



How negative online information affects consumers' brand evaluation

The moderating effects of brand attachment and source credibility

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Abstract

Purpose – The goal of this study is to investigate the relationships among brand attachment, online source credibility, and severity of negative online information on perceived negative change in brand evaluation and perceived brand risk.

Design/methodology/approach – A $2 \times 2 \times 2$ experiment was conducted to explore the effects of brand attachment (low or high), online source credibility (low or high), and online information severity (low or high) on perceived negative change in brand evaluation and perceived brand risk.

Findings – The results showed that the severity of negative online information affects perceived negative change in brand evaluation and perceived brand risk significantly. However brand attachment can reduce the effects of negative online information on perceived negative change in brand evaluation and perceived brand risk significantly. The results also showed that the effect of the severity of negative online information on perceived negative change in brand evaluation and perceived brand risk is moderated by online source credibility.

Originality/value – In addition to the main effects in the proposed research model, it is the first study to explore the moderating effects of brand attachment and online source credibility on the relationship between negative online information and perceived negative change in brand evaluation and perceived brand risk.

Keywords Source credibility, Brand evaluation, Brand attachment, Negative online information, Online information severity, Perceived brand risk

Paper type Research paper



Introduction

The proliferation of online information sources enhances the transmission of the huge amounts of news and publicity we receive online. However this can be troublesome for a brand if the news or publicity is unwelcome. For a consumer it is very difficult to judge the credibility of negative online information regarding the products of a focal brand, given the different quantities and qualities of online media sources. A consumer's limited information processing ability may negatively affect their brand

evaluation and increase the perceived risk of purchasing the brand. Therefore online word-of-mouth (WOM) has become an important topic of research in the area of computer-mediated communication.

Because of the increasing importance of online WOM communication in consumer decision-making, studies have explored the antecedents of the decision to use online reviews (Park and Lee, 2009), its effects on purchase intention (Prendergast *et al.*, 2010), the effect of negative online information on brand attitude (Chiou and Cheng, 2003), the perceived risk and trustworthiness of online WOM communication (Martin and Camarero, 2009; Pan and Chiou, 2011), the interactive effects of negative consumer reviews and utilitarian vs hedonic products on product attitude (Sen and Lerman, 2007), and the effects of tie strength, homophily and source credibility on consumers' decision-making (Brown *et al.*, 2007).

Although these extant studies have clarified the antecedents and consequences of online information communication, very little research has been done on the relationship and moderating effects between online source credibility, online consumer brand attachment, and severity of negative information on consumers' brand evaluation and perceived brand risk. In this study we seek to explore these important antecedent variables.

More specifically, although past consumer research has stressed the relationship between source credibility and persuasion effects (Abdulla *et al.*, 2002; Greer, 2003), their relationship is less explored in the online communication context. The source credibility of online information seems to assume an important role in affecting consumers' brand evaluation and perceived brand risk when facing negative online information. When negative information is from an unsolicited online source vs a highly credible internet media source, how would these different sources of information affect consumers' brand evaluation and perceived brand risk?

In addition brand attachment may provide an important mechanism for a consumer to cope with negative information about a brand (Johar *et al.*, 2010). It is also interesting to explore how a consumer who has established a relationship with the brand (Chaplin and John, 2005; Escalas, 2004) reacts to negative online information that attacks the relationship. Finally the severity of the negative online information is a less explored factor in previous online studies that can influence a consumer's brand evaluation and perceived brand risk. The severity of negative online information triggers different levels of consumer fear. Fear has been found to relate to persuasiveness and attitude changes (Eagly and Chaiken, 1993; Hovland *et al.*, 1953; Keller and Block, 1996; Rogers, 1983).

In sum this study will explore how different levels of information severity, consumers' brand attachment, and online source credibility affect consumers' perceived negative change in brand evaluation and perceived brand risk when facing negative online information, and how brand attachment and online source credibility moderate the relationship between online information severity and consumers' perceived negative change in brand evaluation and perceived brand risk. In addition to the main effects in the proposed research model, this is the first study to explore the moderating effects of brand attachment, online source credibility, and information severity on the relationship between negative online information and consumers' perceived negative change in brand evaluation and perceived brand risk.

The study is organised as follows. In the next section the conceptual framework and the research hypotheses will be provided; this section is followed by a description of the methodology and the results of the hypothesis testing. Finally a discussion of results and marketing implications will conclude the paper.

Literature review and hypotheses development

The research is designed to confirm the relationships among source credibility, brand attachment, severity of online information, and the moderating effects of brand attachment and source credibility. The research model is shown in Figure 1.

The effects of source credibility

Source credibility refers to a source's perceived ability or motivation to provide accurate and truthful information (Kelman and Hovland, 1953), and the source of persuasive information is rated more credible through expertise (Brown *et al.*, 2007; Rhine and Severance, 1970; Salo and Karjaluo, 2007) or trustworthiness (Mills and Jellison, 1967). Past research found that highly credible sources are more persuasive and are perceived as more trustworthy than low-credibility sources (Eastin, 2001; Hovland and Weiss, 1951; Rhine and Severance, 1970). Persuasion can be evaluated in low and high elaboration conditions. In the elaboration likelihood model (ELM) framework, high involvement individuals would follow a central processing route to persuasion in which attitude change results from a person's careful consideration of information that reflects what that person feels are the true merits of a particular attitudinal position (Petty and Cacioppo, 1986). Under low elaboration conditions, expertise appears to invoke an "experts are correct" heuristic (Petty *et al.*, 1981). Therefore credible online sources may have significant influence on the information recipients under either low or high elaboration conditions.

The relationship between information sources and people's attitude has also been emphasised in past literature regarding offline communication (Tormala and Petty, 2004; Kaufman *et al.*, 1999). Tormala and Petty (2004) proposed that people's attitudes can actually change when they resist events from different sources. People will become more certain of their attitudes after resisting persuasion from a high-credibility source, but not after resisting persuasion from a low-credibility source. Milburn (1991) found that information from sources rated high in expertise leads to greater attitude change.

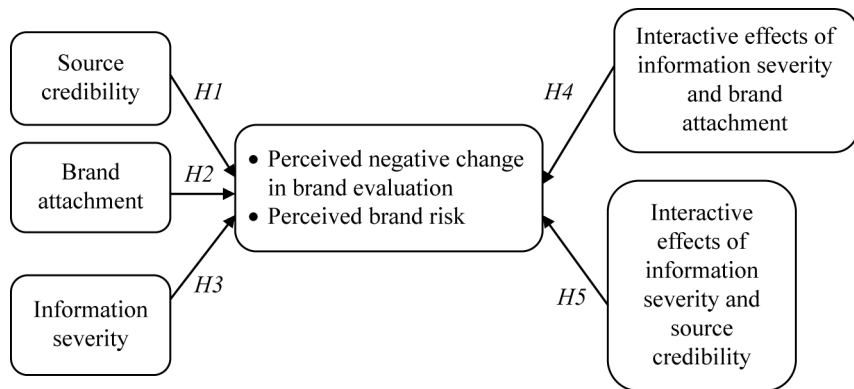


Figure 1.
Research model

Conversely messages from low-expertise sources typically produce no change in attitude. Similarly Greenberg and Miller (1966) found that when a source is seen as low in credibility, individuals are more resistant to persuasion.

Therefore it is predicted that negative online information from credible online sources will be regarded as more reliable and more trustworthy because these sources represent a certain level of expertise, compared to the same content from less credible sources. Thus it is proposed that the effects of negative online information on perceived negative change in brand evaluation and perceived brand risk will be stronger when consumers receive the online information from a more credible online source (such as reviews from a professional product review website) vs a less credible online source (such as unsolicited e-mail information). Thus it is hypothesised that:

- H1.* When exposed to negative online information from a more credible source, consumers will demonstrate more negative change in brand evaluation and perceived brand risk than when exposed to negative online information from a less credible source.

The effects of brand attachment

Brand attachment is a cognitive and emotional connection between the brand and self (Chaplin and John, 2005; Escalas, 2004); it is the strength of the bond connecting the brand with self-involving thoughts and feelings about the brand, as well as the brand's relationship to the self (Fournier, 1998). Although brand attachment is very similar to the concept of affective commitment toward a brand, it places more emphasis on the bond and prominence between the brand and the self. Affective commitment toward a brand is the customer's emotional attachment to the brand based on their identification with that brand (Allen and Meyer, 1990). In fact brand attachment can be composed of brand-self connection and brand prominence. The first, brand-self connection, refers to a consumer who develops a sense of oneness with the brand by categorising the brand as part of the self, establishing cognitive links, and connecting to brands that represent who the self is or are meaningful in light of goals, personal concerns, or life projects (Park *et al.*, 2010). The second, brand prominence, refers to the notion that brand-self connections develop over time and through experience, which suggests that brand-related thoughts and feelings become part of one's memory (Park *et al.*, 2010). Positive memories about an object are more prominent for people who are highly attached to the object than for people who show weak attachment (Collins, 1996; Mikulincer, 1998).

It is predicted that consumers' level of brand attachment is related positively to elaboration condition (Petty and Cacioppo, 1986). Consumers with high brand attachment will follow a central processing route to persuasion, whereas consumers with low brand attachment will follow a peripheral processing route to persuasion. Under high elaboration conditions, brand attachment influences persuasion by biasing the nature of individuals' thoughts (Chaiken and Maheswaran, 1994). Customers with high brand attachment tend to deny negative information by demonstrating less perceived negative change in brand evaluation and less perceived brand risk, since the negative online information on the events does not align with their previous belief about and relationship with the brand. Conversely customers who do not have any attachment to the brand will tend to believe the accusation in the negative online information, thus demonstrating more perceived negative change in brand evaluation

and more perceived brand risk. Past research also shows that high-attachment consumers may show more behavioural commitment in the form of brand loyalty (Park *et al.*, 2010). They are more likely to engage in biased processing of negative information regarding the brand (Ahluwalia *et al.*, 2000). Therefore it is hypothesised that:

- H2. When exposed to negative online information about a brand, consumers with higher brand attachment will demonstrate less perceived negative change in brand evaluation and perceived brand risk than consumers with lower brand attachment.

The effects of the severity of online information

The severity of negative information increases its persuasiveness and changes the recipients' attitudes. Fear arousal has been found to affect persuasiveness, and consequently attitude changes (Keller and Block, 1996), which could be accomplished by presenting information about harmful consequences of specific behaviour or recommending actions to avoid negative consequences (Hovland *et al.*, 1953; Keller and Block, 1996). Similarly defensive acts may include avoiding the events, minimising the severity of the threat, selectively attending the events, discounting the threat, and denying the threat's personal relevance (Eagly and Chaiken, 1993; Martin and Camarero, 2009; Rogers, 1983).

Based on the ELM framework, fear arousal could be a part of negative information that makes individuals process negative content more carefully and systematically. That is, fear arousal increases the processing capacity of the consumers and they process the incoming information via a central route. Keller and Block's (1996) study provides support for this assertion. In their study recipients who received high-fear-appeal negative information increased their elaboration level and took corresponding defensive action, thus demonstrating more negative attitude changes. Meanwhile recipients who received information about low-fear-context negative events tended to lack sufficient motivation to elaborate the negative content and, thus, did not take defensive action and demonstrated fewer negative attitude changes. Therefore it is hypothesised that:

- H3. When exposed to negative online information, consumers will demonstrate more perceived negative change in brand evaluation and perceived brand risk when facing more severe negative online information vs less severe negative online information.

The moderating effect of brand attachment and source credibility

A brand-attached consumer may demonstrate biased assimilation, which refers to the tendency to view events that are similar to one's point-of-view as more reliable than dissimilar events when asked about certain topics and pushed to express self-opinion (Lord *et al.*, 1979), thereby proving that one's previous personal attitude is indeed an important convincing factor (Prendergast *et al.*, 2010). When receiving information about an event that runs counter to a previous personal attitude, the event's point-of-view may threaten the personal concepts of the information receiver, who reacts with protective action or a closed mind; in contrast if the point-of-view in the information is similar to the previous personal attitude, information receivers tend to be open minded (Zanna, 1993).

However, as proposed by Kunda (1990), consumers who are motivated to arrive at a particular conclusion attempt to be rational and they draw the desired conclusion only if they can summon up the evidence necessary to support the conclusion. The experimental study by Einwiller *et al.* (2006) supported this assertion. In their study moderately negative publicity was found to result in fewer negative corporate associations when the consumers strongly identified with the brand vs when consumers had relatively weak identification with the brand. In contrast consumers' levels of identification did not affect their reactions to extremely negative publicity, resulting in equally negative corporate associations for those with either strong or weak consumer brand identification.

Therefore it is predicted that the effect of brand attachment on reducing the perceived negative change in brand evaluation and perceived brand risk will be significant if the negative information is less severe. However if the information is very severe, consumers will have difficulty in summoning up the evidence necessary to resist the effect of negative online information on their perceived negative changes in brand evaluation and perceived brand risk. Thus it is hypothesised that:

- H4.* There are interactive effects between the level of online information severity and brand attachment on brand evaluation and perceived brand risk changes.
- H4a.* When the online information is less severe, the higher the level of brand attachment, and the lower the perceived negative change in brand evaluation and perceived brand risk.
- H4b.* When the information is more severe, there is no difference in perceived change in brand evaluation and perceived brand risk between consumers with high and low brand attachment.

As discussed, negative information may trigger individuals' problem elaboration process. The level of elaboration depends on the severity of the focal information (Keller and Block, 1996). Past studies have shown that the level of information severity is related to the degree of information diagnosis. Extremely negative information has been shown to be more diagnostic than less extreme negative information (Herr *et al.*, 1991). This assertion is more likely to be true when the information is from a credible online information source (Sen and Lerman, 2007). If the information is from a credible online media source, the diagnostic power will be significantly increased, leading consumers to have higher perceived negative changes in their brand evaluation and perceive more risk when the severity of the online negative information is high than when it is low. However, if the information is from a less credible online media source, the diagnostic power will be questioned since the consumers do not believe the information source in the first place (Pan and Chiou, 2011). In this situation online information severity will not affect the perceived change in brand evaluation and perceived brand risk. Thus it is proposed that:

- H5.* There are interactive effects between the level of information severity and the source credibility of negative information.
- H5a.* When the information is from a credible online source, the higher the level of online information severity, the more perceived negative change in brand evaluation and perceived brand risk.

H5b. When the information is from a less credible online source, there is no difference in perceived negative change in brand evaluation and perceived brand risk between high and low levels of online information severity.

Method

Research design

We tested the hypotheses using a $2 \times 2 \times 2$ between-subjects factorial design with brand attachment (low or high), online source credibility (low or high), and different levels of online information severity (low or high) on the changes in perceived negative change in brand evaluation and perceived brand risk. Mobile phones were chosen as the object for this study because this product category is very popular within the sampled population. The penetration rate of the product is almost 100 per cent. Target respondents also pay attention to the latest news and developments regarding the industry.

Pre-tests

A pre-test was conducted to choose the different levels of online source credibility and online information severity. A group of 40 respondents was asked to rate nine descriptions of online source credibility and eight online information descriptions with various severity levels by using seven-point scales that were developed by consulting industry experts, anchored from “least credible/least severe” to “very credible/very severe.” In terms of online source credibility “reviews from professional product review website/magazine” was rated the most credible with a mean of 5.58, while “unsolicited emails” was rated the least credible with a mean of 1.95. In addition, in terms of information severity, “potential battery explosion due to unknown reasons” is rated the most severe with a mean of 6.23, while “overly slow texting speed on the screen” is rated the least severe with a mean of 4.05. To make sure the results’ credibility and severity measurements are significantly different between high and low levels, paired sample T-tests were conducted using 5 per cent significance. The results show that the two descriptions of both online source credibility and information severity are significantly different. Therefore, in the experiment, credible source refers to reviews from professional product review websites/magazines, and less credible source refers to unsolicited e-mails; high information severity refers to a battery explosion event, and low information severity refers to slow texting speed.

Procedure

The survey was advertised on the internet channels most widely used by the target audiences in Taiwan, including bulletin board systems (BBS) and Facebook (the social network), which linked respondents to an established survey website. The participants were initially screened to ensure that they were appropriate as target respondents. Self-administered questionnaires were used for all measures. There were two stages in the experiment. In stage one the respondents were randomly assigned to answer either “what is your most attached mobile phone brand” or “what is your least attached mobile phone brand,” where they self-identified a mobile phone brand from a list of mobile phone brands, and to complete eight five-point scales regarding brand attachment developed by Park *et al.* (2010) which are listed in Table I.

Variables	Items
Brand attachment	I think this brand is part of me, or can represent me I have strong personal connection with this brand I have strong emotional connection with this brand I think this brand is who I am I think this brand can tell other people the kind of person I am I can tell my thoughts and feelings about this brand without even thinking about it Speaking of this brand's past, present and future, I can recall many positive thoughts without thinking about it I have many thoughts about this brand
Perceived negative change in brand evaluation	This mobile phone brand has become very unattractive to me This mobile phone brand has become very disgusting to me My feeling toward this mobile phone brand has become very awful
Perceived brand risk	I think it has become very dangerous to use this mobile phone brand I think using this mobile phone brand has incurred very high severity I have become very doubtful about the trustworthiness of this mobile phone brand

Table I.
Items for variables

All available mobile phone brands in the market were considered. In total there were 19 brands, including the best-known brands and the least known brands in the form of both traditional-feature phones and smart phones. The criteria of data screening included that if a respondent was asked to self-identify a high-attachment brand, then they must have a whole construct average score greater than 3.0 (the average score) in the measurement of brand attachment. However if a respondent was asked to self-identify a low-attachment brand, then they must have a whole construct average score lower than 3.0 in the measurement of brand attachment. Cronbach's alpha and composite reliability for the brand attachment scale were higher than 0.90 and the average variance extracted was 0.666, indicating a considerable level of internal consistency among the measurement items within the construct (Nunnally, 1978) as shown in Table II.

In stage two participants were told to read and follow the instructions on the computer screen and imagine themselves as the online information receiver in the scenario. In this stage respondents were instructed to read online information regarding their high/low self-identified mobile phone brand. The information content was randomly assigned one of four scenarios: less credible online source and high information severity, less credible online source and low information severity, credible

Variables	Cronbach's α	Composite reliability	Average variance extracted
Brand attachment	0.928	0.941	0.666
Brand evaluation change	0.947	0.966	0.904
Perceived brand risk change	0.922	0.951	0.865

Table II.
Measurement properties of variables

online source and high information severity, and credible online source and low information severity.

A total of 349 respondents visited the survey website. However, for manipulation purposes, respondents who showed below-average attachment toward the chosen brand in the high brand-attachment scenario and respondents who showed above-average attachment toward the chosen brand in the low brand-attachment scenario were excluded from further analysis. In total 189 respondents met the research requirements. The profile of the respondents showed a balance in gender, with 54 per cent female and 46 per cent male respondents. In addition respondents fit into the target audience (4 per cent were less than 20 years old; 89 per cent were 20-30 years old; and 7 per cent were 31-40 years old) and were well educated (4 per cent had less than a college diploma; 63 per cent had an undergraduate degree; while 33 per cent had a masters degree or higher).

Dependent variables

The measurements of dependent variables included perceived negative change in brand evaluation and perceived brand risk as shown in Table I. Perceived negative change in brand evaluation was measured by asking respondents to rate their changes of feeling toward the mobile phone brand – became unattractive, became disgusting, became awful – after reading the negative online information. This scale was developed by consulting the scales developed by Park *et al.* (2010) and modifying them; answers were rated on a five-point scale anchored by “least agree” and “most agree.” To measure perceived brand risk after reading the online information, three items developed by Keller and Block (1996) were modified: became dangerous to use; incurred high severity; and became doubtful about the trustworthiness of this mobile phone brand. Cronbach’s alpha and composite reliability for both scales were higher than 0.90, indicating a considerable level of internal consistency among the measurement items within each construct (Nunnally, 1978). The average variance extracted for perceived negative change in brand evaluation and perceived brand risk were 0.904 and 0.865 respectively which also demonstrate strong internal consistency of the scales as shown in Table II.

Data analysis method

An analysis of variance test was conducted to test the research hypotheses empirically to see whether brand attachment, source credibility, and information severity have any effect on consumers’ perceived negative change in brand evaluation and perceived brand risk in the proposed model.

Results

The results shown in Tables III and IV demonstrate that the main effect of online media sources on consumers’ perceived negative change in brand evaluation ($F = 0.083$, $p = 0.773$) and perceived brand risk ($F = 1.416$, $p = 0.236$) are not significant. Therefore *H1* was not supported by the data. Regarding *H2* it was found that brand attachment has significant main effects on consumers’ perceived negative change in brand evaluation ($F = 91.936$, $p < 0.01$) and perceived brand risk ($F = 59.223$, $p < 0.01$). As expected high brand-attached consumers tend to show less perceived negative change in brand evaluation and perceived less brand risk than

Source	Sum of squares	DF	Mean square	F-value	Significance
Attachment	81.019	1	81.019	91.936	0.000*
Source	0.074	1	0.074	0.083	0.773
Severity	3.383	1	3.383	3.839	0.052*
Attachment × source	0.032	1	0.032	0.037	0.849
Attachment × severity	0.000	1	0.000	0.000	0.989
Source × severity	5.450	1	5.450	6.184	0.014*
Attachment × source × severity	0.025	1	0.025	0.028	0.868
Error	159.508	181	0.881		
Total	1896.456	189			

Note: * $p < 0.1$

Table III.
Tests of between-subjects effects by brand evaluation change

Source	Sum of squares	DF	Mean square	F-value	Significance
Attachment	54.488	1	54.488	59.223	0.000*
Source	1.302	1	1.302	1.416	0.236
Severity	15.347	1	15.347	16.680	0.000*
Attachment × source	0.114	1	0.114	0.124	0.725
Attachment × severity	0.745	1	0.745	0.809	0.370
Source × severity	3.165	1	3.165	3.440	0.065*
Attachment × source × severity	0.003	1	0.003	0.004	0.952
Error	166.529	181	0.920		
Total	1887.468	189			

Note: * $p < 0.1$

Table IV.
Tests of between-subjects effects by perceived brand risk change

low brand-attached consumers. Therefore $H2$ was supported by the data. Finally the severity of online information also has a significant main effect on consumers' perceived negative change in brand evaluation ($F = 3.839, p = 0.052$) and perceived brand risk ($F = 16.680, p < 0.01$). Respondents demonstrated more perceived negative change in brand evaluation and perceived brand risk when facing more severe negative online information vs less severe negative online information. Therefore $H3$ was supported by the data.

The results regarding interaction effects showed no statistically significant interaction effect between online information severity and brand attachment on perceived negative change in brand evaluation ($F = 0.000, p = 0.989$) and perceived brand risk ($F = 0.809, p = 0.370$). As a result $H4$ was not supported by the data. However the results did show that the interaction effect between online information source and information severity does affect consumers' perceived negative change in brand evaluation ($F = 6.184, p = 0.014$) and perceived brand risk ($F = 3.440, p = 0.065$).

To visualise the interaction effects, we dichotomised the online information sources and the information severity. Thus the interaction yielded four cells. The means for perceived negative change in brand evaluation and perceived brand risk in each of these four cells are shown in Figures 2 and 3. From the figures one can see that the relationship between information severity and perceived negative change in brand

Figure 2.
Estimated marginal means of perceived negative changes in brand evaluation by information severity and source credibility

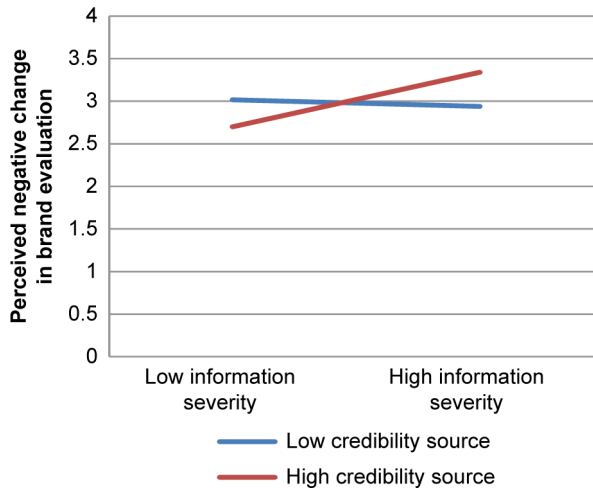
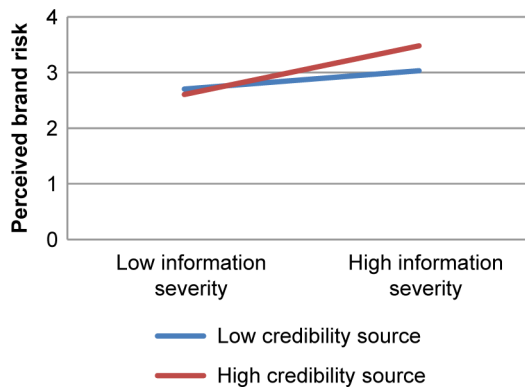


Figure 3.
Estimated marginal means of perceived brand risk by information severity and source credibility



evaluation, and perceived brand risk depends on the online information source, with the slope being greater for professional review websites/magazines than for unsolicited email. The differences in perceived negative change in brand evaluation and perceived brand risk between severe online information and less severe online information in professional review websites/magazines are significant ($M = 3.34$, $SD = 1.21$ vs $M = 2.70$, $SD = 1.04$, $p < 0.05$; $M = 3.48$, $SD = 1.19$ vs $M = 2.61$, $SD = 0.95$, $p < 0.01$). However the differences in perceived negative change in brand evaluation and perceived brand risk between severe online information and less severe online information in unsolicited email are not significant ($M = 2.94$, $SD = 1.24$ vs $M = 3.02$, $SD = 1.10$, $p > 0.10$; $M = 3.03$, $SD = 1.24$ vs $M = 2.70$, $SD = 1.01$, $p > 0.01$). This means that changes in perceived negative change in brand evaluation and perceived brand risk are more sensitive to information severity when the information is from a credible professional review website/magazine (as compared to unsolicited email). Therefore $H5$ was supported by the data.

Discussion

The goal of this study was to investigate the relationships among brand attachment, source credibility, and severity of negative online information on changes in consumers' brand evaluation and perceived brand risk. First the results showed that brand attachment affects consumers' brand evaluation and perceived brand risk when facing negative online information. This conclusion supports our prediction based on ELM that consumers with high brand attachment will follow a central processing route to persuasion, whereas consumers with low brand attachment will follow a peripheral processing route to persuasion. Under high elaboration conditions, brand attachment influences persuasion by biasing the nature of individuals' thoughts. Meanwhile customers who do not have any attachment to the brand will tend to believe the accusation in the negative online information, thus demonstrating more perceived negative change in brand evaluation and perceived brand risk. Therefore brand attachment has a negative relationship with customers' perceived negative change in brand evaluation and perceived brand risk when consumers are exposed to negative online information.

Second, although this study revealed that online source credibility does not affect perceived negative change in brand evaluation and perceived brand risk, it moderates the relationship between online information severity and perceived negative change in brand evaluation and perceived brand risk. When consumers receive negative online information from a more credible source, information severity affects perceived negative change in brand evaluation and perceived brand risk significantly. However such negative ratings become significantly weaker as the source of the information moves from more credible to less credible.

Third consumers who are exposed to severe negative information tend to show greater perceived negative change in brand evaluation and perceived brand risk. As emphasised by Keller and Block (1996), low-fear appeals reduce the individual's level of problem elaboration (peripheral route) and high-fear appeals increase the individual's level of problem elaboration (central route). Finally this study could not demonstrate that consumers' brand attachment interacts with negative information from the perspective of information severity, which suggests that brand assimilation resulting from brand attachment does not replace knowledge provided through the fear level in negative information. Perhaps consumers tend to consider brand attachment and negative information separately.

Implications

In today's markets brand power is an important means of retaining loyal consumers and creating more sales. At the same time it is increasingly difficult to prevent negative online information about brands, especially with convenient technology that transmits negative information quickly (Brown *et al.*, 2007; Park and Lee, 2009). The findings of this study have important implications for marketers. Most importantly brand managers should devise strategies for responses to negative online information with different levels of consumer brand attachment, online information severity, and information sources. When a brand is attacked by negative online information, brand managers should respond strategically based on the negative information's severity level, online sources, and consumers' brand attachment. The study results demonstrate that it is important to promote consumers' attachment toward the brand. Brand

attachment is an effective vehicle for a brand to use in coping with negative online information, regardless of the information source or information severity. For a brand manager it is critical to enhance the cognitive and emotional connection between the brand and consumers. Brand managers need to develop consumers' brand attachment over time via adequate brand community creation or brand-self meaning construction strategy, and eventually let consumers establish prominent brand-related thoughts, feelings, and memories.

In addition this study offers four possible situations regarding the information source and information severity issues with appropriate implications for brand managers to cope with negative online information as shown in Table V. First, if the negative online information involves low severity and comes from a more credible online source (Cell 3), or low severity and comes from a less credible online source (Cell 4), brand managers can pay less attention to the attack since consumers know that the accusation in the negative information is not serious; it will produce no significant changes in brand evaluation and perceived brand risk. Second, if negative online information involves high severity and comes from a less credible online source (Cell 2), managers should try to lower the information's severity level, for example, by explaining the situation publicly and making appropriate responses. Finally, if negative online information involves high severity and comes from a more credible online source (Cell 1), managers should not only explain the situation in public, but actively respond to the publicity crisis to regain consumers' trust, for example by holding a press conference, seeking support from experts or authority, or sponsoring counterattack ads etc.

Limitations and future study

There are several limitations to this study. First of all this study did not find support for *H4* regarding the interaction effect between source credibility and brand attachment. Further studies regarding this prediction may be needed. Past research shows that when consumers with high brand attachment are exposed to negative information, they may feel that their trust in the brand has been broken and even feel deceived (Bitner *et al.*, 1990). Similarly *H4* proposed that even though brand attachment may reduce the impact of negative online information, its power will be significantly reduced when the source credibility is high. In this situation consumers may feel betrayed. One possible reason for the insignificant result is that the experiment only involves one negative information exposure, so brand attached consumers may still doubt the credibility of the incoming information, and therefore not feel deceived. Future studies may provide stronger experiment stimuli to create feelings of betrayal in consumers.

		Sources	
		High credibility	Low credibility
<i>Event severity</i>			
High	Explain the situation in public and actively respond to the publicity crisis (Cell 1)		Try to lower the information's severity level (Cell 2)
Low	Pay less attention to the attack (Cell 3)		Pay less attention to the attack (Cell 4)

Table V.
Strategies for responses

Second it is also quite surprising to find that the main effect of source credibility is not significant on the two dependent variables. In the experiment we defined a credible source as reviews from professional product review websites/magazines, and defined a less credible source as unsolicited emails. Nowadays consumers receive all kinds of online information claiming authority. It becomes more and more difficult for them to differentiate the credible ones from those that are not credible. Another possibility is the presentation of the different scenarios. To isolate variables that may have confounded the causation results in the experiment, this study did not show the real name of the professional review website/magazine. Experiment participants may not have totally believed in the credibility manipulation. Future studies should be repeated with participants viewing an actual webpage with a real name.

Third this study was conducted on consumers in internet forums or groups. Although this group of samples is relevant to the research topic, future studies may explore the proposed hypotheses in regard to various groups of consumers. Therefore caution should be used in generalising these data, and future research should examine these issues in broader populations. Fourth different antecedents may affect consumers' brand evaluation and perceived brand risk differently (Martin and Camarero, 2009). For example brand commitment may have a stronger effect on behavioural aspects of consumers. Future studies can explore more antecedents in the proposed model. Fifth only one product category was studied in this experiment. More experiments with different product categories are needed to generalise the research findings. Future studies may also provide cross-product comparisons by replicating this study using other product types or industry categories that provide different functions and benefits to consumers.

Finally, although we received 349 qualified responses in the experimental study, 160 samples were discarded for the purpose of brand attachment manipulation. In our experiment respondents were randomly assigned to either the high brand-attached group or the low brand-attached group, where they self-identified a mobile phone brand from a list of mobile phone brands. To ensure the accuracy of brand attachment manipulation, respondents who showed below-average brand attachment scores toward the chosen mobile phone brand in the high brand-attached group and respondents who showed above-average brand attachment toward the chosen mobile phone brand in the low brand-attached group were excluded from further analysis. This screening process reduced the sample size significantly. Future studies may try to use brand fan vs nonfan groups to replicate the study. This study refrained from using this sampling method to avoid respondent profile difference between the fan vs the nonfan group which may cause confounding effects in the experiment (Campbell and Stanley, 1963).

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