left frame contains links to the eight web pages. Initially the right frame contains the instructions. The order of the eight web pages linked to the eight buttons is randomly initialized when the first page is loaded. When the buttons are clicked, the web page corresponding to the button is shown in the right frame. The subjects clicked the eight buttons to browse the eight web pages, and gave each page a relative trust rank on a scale from 1 (least trustable) to 9 (most trustable) by clicking the radio button in the left frame.

Fig. 4. The experimental web site

They could click the eight buttons in any order they wanted, and could jump back and forward to make changes of ranks. The experiment software recorded the time subjects took to finish ranking, which was from the moment the index page was loaded to the moment the subjects clicked the submit button to indicate they have finished ranking. On submission, the

ranks were recorded by the software. Then a short questionnaire asking about subject's background and opinion about e-commerce web site trustable features was displayed. The subjects answered all the questions and clicked the submit button. The software recorded their answers to the questionnaire and brought up an acknowledgement page. The subjects were observed and asked some questions by the observer about their answers to the questionnaire at the end of experiment.

2.6. Results

Our program collected the results of evaluations and the answers to the post-experiment questionnaires into two tables in the MSSQL database. The average time to carry out the rankings was 5 minutes, with the maximum time being 11.5 minutes.

The means of trustworthiness ranks and standard deviations for all pages reveal the strong differences in user perceptions (Figure 5)

SEALS	GRAPHIC		TEXT	
TESTIMONIAL	**external**	**self**	**external**	**self**
extensive service	7.9 (1.1)	6.2 (1.5)	6.4 (1.7)	5.3 (1.7)
limited service	5.3 (1.7)	4.0 (1.7)	4.5 (1.7)	3.0 (1.7)

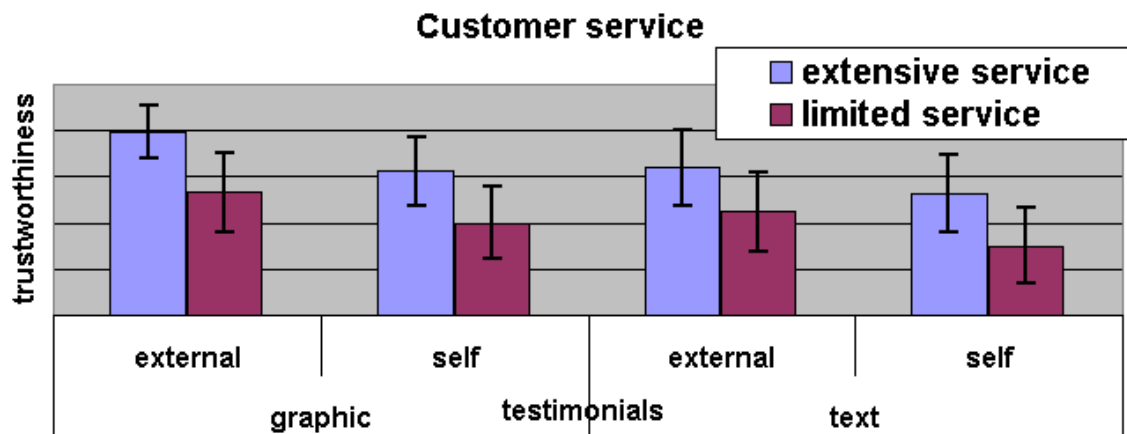Table 2.   Mean ranking (and standard deviations) for 52 subjects.

Fig. 5. Mean and standard deviation bars for trustworthiness rankings from 52 subjects
    (9 = highest trust)

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The results of the three-way ANOVA using degree of trust as the dependent variable, indicate that all three main effects of customer service, testimonials and graphical representation were highly statistically significantly different. There were also statistically significant interaction effects for Customer Service x Testimonial and Testimonial x Graphics. The three-way interaction was also statistically significant.

Source	SS	df	MS	F	P
A (customer service)	341.7	1	341.7	131.4	<.0001
B (testimonial)	356.3	1	356.3	137.0	<.0001
C (graphics)	45.1	1	45.1	17.4	<.0001
AB	20.8	1	20.8	8.0	<.001
AC	7.3	1	7.3	2.8	0.095
BC	30.7	1	30.7	11.8	<.001
ABC	40.0	1	40.0	15.4	<.001
Error	1062.3	408	2.6		
Total	1904.1	415			

Table 3. ANOVA Summary

Paired t-tests on extensive vs. limited customer service for pages with external testimonials, as well as for the self testimonials showed a statistically significant difference in degree of trustworthiness both for the pages containing only textual references to security sites and for the graphically enhanced pages.

			mean customer service		t-statistic	P two-tail
			extensive	limited		
Testimonial	**external**	**graphic**	7.9	5.3	10.6	<.001
		text	6.4	4.5	6.8	<.001
	self	**graphic**	6.2	4.0	9.6	<.001
		Text	5.3	3.0	8.7	<.001

Table 4. Paired t-test for customer service (t-crit two-tail=2.67)

Similarly t-tests confirmed our hypothesis that external testimonials matter in establishing customers' trust and that trustworthiness of the graphically enhanced pages is greater than the trustworthiness of the text only security references.

			mean testimonial		t-statistic	P two-tail
			external	self		
Customer service	extensive	graphic	7.9	6.2	7.8	<.001
		text	6.4	5.3	4.8	<.001
	limited	graphic	5.3	4.0	6.6	<.001
		text	4.5	3.0	7.9	<.001

Table 5. Paired t-test for testimonials (t-critical two-tail=2.67)

			security features		t-statistic	P two-tail
			graphic	text		
Customer service	extensive	self testimonial	6.2	5.3	4.6	<.001
		external testimonial	7.9	6.4	7.1	<.001

| | | self testimonial | 4.0 | 3.0 | 5.8 | <.001 |
| limited | | external testimonial | 5.3 | 4.5 | 4.4 | <.001 |

Table 6. Paired t-test for security seals (t-critical two-tail=2.67)

2.7. Questionnaire results

Out of 52 subjects, 11 buy online more than 10 times a year, 23 buy 3 to 10 times, 15 - 1 to 3 times and 3 students never bought anything online. Only two students are online at least 2-3 times a week, the rest are online every day. 20 of 52 people spend more than 3 hours online; 29 spend 1 to 3 hours and only 3 students spend less than an hour.

The majority (37 people) considers security to be a significant factor in their decision. Three of these students never bought anything online. Only one student does not take the security of the site into consideration while making his 3 to 10 online purchases a year. 14 people list the security feature as a small factor in their decision. We added an average degree of trust for each person obtained in the experiment to the questionnaire results as a dependent variable for statistical analysis. The analysis showed that some of the factors we predicted to be important in establishing trust, are indeed important. The two-sample t-test confirmed the importance of the following features (t critical two-tail=2.7): security and privacy seals; contact number available; clearly stated return policy; possibility to return a purchase at a nearby store; discount or special offers; ease of use of the website; privacy statements. There was no statistically significant difference for other factors.

Factor	Mean value	Standard deviation	t-statistic
Security and privacy seals	6.7	1.9	4.8
External testimonials	5.8	1.7	1.6
Contact number available	7.4	2.0	7.0
Being able to visit the real store	5.6	2.4	0.8

Clearly stated return policy	7.4	1.8	7.6
Possibility to return a purchase at a nearby store	6.4	2.5	3.2
Privacy statements	6.2	2.1	3.0
Merchandise type	6.1	2.2	2.6
Discount or special offers	6.6	2.2	4.0
Professional design of the website	5.7	2.2	1.2
Ease of use of the website	6.3	2.0	3.40

Table 7. Subjective rankings on a 1-9 scale (1=low, 9=high). Factors that were statistically
significant at the $P < 0.05$ are shown in bold

3. DISCUSSION

The goal of our experiment was to establish which features that appear on commercial websites are trust inducing. Previous studies determined that elements like brand, navigation, fulfillment, presentation, up-to-date technology, seals of approval communicate trust in e-commerce websites. Our study focused on customer service (extensive and limited), testimonial (self and third party) and security features representation (graphics and text).

Three-way analysis shows that there is interaction between three tested features. Interaction between testimonials and their graphical representation and testimonials and customer service is significant. The analysis of customer service feature showed that extensive customer service is very important. The pages that have extended customer service scored on average 2 points higher than the pages that contained only the email address of the online store. This outcome is supported by the post-experimental questionnaire results. These showed that information like contact address plus number and clearly stated return policy are major concerns for customers. These two features scored highest among all decision factors for online purchases.

The analysis of self and third party testimonials showed that the presence of an external testimonial also contributes to building up trust. Although this proved to be statistically significant in the experiment, in the questionnaire it was not considered to be that significant. 16

out of 52 subjects never heard of the third parties presented in our pages. So there may be other reasons that contribute to this significant difference. According to subjects' feedback one of the reasons may be the amount of information customers see on the front page of the website - the longer text is visually more convincing.

The analysis of security features representation showed that graphic seals of approval and graphic security seals induce more trust as opposed to the same information just textually represented. The reason for that may be that visual memory triggers trust without analysis of content.

The questionnaire the subjects filled after the experiment contributed to our understanding. Our expectation was that the mentioning of a real store would add to the credibility of the website. The subjects' feedback shows that they do not consider the online store to be an extension of the real store, but rather its convenient replacement. Therefore, details about the real store proved to be not important.

Merchandise type influenced our subjects' evaluations of the trustworthiness of the site less than we expected. The reason for this may be that the questionnaire immediately followed the evaluation of the web sites that were exclusively selling computers. The subjects might have assumed that in this case 'merchandise type' means 'brand'.

4. CONCLUSIONS

4.1. Impact for practitioners

Our experiment shows that all three features that we tested are important in establishing strategic trust among on-line customers. Website designers should include extensive customer service information, provide phone numbers for technical support, clearly state the return policy, and provide address for merchandise return. Graphic seals should be included as well as external testimonials, if available.

4.2. Suggestions for future research

Our study can be considered as a preliminary investigation into a very interesting topic of on-line trust. Future research should take into consideration the following issues that we came across when running our experiment:

- We were very careful about the visual impact of colors, size of tables, but we did not take into consideration the length of text.
- The source of the external testimonial has to be meaningful to the subjects.
- The questionnaire should be more specific about the kind of information requested.

- Because the dependent variable of the experiment is subjective, the number of subjects should be greater, and they should belong to different population groups.

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