

The Influence of Trust Building User Interface Elements of Web Shops on e-Trust

Andreas Auinger¹(✉), Werner Wetzlinger¹, and Liesmarie Schwarz²

¹ University of Applied Sciences Upper Austria, Campus Steyr,
Wehrgrabengasse 1-3, 4400 Steyr, Austria

{andreas.auinger, werner.wetzlinger}@fh-steyr.at

² Voglsam GmbH, Dorfplatz 5, 4492 Hofkirchen, Austria
l.schwarz@ftrabbit.com

Abstract. In this paper we examine how different trust building user interface elements in web shops affect trust in B2C Internet vendors (e-trust). We identified trust seals, consumer reviews and contact options as trust building elements and conducted an online experiment using multiple versions of a fictional web shop. Using a between-subjects design we presented participants with pages of the web shop containing these GUI elements. Afterwards subjects rated the e-trust. We found that only trust seals had a significant influence on e-trust. Since we expected a higher influence of the trust-building elements we additionally conducted an eye tracking study that showed that participants did not direct much attention to these elements, which we conclude is the reason for the weak influence of trust-building elements.

Keywords: e-Commerce · e-Trust · Eye-tracking · Conversion optimization

1 Introduction

The main goal of web shops is to convert shoppers' product navigation into purchases [1]. Many shoppers visit web shops, but globally only about 3 % actually convert [2].

One substantial influence on the purchase decision of a web shop visitor is the perceived risk of buying. Trust is an important factor in economic and social interactions. This is especially the case when there is uncertainty, because trust can reduce the perceived risk [3].

Research of the last 15 years shows (e.g. [4, 5]) that it is especially difficult for B2C e-commerce retailers (e-vendors) to convey trust through their online shops, caused by a lack of personal interaction and limited options to evaluate the quality of products and services, which could negatively influence their buying decision [6]. Consequently, consumers' trust and perceived risk have strong impacts on their purchasing decisions and are therefore key success factors in e-commerce [7]. Consumer trust is relevant on multiple engagement levels in e-commerce: Trust in (i) the *Internet technology* facilitating the transaction, (2) the *vendor* and (3) *third parties* to safeguard the exchange [8]. Within these categories numerous factors have strong effects on Internet consumers' trust in the website (e.g. consumers' trusting disposition, reputation of the vendor, privacy concerns, security concerns and the information quality) [7].

Structure of the Paper. The remaining paper is structured as follows: In Sect. 2 we derive the trust building elements from literature. Section 3 describes the research methodology and the results of an online experiment. Section 4 presents the method and results of the subsequently conducted eye tracking study. Finally, Sect. 5 discusses the results and draws conclusions.

2 Trust Building User Interface Elements

Due to missing direct consumer contact, online vendors try to convey their qualities by the graphical user interface (GUI) and its trust building elements such as contact options [9], trust seals, or consumer reviews on products and shops [10].

Recent studies on trust seals lead to different findings in respect to their effect: Some find significant and positive impacts of Web assurance seals on consumer trust (e.g. [11–15]), yet others do not find significant impacts (e.g. [7, 11, 16–19]). Additionally, different kinds of seals (privacy assurance, security assurance, transaction-integrity assurance) seem to have different effects on trust [12]. Also their position on the website seems to have an important influence. Generally, trust assurances (third party trust seals) perform better when displayed in the information-searching stage, while vendor specific trust assurances (e.g., warranty and return policy, product quality guarantee, and delivery on time) lead to higher initial trust when displayed in the choice stage [11].

Consumer generated reviews are a second well researched topic. Generally, positive consumer reviews seem to increase sales whereas negative reviews normally decrease sales [20, 21], but negative reviews can also increase sales due to increased visibility [22, 23]. It has also been shown that consumer reviews on web shops are a strong predictor of trustworthiness judgments [16], but the literature review led to no results which investigated the impact of product reviews on the trustworthiness of the vendor.


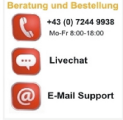

Thus while trust building elements like consumer reviews are widely used on web shops there is still a lack of knowledge on their actual effect on consumer behavior and opinions [6]. Furthermore, consumer reviews have not been contrasted with the influence of other trust building elements such as trust seals or also contact options on Web shops.

Therefore, this research investigates the influence of selected trust building user interface elements on trust and how they affect the purchase intention of consumers. Different trust building elements can be categorized based on their purpose [24] and their origin [11]. Based on a comprehensive literature study¹, we chose trust seals (which convey trust in the shop and the company), contact options (which convey trust in the shop and the company itself) and consumer reviews (which convey trust in the product) as trust building elements for our research, because they reflect all categories

¹ *Databases:* ACM, IEEE, Business Source Premier, EconLit, PsycINFO, PSYINDEX, SocINDEX, Sciencedirect, Sprinter Link; *Search Terms:* Combinations and Variations of Trust and e-commerce; *Analysis:* The first 100 search results of every database search result were analyzed.

most replicable (see Table 1). The influenced trusting beliefs are based on the research of [25], which will be described in more detail below.

Table 1. The analyzed trust building graphical user interface elements

Trust Element	Purpose	Origin	Influenced Trusting Belief	Graphical Representation
Trust Seal	Recommendation of third parties - trust in the shop and the company	Endorsement by an independent third party	Integrity, benevolence and ability	
Contact Options	Emotional security - trust in the shop and the company	Endorsement by the e-vendor	Integrity	
Consumer Reviews and (positive and negative)	Credibility of the web content - trust in the product	Endorsement by other consumers	Integrity and ability	

The research is based on a 2-step empirical study including (i) a *quantitative trust experiment* asking for the effect of trust building elements on web shop pages and (ii) an *eye tracking study*, testing the cognition of these elements.

3 Online Trust Experiment

3.1 Research Model

The *main objective* of the experiment was to measure the impact of the selected trust elements (trust seal, contact options, positive consumer reviews, negative consumer reviews) on consumer trust in B2C Internet vendors, defined by the established research model on e-trust by Gefen and Straub [25]. It measures e-trust using the dimensions *integrity*, *predictability*, *ability* and *benevolence*. These dimensions are described as follows:

- **Integrity** is a characteristic of an e-vendor that convinces consumers that their expected outcomes from the interaction will be fulfilled and that the e-vendor is honest and reliable and will keep promises made.
- **Predictability** is a quality that conveys to consumers that they can be sure about actions an e-vendor will take and what outcomes to expect.
- **Ability** is a characteristic of an e-vendor that conveys competence, knowledge about products and the excellence of services offered.
- **Benevolence** is a characteristic of an e-vendor that conveys its well meaning, considers how its actions affect the consumer and puts consumers’ interests before its own.

Using the model of Gefen/Straub to measure trust of consumers in e-vendors (e-Trust) we examine the effects of trust building elements. We aim to answer the following questions (c.f. Fig. 1):

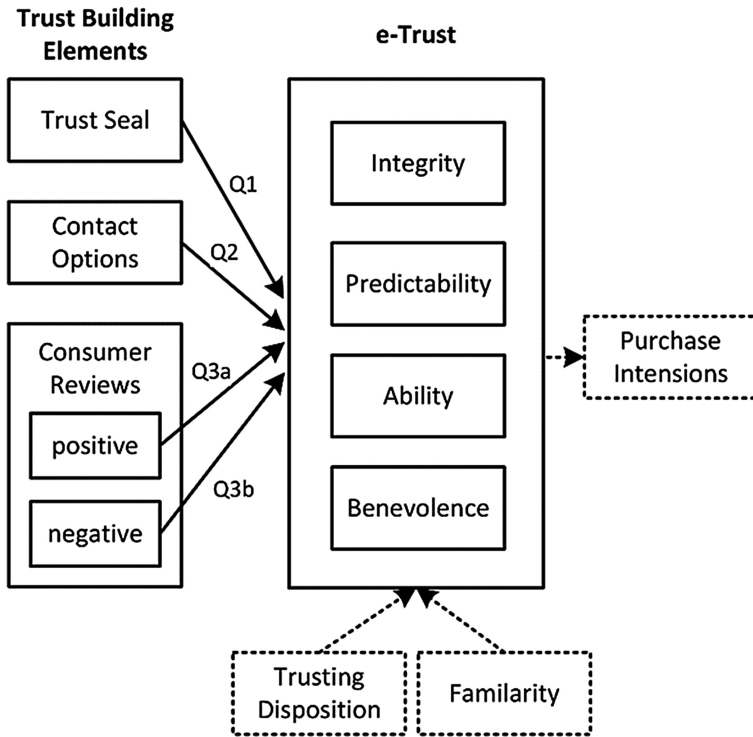


Fig. 1. Research questions in the context of the research model of Gefen/Straub [25]

- **Q1:** Does the presence of a trust seal influence the trust of a potential consumer in the e-vendor?
- **Q2:** Does the presence of contact options influence the trust of the potential consumer in the e-vendor?
- **Q3a:** Does the presence of positive consumer reviews influence the trust of the potential consumer in the e-vendor?
- **Q3b:** Does the presence of negative consumer reviews influence the trust of potential consumer in the e-vendor?

The results of Gefen/Straub show that an increase in e-trust leads to an effect on purchase intention [25]: The analysis shows that Purchase Intentions were affected by Familiarity (control variable) and by e-trust ($R^2 = 37\%$). Among the dimensions of e-Trust, only Integrity and Predictability affected Purchase Intentions. Most of the dimensions of e-Trust were affected, albeit not strongly, by Trusting Disposition and by Familiarity.

Hence, we assume that finding an influence of the trust building elements on e-trust would lead to an increase in purchase intentions, which subsequently should positively affect the conversion rate of an e-vendors online shop.

3.2 General Experimental Approach

Multiple aspects of an e-vendor's Web shop (e.g. functionality, design, search options, check-out process, etc.) can influence user perception of how trustworthy they are [26]. Consequently, a laboratory experiment seemed appropriate to assure internal validity [27]. Since we planned to only test the influence of graphical user interface elements, we chose not to use a fully functional Web shop, but to present screenshots of certain Web shop pages to participants.

Additionally, we wanted to avoid any brand effects of existing Web shops, since brands are strong trust builders [28]. Accordingly, we decided to incorporate the trust elements in a fictional web shop to prevent affectations.

The study was carried out using a between-subjects design. Multiple versions of web shop pages were designed containing the different trust elements in systematic combinations. Each participant saw only one of these different versions and had to fill out an online questionnaire afterwards. Consequently, measured values are independent of each other, as every participant was only measured once [29].

3.3 Tested Web Shop Content

We used two shop pages for testing: a *product overview page* and a *product detail page*. Subsequently, page one provided an overview of all products of a certain category showing product images, the product title and a short description. Page two showed detailed information about just one product. The web shop was built following the layouts of the three web shops with the highest revenues in Austria, which at the time of the study were www.amazon.at, www.universal.at and www.ottoversand.at. The trust elements were applied on the pages according to their nearby similar positions in the three web shops (see screens in Figs. 2 and 3).

To measure the impact of the trust building elements, five different versions of these pages were created: containing (i) no trust elements, (ii) positive rating, (iii) negative rating, (iv) trust seal and (v) contact options. Each of these five versions was assigned to one subject group (Table 2).

The types of presented products can also influence the effect of trust building elements. There is a direct correlation between this effect and the product price: The higher the product price, the stronger the influence of trust building arguments on consumers [30]. Additionally, consumer reviews are said to have a different effect on the uncertainty of consumers about the product performance regarding experience goods rather than search goods [31, 32]. Therefore, we decided to use an experience good with a price range that can also include more expensive products. Based on the results of a study examining the effects of multiple communication practices on consumer uncertainty about product performance by [32], we chose an MP3-player as the

Scanpath of the overview page



Heatmap of the overview page



Fig. 2. Scanpath and heatmap of overview page

Scanpath product details page



Heatmap product details page



Fig. 3. Scanpath and heatmap of product details page (case 1 with negative rating)

Table 2. Experimental setting

	Trust seal	Positive consumer review	Negative consumer review	Contact options
Experimental group 1	X			
Experimental group 2		X		
Experimental group 3			X	
Experimental group 4				X
Control group				

experience good. Since this item may also have a high price, we considered it to be an appropriate product to measure the effects of trust building elements.

3.4 Procedure and Measurement

The link to the online experiment was sent out to students of Austrian universities via email. Participants were shown screenshots of the two selected shop pages (each on one page) and instructed to examine the two pages. There was no time limit and participants could switch between the pages as they liked. A third page contained multiple statements to measure the constructs of the research model (see Fig. 1). We selected the items shown in Table 3 from the research model of [25] corresponding to the constructs described above. An item asking about overall trust was added. All items were rated on a 7-point Likert scale.

Table 3. The measurement items

Construct	Item	Origin
Integrity	I do not doubt the honesty of MyShop.com	Gefen/Straub
	I expect MyShop.com will keep promises they make	Gefen/Straub
Benevolence	I expect that MyShop.com 's intentions are benevolent	Gefen/Straub
Ability	MyShop.com is competent	Gefen/Straub
Predictability	I am quite certain what to expect from MyShop.com	Gefen/Straub
Overall trust	How trustful do you perceive MyShop to be?	Added

3.5 Results of the Online Trust Experiment

Characteristics of the Sample. The survey ran two weeks and had a response of 268 in total for the five experimental groups (more than 50 per group). The majority of participants were students (68 % female, 32 % male) with 89 % being younger than 30 years old (average age 25). 50 % of participants said they are fully familiar with

purchasing electronic equipment online. Only 9.3 % claimed to be absolutely unfamiliar with purchasing electronic equipment online.

Analysis of Variance. Since data was collected using a Likert scale, it can be considered as interval scaled and parametric methods can be used [27]. To test the influence of the trust elements an analysis of variance (ANOVA) was conducted. It showed a significant variance (p-value 0.007). A post-hoc-test (Bonferroni correction) comparing the means revealed that only the group with trust seals showed significant differences to the control group, where no trust elements were displayed (Table 4). The trust seal was the only trust building element with a significant influence on e-trust (p-value 0.05). In this case the difference in means was 0.641 and effect size was 0.548, which corresponds to a medium to strong positive effect [33].

Table 4. Multiple comparison (Bonferroni).

Questionnaire version (I)	Questionnaire version (J)	Mean difference (I-J)	Std. error	Sig.
No trust element	Negative consumer review	.146	.231	1.00
	Positive consumer review	-.226	.230	1.00
	Trust seal	-.641*	.227	.05
	Contact options	-.349	.226	1.00
Negative reviews	No trust element	-.146	.231	1.00
	Positive consumer review	-.372	.233	1.00
	Trust seal	-.787*	.230	.01
	Contact options	-.495	.230	.32
Positive reviews	No trust element	.226	.230	1.00
	Negative consumer review	.372	.233	1.00
	Trust seal	-.415	.230	.71
	Contact options	-.123	.228	1.00
Trust seal	No trust element	.641*	.227	.05
	Negative consumer review	.787*	.230	.01
	Positive consumer review	.415	.229	.71
	Contact options	.292	.225	1.00
Contact options	No trust element	.349	.226	1.00
	Negative consumer review	.495	.229	.32
	Positive consumer review	.123	.228	1.00
	Trust seal	-.292	.225	1.00

* The mean difference is significant at the .05 level.

4 Eye Tracking Study

The experiment showed very weak influence of the trust building GUI elements on trust. Since we expected the influence to be much stronger, we supposed that perhaps participants did not notice the trust elements. We therefore resolved to conduct an eye tracking study [34] to find out whether users see the trust building elements and how much attention they pay to them.

The participants received two different sets of instructions for the tested web shop pages (product overview page, product details page):

- **Product Overview Page Task:** *You will see a web shop. Which of the 12 MP3-Players is most appealing to you? Click on the most interesting product.*
- **Product Details Page:** *You will see another screenshot of the web shop for 25 s now. Consider whether the displayed product is interesting for you.*

The three trust building elements were on both of these sites. The product details page showed positive ratings (5 stars and positive comments) for the first half of the participants and negative ratings (1 star and negative comments) for the second half.

4.1 Eye Tracking Results

Eye tracking was carried out about 3 weeks after the online experiment with 55 new business students between 20 and 30 years old. Results showed that the trust elements attracted hardly any attention. On the products overview page the elements received the following attention:

- **Trust Seal:** No participant fixated on the trust seal.
- **Contact Options:** 23.6 % fixated on the contact options, but the amount of dwell time was short (0.5 % of total dwell time).
- **Ratings:** All participants noticed at least one of the ratings, but aggregated total dwell time was again brief (2.4 % of total dwell time).

On the product details page the elements received the following attention:

- **Trust Seal:** Only 3 participants fixated on the trust seal.
- **Contact Options:** 54.5 % fixated on the contact options, but dwell time was short (400 ms, 1.6 % of total dwell time).
- **Ratings:** There is very little difference between 1-star ratings and 5-star ratings. About 60 % of participants fixate on the ratings and spend a similar dwell time (5 stars: 252 ms, 1 % of total dwell time; 1star: 279 ms, 1.1 % of total dwell time) on them.
- **Reviews:** 1-star reviews (case 1) and 5-star reviews (case 2) also have a similar hit ratio (1 star: 25 %; 5 stars: 29 %), but the dwell time average is slightly higher on 1-star reviews (1 star: 1290 ms; 5 stars: 1085 ms).

5 Interpretation and Conclusion

The results of the qualitative online experiment showed that for Web shop users trust in the e-vendor is an important influencing factor on purchase intentions. However, the result of the evaluation only identified trust seals as having a significant influence on e-trust. Reviews and contact options had no significant impact on the e-trust construct. To examine the reason, a subsequent eye tracking study was conducted revealing that only very few participants fixated on the trust seal. The other trust building elements were fixated on by a much higher proportion of participants. Based on this finding, especially the trust seal was of particular interest for our interpretation of these results. We derived the position of the trust seal from the layout of the most popular web shops in Austria. In retrospect, this was not the right decision for our experiment, because the trust building effect of this seal may be of minor importance for well-established e-vendors, as they are already trusted by a large portion of the population. A valid conclusion is that positioning the trust seal in the left bottom corner of a Web shop page may be ineffective if a shop relies on its trust building effect. These findings are in line with current research from [35] that shows that trust seals are more effective for small e-vendors and new shoppers, thus serving as partial substitutes for both shopper experience and a seller's sales volume.

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