Who do you turn to? Predicting trust in online advice.

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ABSTRACT

Many people are now influenced by the information and advice they find on the Internet, much of it of dubious quality. This paper is concerned with those factors capable of influencing people’s response to online advice. It describes a survey of over two and a half thousand people who had actively sought advice over the Internet. A framework for understanding trust in online advice is proposed in which three key factors – source credibility, personalisation and predictability – are shown to predict whether or not people actually follow advice given online.

Keywords

Trust, persuasion, advice, Internet, e-commerce.

INTRODUCTION

Many people are turning to the Internet for advice and guidance, with the result that online information is now exerting strong societal and personal influences.

In recent surveys in the USA, for example, online electoral information has been shown to affect voting decisions [1], while some 21 million people are estimated to have been influenced by online medical information [2]. These numbers are staggering when one considers that the quality of information and advice available online can vary enormously. It has been estimated, for example, that less than half of the health and medical information available online has been reviewed by doctors [2]. So how do people decide
whether or not to trust the advice they’re given? Researchers have started to explore this question, with published studies available in the areas of online trust [3-11], and of Web credibility [Fogg 12-14].

These new studies are predominantly concerned with cataloguing those factors which enhance and those factors which diminish perceptions of trust and credibility. So far they have resulted in a number of guidelines or heuristics, and these have been brought together for the first time below:

1. Include seals of approval such as TRUSTe [3,13]
2. Provide explanations, justifying the advice given [10],
3. Include independent peer evaluation such as references from past and current users and independent message boards [8, 10].
4. Include alternative views, including good links to independent sites within the same domain[8].
5. Include background information such as indicators of expertise and patterns of past performance. [13,5,10].
6. Ensure that communication remains open and responsive and offer alternative means of getting in touch [10].
7. Improve ease of use [3, 5, 10, 13].
8. Create a professional image - avoiding spelling mistakes and other simple errors [13, 10].
9. Convey a ‘real world’ look and feel, for example with the use of real addresses and high quality photographs of real places and people [13].
10. Provide clearly stated policies, concerning, inter alia, security and privacy statements, rights to compensation and return. [3, 8, 10]
11. Don’t mix advertising and content – avoid sales pitches and banner adverts [13].
12. Offer a personalised service, which takes account of each client’s needs and preferences. [10].

These heuristics provide useful information for designers, however relatively few of them have been empirically tested. In addition, they have almost all focussed on a model of trust or credibility in a business-to-consumer (B2C) e-commerce environment, which is by no means the sole environment for online advice.

A great deal more needs to be done to establish a convincing framework within which to understand trust in any domain, but this is particularly true of trust in online advice, given the important social consequences of Internet persuasion. Thus the purpose of this paper is to build and test a theoretically sound model for the study of trust in online advice.

Trust is a difficult construct, because it is hard to define, presupposing as it does an element of unspecified risk [4]. Exploring trust in online behaviour complicates the issue still further, since it invites considerations of source, message and channel. Some models recognise this in an explicit awareness that online trust entails questions about the control processes one must rely upon, as well as the agents one is dealing with [10,11]. While other models see trust as a composite of other, more accessible constructs, including faith, dependibility, reputation, predictability, familiarity and outcome expectancy. [10, 15,16,17]. A model which combines both viewpoints is MoTEC (A MOdel of Trust for Electronic Commerce) [10]. Trust in this model is initially determined by three factors: (a) the users knowledge of the domain and reputation of the vendor, (b) the impression made by the interface, and (c) the quality of the informational content as assessed by the user – although a forth factor becomes influential over time, in the relationship that an organisation eventually builds up with its client.

MoTEC holds that trust comprises both an impressionistic judgment of the interface and a more analytical evaluation of information content. This view gains support elsewhere [us] and reflects long-standing work which proposes two distinct cognitive processes underlying assessments of trust [18,19]. One process involves a heuristic or impressionistic judgement of the look and feel of the message or channel, while the other process involves a cognitively intensive and dynamic evaluation of the message content and source intention.
It seems likely that heuristic judgements of the look and feel of the interface will dominate initial judgements about the trustworthiness of advice sites on the Internet, but that more demanding analysis of content would come into play later. However most if not all of the studies available in the literature have been limited to first impressions. A typical paradigm, for example, is to give users a number of sites to visit and then ask for their views. Few, if any, studies have investigated real choices. In this paper, then, the focus is upon those individuals who have genuinely sought advice over the Internet. As stated earlier, published models of online trust and credibility have been based upon initial impressions of websites, rather than upon their actual use. The study was therefore designed to assess the relative importance of the various factors known to influence judgments of trust, and establish those factors most likely to lead to subsequent action.

**Method**

A web-based questionnaire, compatible with current versions of Netscape Navigator and Internet Explorer, was written in html, with data recorded by a cgi script written in Perl. On the first page participants were asked whether they had sought advice on-line, and those who clicked on ‘yes’ then completed 5 screens of questions. These requested: a) details of the site they had previously used (the subject and URL, if known, b) details of those subjects they had, would consider, and would not consider seeking advice for on-line, c) personal details for demographic comparisons, and d) questions about that site, derived from the trust literature and listed below:

1. The advice appeared to be prepared by an expert.
2. The advice came from a knowledgeable source.
3. There were comments from other users on the site
4. The site was owned by well known brand and featured their name and logos.
5. I did not have to wait long for the advice.
6. Different options or alternative courses of action were suggested.
7. The site was easy to use.
8. I felt involved in the way the site tried to find appropriate advice.
9. The site was interactive.
10. The advice was tailored to me personally.
11. The reasoning behind the advice was explained to me.
12. The site offered the opportunity to contact a person (by phone, email etc.).
13. The advice appeared to be impartial and independent.
14. I had used the site before.
15. The way the site went through the process of giving advice was predictable.
16. Using the site helped me make the right decision.
17. I trusted the advice.
18. I am knowledgeable about the subject area I was looking for advice about.

The questionnaire was promoted on thehungersite.com website, which at that time made a donation of 0.5 cents to the UN World Food programme for each impression an advertisement made on the hungersite page. Hungersite suggest that an average weekday will generate 300,000 impressions, and a click-through rate of 3%.

**Results**

The section below refers only to participants who said that they had sought advice online. The data set was firstly cleaned-up by applying internal consistency checks to eliminate possible errors or fake answers (which can be a particular problem for research conducted online). Two hundred and sixty five respondents were found to be inconsistent in their replies, and they were discarded from the study, leaving a total of 2,893 respondents for the final analyses.

Responses to 18 trust-related items were subjected to a reliability analysis, to evaluate their consistency. The Cronbach value was satisfactory (standardised $\alpha = .81$). Nevertheless, four statements were only
slightly correlated with the rest of the scale ($r < .30$). They were item 3 (There were comments from other user on the site), 4 (The site was owned by well-known brand and featured their name and logos), 12 (The site offered the opportunity to contact a person), and 18 (I am knowledgeable about the subject area I was looking for advice about). As regards the first three items, the problem can be attributed to a lack of a positive-negative direction of the statements. Comments from peer can be either positive or negative; a brand can be liked or disliked; a person can be expert or inexpert. Therefore, in a new version of the scale, these items should not be directly discarded, rather they should be reformulated.

A global trust index was then computed, averaging scores to the 14 selected items. The variable was normally distributed and ranged from 1.2 to 7. The mean reported trust value was 4.9, significantly higher than 4, the neutral scale midpoint ($t(2664)=50.89; p<.001$). To check the construct validity of the trust-scale, the index was analysed by a t-test with Action as the grouping variable. The rational behind the analysis is as follows: if the scale genuinely measures trust, it should differentiate people who took the advice on offer from people who did not. Results showed a highly significant effect of reported trust on action ($t(777.71)=21.51; p < .001$) – i.e. those that trusted the site were more likely to take the advice.

To further investigate the psychometric properties of the trust scale, a factor analysis was conducted. This technique is often used in data reduction to identify a small number of factors that explain most of the variance observed in a much larger number of manifest variables. The analysis was run applying the principal-axis factoring method with Varimax rotation. On the basis of a scree-plot analysis and of factor interpretability, three main factors were extracted. They accounted for 47% of the total variance and each had the eigenvalue index greater than 1.5. The interpretation of the factors was based on the semantic content of all the items presenting a saturation superior to .30 on just one factor. The rotated factor matrix is reported in Table 1.

The first factor to emerge concerned source credibility. It concerned the extent to which the information and advice came from a knowledgeable source, was prepared by an expert, seemed impartial and was readily available. The trust item ‘I trust the advice’ also loaded on this scale. This factor was highly predictive of participants’ decisions to follow the advice (see below) and it ties in very strongly to models of information credibility in the literature [13].

The second factor concerned the extent to which the advice was personalised. Did the respondent feel involved in the process? Was the site interactive? Was the information tailored to the participant? Were different courses of action suggested, and was a peer commentary available?

Finally, the third factor was a measure of predictability, and addressed the issue of whether or not the site met the user’s expectations. Had the respondent used the site before and did they already know something about this domain? Did the site operate in a predictable way? Was it branded with a familiar name and/or logo?

Taking advice

A very high percentage of the respondents declared that they took the advice (78%). This fits recent research on the influence of online information [1,2]. It is worth noticing that people trusted university, organisations, and government institutions more than any other type of sites. Those using university sites reported that they followed the advice given some 86% of the time. Naturally, the extent to which participants were prepared to take the advice offered was dependent upon perceived risk. A Mann-Witney U test showed that participants who took the advice felt they were risking less than participants who did not take it ($U=574297.0$, $p < .01$).

What further factors predict the acceptance or rejection of the advice on offer? To answer this question a binary logistic regression was conducted. The analysis is similar to a linear regression but is suited to model where the dependent variable is dichotomous. Hence, it allows predicting whether an event will or
will not occur, as well as identifying the variable useful in making the prediction. The estimated coefficients from the logistic regressions are reported in Figure 5.

The logistic regression demonstrated that all three of the trust factors previously identified - Source credibility, Personal tailoring and Predictability - significantly affected behaviour (p<0.001). Of the three, the role of source credibility is probably best-documented in the persuasion literature [12, 13] and this finding demonstrates that it is a crucial predictor of subsequent action. Here, too, is new evidence of the significant influence of personalisation and predictability on advice-taking.

SUMMARY AND DISCUSSION

Users are likely to follow online advice in circumstances where the website is:

- a. credible (demonstrates knowledge and expertise, appears impartial and ensures information is accessible),
- b. personalised (which means the site must be interactive, such that advice can be tailored to the individual, and users can make their own choices), and
- c. predictable (draws upon prior experience with this and other sites, reflects users’ knowledge and understanding and contains the appropriate signs, statements or logos).

The importance of the first factor (source credibility) has been documented in the persuasion and online trust literature, but the significance of the other two factors is less widely accepted. The third factor (predictability) is particularly interesting when one considers that people searching for advice online typically arm themselves with information from several sites. Within the medical domain, for example, it is not unusual for people to visit three or more sites for advice before making any decision [2], and yet this comparative, self-educational process has not been properly acknowledged within the literature. It might be interesting to explore the ways in which people’s expectations vary as a result of the sites they initially visit.

This study has documented some of the factors which can influence people’s perception of the trustworthiness of online information, and which can directly influence behaviour. These are important issues. The Internet is already exerting a huge influence on society, and there are few regulatory bodies to monitor the accuracy of online content. There are also vital ethical issues to consider in this work. Researchers like ourselves are uncomfortably aware that in setting forth the design factors underpinning trust in online advice, we are not just coming to a better understanding of human behaviour online, but we are also demonstrating just how authors of untrustworthy sites can make them appear more trustworthy! Some researchers have started working towards an ethics of persuasive technology which attempts to clarify these rather cloudy issues of responsibility, having taken the assumption that ‘in the near future, persuasive technologies will be commonplace [14], but there is a long way to go. For the moment it seems worthwhile to understand just how and why people are turning to certain sources of online advice rather than others.

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