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Recommended Citation  
Furner, Christopher P.; Racherla, Pradeep; and Zhen, Zhu, "Cultural and review characteristics in the formation of trust in online product reviews: A multinational investigation" (2013). WHICEB 2013 Proceedings. Paper 90.  
http://aisel.aisnet.org/whiceb2013/90

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Cultural and review characteristics in the formation of trust in online product reviews: A multinational investigation

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Abstract: Recent changes in web technologies have given a voice to consumers in online discussion of products and services. While the web has long been a source of information about products and services, web content was controlled by those who knew how to develop for the web, or those who could hire web developers. The trend toward web software that permits novice users to contribute to conversations about products has been embraced by online retailers, who facilitate and encourage online user reviews of products. Researchers are just starting to understand the relationship between online user reviews and purchase intention, however have determined that trust is central to the development of purchase intention. In this study, we report the results of a simulation based web purchase experiment that included subjects in Colombia, the People’s Republic of China and the United States. The experiment included manipulations for both information quality and a social component of the review, and espoused culture scores of subjects where measured. We find that information quality, the social component and espoused uncertainty avoidance influence trust in the review. We were not able to support an interaction effect between information quality and uncertainty avoidance and trust, nor an interaction effect between the social component and collectivism.

Keywords: online product reviews, web 2.0, trust, espoused national culture, e-commerce, word of mouth

1. INTRODUCTION

Websites have long served as an important source of information for shoppers [1, 2]. In the early days of e-commerce, online retailers were in a strong position, as they controlled the presentation and content of online information about products [3]. In order to put information online, one had to register a domain name, purchase hosting services, and know how to develop HTML based webpages. This put participation in online discussions about products or services out of reach for most consumers [4]. With traditional word of mouth, an individual’s range of influence is generally limited to 20 potential customers [5]. That is, if a person has a bad experience with product or service, they can share this experience with their acquaintances, and may have the ability to influence a purchase decision for around 20 potential customers. With the explosion of web-based software that allow novice users to contribute to web content without owning a domain name or even knowing how to develop in HTML (this trend toward such software is often referred to as Web 2.0), consumers were empowered to contribute to the conversation about products online, expanding a consumer’s range of influence from 20 potential customers to millions of potential customers.

As with other Web 2.0 technologies, information found in online product review systems suffers from a number of challenges. According to Constantinides [6], such technologies tend to generate a great deal of information, some of which is unreliable because it suffers from biases inherent to the contributor. The two challenges for the consumer of information from a Web 2.0 technology are 1) to sift through a barrage of information generated by other users and find information that is relevant and 2) evaluate the veracity of the

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information that they have identified. In the context of online product reviews, this remains the case: The potential consumer will have a finite amount of time to devote to reading reviews, so finding relevant reviews among many is a challenge, as is identifying reviews that are trustworthy and reliable.

Researchers have continually demonstrated the importance of trust in online reviews to purchase intention [7,10], indeed trust is important not just in online reviews, but also traditional word of mouth [5, 11] and in mobile application reviews [12, 13]. In studying the formation of trust in online reviews, researchers have investigated characteristics of the review, as well as individual characteristics of the potential buyer. In this study, we investigate the effect of two review characteristics, information quality and social content, as well two individual level characteristics, espoused uncertainty avoidance and espoused collectivism. We selected these individual level characteristics for two reasons: both have been shown to influence trusting behavior in the past [14] and they are both components of espoused national culture. Espoused national culture is becoming more and more relevant to e-commerce researchers given the recent trend toward globalization and the cultural diversity of online consumers [15]. Our research questions are:

1. In what ways do review characteristics influence trust in an online review?
2. Does the effect of online product reviews on trust vary across espoused cultures?

This paper proceeds as follows. In the following section, we review relevant theories and empirical work related to online word of mouth (eWOM), trust and espoused national culture. In doing so, we develop a model of trust in online reviews and outline our hypotheses. We then report the results of a multinational simulation-based experiment to test our hypotheses. Findings are discussed, as well as implications and limitations. Summarizing remarks conclude the paper.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

In order to answer our research questions, we build a model of trust formation in online product reviews. This model considers the impact of two review characteristics (information quality and social content) and two espoused national culture dimensions (uncertainty avoidance and collectivism). Our model is presented in Figure 1. We then review relevant literature, which we use to outline our hypotheses.

2.1 Online Word of Mouth

Researchers have been interested in the influence of traditional word of mouth on purchase intention for some time [16, 17]. Indeed word of mouth is viewed as an important social process that can have an important influence on new product diffusion [18]. Beatty and Smith [19] empirically demonstrate that in some cases (across multiple product categories), word of mouth is the only source of information used by consumers. The dominant theoretical explanation for consumer reliance on word of mouth is uncertainty reduction theory [3], in which people employ both active and passive strategies to mitigate uncertainty about recurring situations [20, 21]. In a purchase context, consumers have less than perfect information about the ability of a product to meet a need or satisfy a desire of the consumer’s. Since the product has a cost associated with it, it becomes more important for the consumer to select a product that satisfies their need effectively. To reduce the risk of purchasing a product that will fail to satisfy their needs, the consumers...
will employ active and passive information seeking activities. According to Berger [20], active strategies are those where the consumer exerts effort to contact other individuals who have information that would reduce their uncertainty. Passive strategies involve observing others with the goal of learning more about a product. In a traditional environment, active strategies are actually easier, as it is difficult in many cases to observe individuals using products and gauge how well those products will satisfy the consumer’s needs.

In an online environment, passive uncertainty reduction strategies are easier to pursue, since most information online is static and asynchronous, a consumer can observe (read reviews) without actually expending effort to contact other consumers. However, online reviews do carry specific challenges. First, there are generally a plethora of reviews for a given product, and the consumer must determine which reviews are relevant, that is, which reviews discuss the ability of a product to meet needs that the consumer has. The reviewer may have different needs and may prioritize those needs differently than the consumer. In traditional word of mouth, the synchronous and interactive nature of the discussion allows the consumer to ask questions about the ability of the product to meet specific needs. Also, in traditional word of mouth, the consumer will have to rely on their limited personal network of acquaintances to provide information, where in eWOM, a large number of reviews are likely to exist.

Another challenge faced by a consumer relying on eWOM is related to trust. In traditional word of mouth, the consumer generally has a relationship with the product reviewer, and should have already formed an attitude about whether the person is trustworthy. In eWOM, the consumer is forced to make a trust assessment based only on the content of the review, which is a very short interaction. According to Gefen [9], trust develops in stages over time, and developing trust in an online environment is very difficult given the constraints of the medium.

Since trust has been shown to be a primary driver of purchase intention in traditional, mobile and web-based environments [22], it is no surprise that there has been a great deal of research on trust formation in e-commerce [23]. We focus on two components of online product reviews that have been widely used in e-commerce research: Information Quality and Social Content.

2.1.1 Information Quality of Product Review

Previous research suggests that the information content of product reviews is among the most important factors influencing trust. Buda [24] demonstrates that consumers make an effort to assess the credibility of a message in terms of the expertise and knowledge of the source of the message. In the case of online reviews, Mitchell and Dacin [25] show that consumers view reviewers with expertise as likely to have greater awareness and knowledge of their products, and that consumers form these attitudes about a reviewer’s expertise based on the extensiveness of the review. Other studies echo this sentiment, with consumers rating reviewers higher in terms of information quality based on the number of words in the review [26] and the valence of the review (is it positive or negative) [22]. However, these factors are peripheral cues that consumers use as heuristics to evaluate the information quality of the review, but they do not actually assist the consumer in determining if a product is suitable for their needs. Other characteristics of the review must be used to assess information quality, which we will discuss below.

Following Petty and Cacioppo [27], we term the presentation and framing of a message as argument quality. Information that makes strong arguments (arguments that are relevant, objective and verifiable) tend to be viewed as more credible and more persuasive. In traditional word of mouth, argument quality has been found to have a positive influence on brand attitude and purchase intention [28]. This is consistent with Mayer et al. [29], who identified the perceived ability of an individual as a major factor in their trustability. It stands to reason that better information quality in a review will increase the consumer’s perceptions of their ability to accurately describe the suitability of a product to meet their needs. Following this logic and building on [22, 26, 27, 29], we
argue that product reviews which are more extensive and that have higher argument quality (i.e. higher information quality) will result in a higher level of trust in the review by consumers.

H1 Reviews with higher information quality will lead to higher levels of decision trust than reviews with low information quality.

2.1.2 Social Content of Product Review

Researchers have considered a number of social factors in trust formation. Using literature from sociology, psychology and management, Myer et al. [29] modeled trust formation as a function of four factors: the communicator’s perceived ability, benevolence and integrity as well as the receiver’s disposition to trust. Benevolence and integrity are both social components that are assessed through interaction [29]. This is consistent with a number of studies that demonstrate a relationship between interaction frequency and trust formation (e.g. [30, 31]).

In an online product review context, social mechanisms also help the consumer form attitudes about the reviewer, which serve to reduce uncertainty about the review [3]. Consistent with Bartel and Dutton [32], we conceptualize the social component of the review as consisting of two factors: identity claiming and in-group granting. Uncertainty reduction theory suggests that participants in a communication event explicitly seek to reduce uncertainty about the attitudes and behaviors of each other via the exchange of background information. As more social information is collected, uncertainty is reduced [32]. Researchers have established that word of mouth is socially embedded in identity groupings, and that this identity related behavior is one of the primary motivations for providing information in both traditional and electronic word of mouth exchanges [33, 34].

According to Simpson and Siguaw [5], communication partners with shared identity are more efficient and effective than those with disparate backgrounds. This is consistent with Murphey et al. [35] who found that perceived similarity or homophily between communication partners influences word of mouth outcomes. Other studies have demonstrated that homophily is a major driver of trust in word of mouth, in both high and low involvement purchases [11, 35]. For instance, Forman et al. [36] found that when reviewers provided demographic information such as city, more identity granting behavior from other consumers took place, and this identity granting behavior led to increased sales. Consistent with the findings of [10, 29, 31, 32, 36], we hypothesize that reviews with a stronger social component will engender higher levels of trust.

H2 Reviews with a stronger social component will lead to higher levels of decision trust than reviews with a weaker social component.

2.2 Espoused National Culture

Recent trends toward globalization and multicultural organizations have led to increased interest among researchers in cultural determinants of organizational as well as digital communication outcomes [15, 37]. While a number of research topologies for culture exist, one of the most frequently used is Hofstede’s [38] five dimensions of culture. Since Hofstede’s topology does not allow for prediction of individual behavior (it is a national level construct, and cannot apply to every individual member of a nation), Srite and Karahanna [14] developed four espoused national culture constructs, which are measured at the individual level, not the national level, and allow for the prediction of individual level behavior. The four constructs are espoused uncertainty avoidance, espoused collectivism, espoused power distance and espoused masculinity. In considering trust formation in an online product review context, we determined the espoused uncertainty avoidance and espoused collectivism are likely to influence trust formation, while espoused power distance and espoused masculinity are not. As such, we only describe espoused uncertainty avoidance (the extent to which individuals are uncomfortable acting in the absence of perfect information about outcomes) and espoused collectivism (the extent to which individuals value group interactions and outcomes over individual activities and outcomes).

Gefen and Heart [15] specifically argue for the importance of considering culture in e-commerce research.
They point out that the overwhelming majority of e-commerce research was conducted in a western context, using western subjects, and empirically demonstrate that trust is an important component of purchase intention in e-commerce across cultures (their sample included subjects in the United States and Israel), but that cultural factors influenced trust formation (specifically uncertainty avoidance, collectivism and power distance). This sentiment is echoed by [39] and [40], both of whom investigate the role of culture in how consumers seek information in an e-commerce environment.

### 2.2.1 Espoused Uncertainty Avoidance

Consumers who score high on uncertainty avoidance are expected to expend more effort on uncertainty reduction [20], and are more likely to thoroughly read product reviews to assess their veracity. These individuals have been shown to be less likely to accept the veracity of statements in the absence of other facts to support the statement [41], that is, they are more sensitive to the verifiability principal of information quality. Since decision trust is the extent to which an individual is willing to act in a given situation with a sense of relative security [42] consumers who score high on uncertainty avoidance are expected to require a high degree of information quality in order to develop decision trust. As such, we predict that individuals who score high on uncertainty avoidance will be more sensitive to the effect of information content on trust in the product review.

H3 Consumers who score high on espoused uncertainty avoidance will require stronger information content in order to develop decision trust than consumers who score low on espoused uncertainty avoidance.

Uncertainty reduction theory indicates that individuals act to reduce uncertainty about outcomes before they act [29]. Uncertainty avoidance refers to the extent to which individuals are uncomfortable acting in the absence of perfect information about outcomes [14]. Consumers who score high on uncertainty avoidance are less comfortable and less likely to act in the absence of good information about the ability of a product to meet their needs than consumers who score low on uncertainty avoidance [14]. As such, we predict that consumers who score high on espoused uncertainty avoidance will not form decision trust based on online reviews as easily as consumers who score low on espoused uncertainty avoidance.

H4 Consumers who score high on espoused uncertainty avoidance will report weaker feelings of decision trust in an online product review than consumers who score low on espoused uncertainty avoidance.

### 2.2.2 Espoused Collectivism

According to Lewicki and Bunker [43] there are three bases for the formation of trusting beliefs: calculative, identification and knowledge based. Calculative-based trust, which stems from transaction cost economics, forms when an individual surmises that another party will not act opportunistically at the expense of others. Identification-based trust builds off an existing calculus-based trust relationship and forms when two parties understand the background and needs of each other, identify with each other and through this identification believe that the other will not seek to harm them. Finally, knowledge-based trust builds on identification based trust and forms when two parties have enough experience with each other that the truster has reduced their uncertainty about the intentions and motivations of the person to be trusted. Both identification-based and knowledge-based trust form when a relationship between the parties is in place, because this relationship reduces uncertainty.

Those who score high on collectivism develop stronger feelings of trust when interacting with people with whom they already have a relationship [44]. Collectivists have difficulty developing identification-based and knowledge-based trust in the absence of a relationship. Since individuals who score high on espoused collectivism develop strong feelings of trust only when they have a relationship in place with the other party, and the social content of a review is an initial step toward building a relationship [3], we predict that those who score high on espoused collectivism will experience stronger feelings of trust when the reviewer identifies him/herself.
H5 Consumers who score high on espoused collectivism will report stronger feelings of decision trust in an online product review with high social content than consumers who score low on espoused collectivism.

3. METHODOLOGY

In order to test our hypotheses, we conducted a simulation-based experiment. We choose the hospitality services industry, because these services are experimental in nature, lack the ability to ‘try before you buy’ and not returnable [45], as a result, they are high risk purchases that should demand substantial attention when purchasing. Further, the intangibility of the services enhance the uncertainty for consumers, increasing their motivation for information search. Subjects are asked to read four hotel reviews (all for the same hotel), and after each review, they are asked to indicate the extent to which they trust the reviewer (using 3 items), and if they intend to purchase a room. Next, students respond to a modified version of Srite & Karahanna’s [14] espoused national culture scale.

We adopt a repeated measures experimental design for two reasons:

a) The independent and moderating constructs have high/low conditions (information quality and social content), that cannot be easily manipulated in real reviews. An experimental design allows us to manipulate our constructs by changing the review content across treatments.

b) Consumers generally read more than one review associated with each product or service, so our repeated measure approach (where consumers read four reviews) matches the phenomenon of interest.

By using a 2x2 repeated measures full factorial experimental design, we were able to both manipulate our constructs while simulating reality. We created four reviews for the high involvement purchase scenario (see Figure 2).

Consistent with previous research, the information quality manipulation considered two dimensions: argument quality [46] and the number of words in the review. Our high information quality reviews (Jordan and MMJoy) both had strong argument quality and many words, while our low information quality reviews (Sam and Luckypal) had weak argument quality and few words. Following Toulmin [46], high information quality reviews contained 1) a claim, 2) evidence to support the claim and 3) backing.

The social component of the review was manipulated using reviewer’s personal information such as photo, real name/screen name, place of origin, and a short statement regarding lifestyle and tastes. These variables were drawn from the Marx’s [47] study which examined the importance of various identity attributes in anonymous interpersonal communication. This study found eleven different types of information people generally use to assess the identity of a source. The most important of these, as rated by the study subjects, included individual identification (the ‘who’ question), shared identification (demographics and lifestyle), geographical location (the ‘where from’ question), and photos (what does he/she look like question).

Espoused national culture was measured using a modified version of Srite and Karahanna’s [14] scale. Srite and Karahanna’s scale was developed for professionals working in organizations; however our population of interest is individuals who are interested in purchasing travel services. Therefore, the original items were considered one by one, and references to any organizational context were replaced with general references. To test the efficacy of the modified culture scale, we ran a pre-pilot test in which 70 students were given only the
Srite and Karahanna items, and 77 students were given the modified espoused culture items. We found no significant differences between the two groups in terms of either responses or reliabilities for any of the variables.

4. DATA COLLECTION AND RESULTS

Data were collected from student subjects in the U.S., P.R. China and Columbia. These countries were selected to assure variation on Srite & Karahanna’s espoused national culture dimensions. While students are not the only online consumers, they are expected to have experience in making online purchases (1). The full instrument, including screenshots of the review, were translated into the native language of the subjects by three bilingual Chinese and two bilingual Columbian volunteers. Data were collected from 2010-2012, and resulted in a usable sample of 356 complete records (U.S.: 142, P.R. China: 129 and Columbia: 85). Reliabilities were assessed for each of our variables and all exceeded 0.7 (see Table 1). The correlation between the two independent variables was 0.273 (p < .05).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number of Items</th>
<th>Chronbach α</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust in Review</td>
<td>3</td>
<td>.950</td>
<td>3.24</td>
<td>1.11</td>
</tr>
<tr>
<td>Collectivism</td>
<td>6</td>
<td>.808</td>
<td>3.34</td>
<td>1.01</td>
</tr>
<tr>
<td>Uncertainty Avoidance</td>
<td>5</td>
<td>.914</td>
<td>3.35</td>
<td>1.66</td>
</tr>
</tbody>
</table>

Data were analyzed using a GLM repeated measures design. Mauchly's Test of Sphericity indicated that the assumption of sphericity had not been violated, $\chi^2 = 3.343, p = .188$. Levene’s test of equality of error variances were conducted on each of the review trust factors. None of results were significant, indicating that the assumption of equal group covariances is met (LuckyPal $F(8, 320) = .893, p = .522$, Sam $F(8, 320) = 1.377$, $p=.205$, MMjoy $F(8, 320) = .958, p = .448$, Jordan $F(8, 320) = .478, p = .871$).

H1 predicted that reviews with higher information quality will lead to higher levels of decision trust than reviews with low information quality. H1 was supported (Pillai’s Trace $= 0.013, F(1, 320) = 4.264, p = 0.040$). H2 predicted that reviews with a stronger social component will lead to higher levels of decision trust than reviews with a weaker social component. H2 was supported (Pillai’s Trace $= 0.021, F(1, 320) = 6.812, p = 0.009$). H3 predicts that consumers who score high on espoused uncertainty avoidance will require stronger information content in order to develop decision trust than consumers who score low on espoused uncertainty avoidance. H3 was not supported (Pillai’s Trace $= 0.10, F(2, 320) = 1.688, p = 0.187$). H4 predicted that consumers who score high on espoused uncertainty avoidance will report weaker feelings of decision trust in an online product review than consumers who score low on espoused uncertainty avoidance. H4 was supported ($F(2, 320) = 12.157, p > 0.001$). H5 predicted that consumers who score high on espoused collectivism will report stronger feelings of decision trust in an online product review with high social content than consumers who score low on espoused collectivism. H5 was not supported (Pillai’s Trace $= 0.006, F(2, 320) =$

![Figure 3: Evaluated Model](image-url)
0.941, p = 0.391). Our evaluated model is presented in Figure 3.

5. DISCUSSION

Three of our five hypotheses were supported, in this section we will discuss the surprising findings, as well as our contributions and limitations.

We were not able to support an interaction relationship between espoused uncertainty avoidance and the relationship between information quality and trust, however we did identify direction relationships between trust and both information quality and uncertainty avoidance. We had argued that individuals who scored highly on uncertainty avoidance would be more sensitive to the uncertainty reducing effect of information quality. While we believe this argument is sound, it is possible that our result didn’t bear this relationship out, because much of the variation in trust was already captured by the strong direct relationship between uncertainty avoidance and trust. We were also unable to support an interaction relationship between espoused collectivism and the relationship between social content and trust. We had argued that consumers would view the act of a reviewer identifying themselves as a first step toward relationship building, and therefore form trusting beliefs, however, it seems that the short time and limited interaction that the reviewer had to establish a relationship was not sufficient for trusting beliefs to form.

Our study is not without its limitations. We sampled from subjects in three countries that differ on Srite & Karahanna’s [14] espoused national culture dimensions. While our variance on these dimensions was good, our limited sample may not be generalizable to other populations. Further, our sample consisted of students. While students do tend to engage in online shopping, they are not the only population that shops online and considers product reviews, which could further challenge the generalizability of our findings. Finally, we were limited in the review characteristics and individual level factors that we could assess. Other factors may play an important role in trust formation based on online product reviews, and the examination of these potential factors represents an interesting avenue for further research.

The current study makes several contributions. Online review systems are common in e-commerce, and a number of studies indicate that online consumers rely on reviews when deciding which products to purchase [8, 30]. Despite the apparent relevance of online reviews, research to date still has a long way to go in understanding how consumers perceive and act on the information from this relatively new medium [3]. Further, continuing trends toward multiculturalization confound the communication dynamic between the reviewer and the consumer even more, as online retailers expand their markets overseas, and as domestic markets become more culturally heterogeneous [15]. By using uncertainty reduction theory to demonstrate a relationship between review characteristics as well as culture and trust in online reviews, this study represents a first step at disentangling those communication dynamics. We contribute to a long line of trust research in e-commerce while incorporating espoused national culture.

6. CONCLUSION

As more and more transactions occur online, e-retailers as well as product reviewers are bombarding consumers with information. Consumers face the challenge of not only sifting through this deluge of information about products, but of vetting the reliability of the information that they do consider in making purchase decisions. Creating trust becomes an important challenge faced by online retailers. In an eWOM context, the development of trust is also critical. We were able to demonstrate that reviews that have higher information quality and social content foster trust better than reviews that do not. We were also able to demonstrate that individuals who score high on uncertainty avoidance tend to develop trust less quickly, however it seems that this was the case when information quality was high as well as when information quality
was low. In addition to contributing to research on trust formation and eWOM, these findings offer insight into how eWOM systems can best be developed to facilitate trust development in a multicultural marketplace.

ACKNOWLEDGEMENTS

The authors would like to thank Zhan Furner, Qiu Wang and Andres Diaz-Lopez for help with instrument translation. They would also like to thank Maria Fernanda Navarro for help with data collection.

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