

Real estate advertising campaigns in the context of natural hazards

Real estate
advertising
campaigns

Evidence from the Wenchuan earthquake

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Abstract

Purpose – The purpose of this paper is to examine how advertising is used by real estate companies as an instrument for managing the adverse effects of a catastrophe.

Design/methodology/approach – Through a theoretical analysis, types of post-disaster advertising messages were identified. On the basis of the likely variations in post-disaster advertising, a content analysis was conducted of a sample of 4,150 property print advertisements to identify advertising messages related to the earthquake. Finally, the message changes in these earthquake-related advertisements were evaluated and compared with the dimension of time to explore the development of advertising strategies.

Findings – The authors found that 12 types of advertising messages were used by developers in response to the Wenchuan earthquake. The initial advertising strategy was mainly to manage public relations, then the strategy was to reduce or compensate for the increased earthquake risk perceptions of buyers.

Practical implications – The findings provide valuable references for helping enterprises adopt effective advertising messages and strategies to reduce the negative effects of disasters.

Originality/value – There are only a few studies on advertising campaigns, especially in the real estate industry, that have been conducted in the wake of catastrophes. This study sought to expand upon the scarce findings in this particular field.

Keywords Advertising, Public relations, Risk perception, Real estate, Wenchuan earthquake

Paper type Research paper

1. Introduction

An earthquake usually causes a temporary real estate marketing crisis because of the negative consequences affecting the products (e.g. buildings). Therefore, it is of great interest to marketing practitioners in real estate businesses to develop marketing strategies to manage the negative effects of disasters on their businesses. Advertising is usually regarded as the main pattern of corporate marketing communications (Ho *et al.*, 2016). There is no doubt that the information offered by real estate advertising may change in response to an earthquake, but advertising during a disaster results in consumer disgust if the

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advertising is mismanaged (Kinnick, 2003). It is necessary to explore the effective management of advertising communications after an earthquake.

The research on post-disaster advertising campaigns is extremely scarce and focuses on corporate level, rather than product level, advertising (Kinnick, 2003; McMellon and Long, 2006; Uribe *et al.*, 2015). According to Kinnick (2003), product advertising is “anathema” during a disaster and ad sponsors should replace it with advertising that focuses on the disaster, such as institutional advertising or cause-related marketing. McMellon and Long (2006) have explored how institutional and advocacy advertising are used to manage public emotions and enhance corporate image after a disaster. The above findings are based on changes in advertising content during periods of half a month and one month after a disaster. In the real estate industry, message changes in product advertising affected by earthquake risk perception can be observed if the sample period is extended (e.g. a half-year sample period). Though there is little research on post-disaster advertising campaigns, the clues about this topic can be found in various complementary perspectives.

In the field of crisis communication, corporate advertising is frequently used because it can affect the way consumers think about an organization and any issues related to the organization (Pashupati *et al.*, 2002). From a public relation perspective, the primary objective of corporate advertising is to enhance the public’s perceptions of a company or facilitate and retain its corporate image (Kinnick, 2003). There are two broad categories of corporate advertising: issue advertising and corporate image advertising (Pashupati *et al.*, 2002). Issue advertising conveys an organization’s views or stance on a particular topic of interest or controversy (Ho *et al.*, 2016). For instance, Cowden and Sellnow (2002) described how issue advertising served as NorthWest Airline’s (NWA) primary channel when its pilots went on strike in 1998. These ads clearly proclaimed NWA’s position and helped the company restore its positive public image. Corporate image advertising is more targeted to directly improving public sentiments toward a company (Ho *et al.*, 2016). In a field study conducted among environmentally conscious participants, corporate social responsibility ads resulted in more positive attitudes and stronger purchase intentions (Winters, 1986).

In the field of disaster recovery management, marketing and promotions are key to assisting an industry to recover after a disaster (Hystad and Keller, 2008) and specific marketing strategies or messages have been demonstrated to be more effective than broad or unfocused communications in the post-disaster phase (Peters and Pikkemaat, 2006). A large volume of studies has focused on tourism marketing, particularly on the development of restoring the image of a destination after a disaster (Hystad and Keller, 2008; Ryu, 2013). In post-disaster marketing, public relations were also identified as a key component (Fall, 2004). Bennett and Kottasz (2001) stressed that most corporations conduct fundraising activities to send supportive messages to the public. Elliott *et al.* (2005) suggested that many corporations inform the public of the issues relevant to their products and services. Persuasive advertising was regarded as an important factor in encouraging Americans to resume normal consumption after the events of 9/11 (Floyd *et al.*, 2004). Mair *et al.* (2016) mentioned that post-disaster marketing strategies should aim to correct public perceptions and restore consumer confidence.

From the perspective of consumers’ risk perception, the perceived risk of product attributes usually influence consumers’ purchase intentions or behaviors (Fuchs and Reichel, 2011). Poor acceptance by consumers may be due to their risk perception of a product’s not fitting their preferred attribute set (Yonezawa and Richards, 2017). Therefore, reducing this risk by advertising information on product attributes is an effective marketing strategy (Byzalov and Shachar, 2004; Anand and Shachar, 2011) For example, safety risk is consistently found to be an important concern among potential tourists after a disaster has hit a particular tourist destination (Floyd *et al.*, 2004). Here, the most important message to communicate may be the “safety” attribute of the destination (Mair *et al.*, 2016). For various

types of disasters and different industries, understanding consumers' risk perceptions can assist the formulation of marketing strategies (Walters *et al.*, 2016).

On the basis of the above rationale and focusing on the two important roles of advertising, which are maintaining public relations and handling risk perceptions, this study examined how public relation messages and product messages in post-quake advertising were used to respond to an earthquake event. Furthermore, we explored message changes in earthquake-related advertising from the dimension of time to observe the development of advertising strategies.

2. Theoretical analysis

This section proposes a theoretical framework used to explain how an earthquake influences real estate advertising (Figure 1). An earthquake may influence homebuyers' perceptions toward a corporate image and a product's attributes. Changes in homebuyers' perceptions influence their purchase intentions or behaviors, which, in turn, influence the demand for housing. As a result, an earthquake may indirectly contribute to a temporary market crisis for some real estate corporations. To forestall a likely market crisis, developers must adjust marketing strategies to fit the homebuyers' varying purchase intentions or demands. From the perspective of marketing crisis management, advertising has long been the preferred tool, which is usually used to influence consumers' feelings, perceptions, and attitudes toward a crisis and a company, as well as its products and services (Atkinson, 2014).

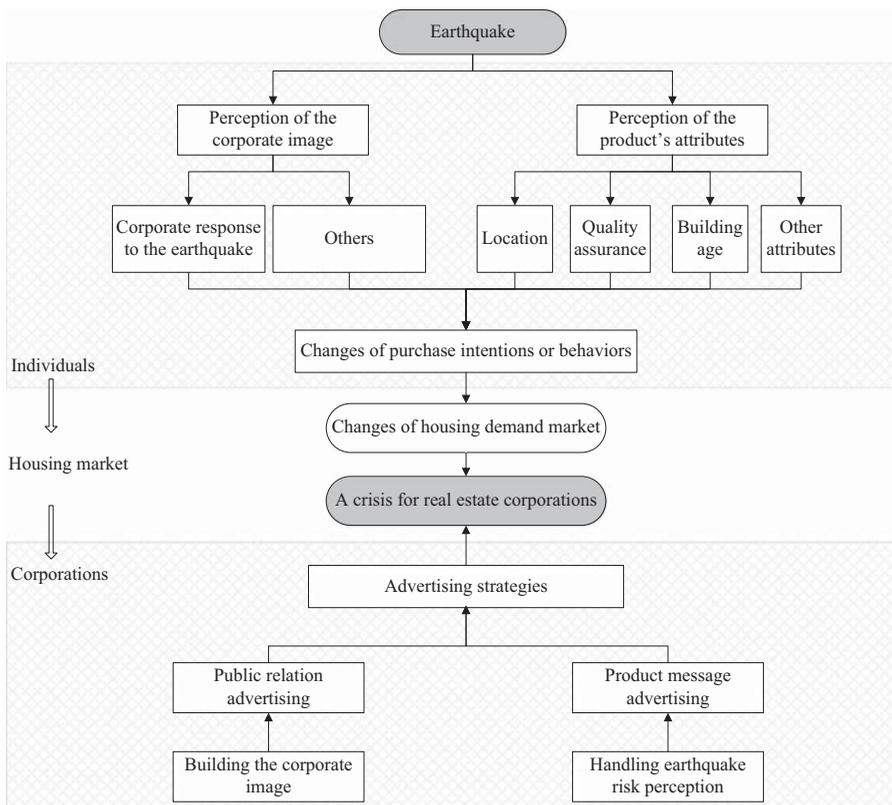


Figure 1. The impact mechanism of an earthquake on real estate advertising

On the one hand, disasters lead to a high degree of public concern and attract the attention of large audiences because of plentiful media reports about casualties and property losses (Uribe *et al.*, 2015). According to the open systems theory of public relations, public relation advertising is sensitive to the environment, and so, adjusts, adapts and responds to any changes (Kinnick, 2003). The use of public relation advertising as a strategy to respond to a disaster can directly improve public sentiments toward an organization. On the other hand, an earthquake raises awareness among all residents of potential risks in the affected area. As soon as consumers have experienced a certain level of risk, their behavior changes, which can range from delaying purchases to using strategies that reduce risks to “tolerable” levels (Fuchs and Reichel, 2011). Informative product advertising plays a “risk reduction” role in consumer purchase decisions (Byzalov and Shachar, 2004). In general, understanding the role of advertising in public relations, as well as consumers’ risk perceptions, will help in the formulation of post-disaster advertising strategies.

2.1 Public relation advertising

Public relation advertising, which, along with institutional advertising or corporate advertising, are usually used to enhance the public perception of a company or corporate image. Kinnick (2003), McMellon and Long (2004, 2006) and Uribe *et al.* (2015) explored the development of such advertising campaigns after disasters. Kinnick (2003) identified 12 distinct message themes in institutional ads released after the events of September 11, 2001. McMellon and Long (2006) also reviewed ads appearing after that date and classified 209 ads alluding to the catastrophe into five message formats. For the February 2010 earthquake in Chile, Uribe *et al.* (2015) scrutinized the characteristics of print ads featuring the earthquake as their main theme and identified nine types of post-quake advertising.

On the basis of the above literature review, eight types of post-disaster advertising are summarized in Table I.

2.2 Earthquake risk perceptions and product advertising messages

The occurrence of an earthquake raises homebuyers’ risk perceptions and further changes their purchase intentions or behaviors (Beron *et al.*, 1997). Hence, understanding homebuyers’ risk perceptions may assist in the formulation of advertising strategies. This study relied on potential factors affecting earthquake risk perceptions to assess message changes in product advertising. Risk compensation and reduction are the most common

References	Types
Kinnick (2003), McMellon and Long (2004, 2006) and Uribe <i>et al.</i> (2015)	Image: depicts the human side of the organization and offers condolences and inspirational messages Patriotic: communicates pride in the country Informational: information about cancellations, business hours, work shifts, and general announcements Commercials alluding to the disaster: similar to traditional product or service advertisements but with references to the disaster
Kinnick (2003), McMellon and Long (2006) and Uribe <i>et al.</i> (2015)	Participation: provides disaster relief and/or encourages customers to donate money or goods to the company’s relief efforts Fundraising promotion: promotes the sales of products by associating them with donations
Uribe <i>et al.</i> (2015)	Mixed: may belong to more than one classification or have different elements that do not merit a specific classification Gratitude: thanks employees, suppliers, customers, and donors

Table I.
Types of post-disaster advertising

strategies for handling risk perceptions and, in real estate advertising, are generally reflected in messages about housing prices and safety, respectively.

2.2.1 Housing prices. Some researchers, such as Tse (1999), have suggested that higher prices lead to lower perceived risks, as it is a widely accepted idea that higher prices imply safer products. Other researchers, however, found that products with higher prices implied higher perceived risks (Akaah and Korgaonkar, 1988). Research on the price effects of an earthquake showed that earthquake risk perceptions always have significant negative effects on housing prices (Beron *et al.*, 1997; Deng *et al.*, 2015), housing rents (Nakagawa *et al.*, 2007; Naoi *et al.*, 2009; Naoi *et al.*, 2010) and land prices (Nakagawa *et al.*, 2009). Because housing value reductions play a “risk premium” role, risk premiums are used as price compensations for the increased earthquake risk perceptions.

2.2.2 Housing safety. Housing buyers may perceive more housing safety risk after an earthquake because of the collapse of numerous buildings. The level of perceived risk, however, may be dictated by housing safety features (e.g. location and quality). On the other hand, the impact of housing safety features on earthquake risk perceptions can be detected in the price differentials (Beron *et al.*, 1997; Nakagawa *et al.*, 2007; Nakagawa *et al.*, 2009; Naoi *et al.*, 2009; Naoi *et al.*, 2010; Deng *et al.*, 2015). From the literature on how housing prices are affected by earthquake risk perceptions, this study identified those safety features affecting such perceptions. For example, Nakagawa *et al.* (2007) suggested that after controlling for other possible effects, housing rents were lower in areas with earthquake risk than in safer areas. They attribute this result to the differences in perceptions toward location risk.

Location safety. Since earthquake risk tends to be fairly differentiated across regions, it is quite natural to expect that location is an important factor affecting earthquake risk perception. Rational buyers are willing to pay more for houses located in areas with low earthquake risk, i.e. buyers may choose quake-prone areas only if they are compensated for their risks by discounted housing prices. As a result, the level of perceived risk affected by location safety can be gleaned from the housing prices (Beron *et al.*, 1997; Nakagawa *et al.*, 2007; Nakagawa *et al.*, 2009; Naoi *et al.*, 2010; Deng *et al.*, 2015).

Quality assurance. Over 25,000 people die annually in earthquakes worldwide (UNISDR, 2017). Most earthquake-related deaths are caused by the collapse of buildings, so construction quality plays a tremendous role in the death toll from an earthquake (Kenny, 2012). Media coverage through photographs and stories provides information to consumers about housing damage and increases buyers’ risk perceptions of building quality. According to Nakagawa *et al.* (2009), risk sensitivity to stronger earthquake-resistant buildings is substantially lower. Naoi *et al.* (2009) also found that earthquake-resistant dwellings were significantly and positively associated with housing prices.

Building age. Individuals may also perceive safety risk in terms of building age because newly constructed apartments are considered more resistant than older residences to earthquake damage (Naoi *et al.*, 2010; Hidano *et al.*, 2015). Naoi *et al.* (2010) explored hedonic regressions with earthquake risk indices and suggested that estimated risk premiums were much higher for older buildings. Hidano *et al.* (2015) also found that information on earthquake risks significantly affected the prices of older properties but not newly constructed buildings and concluded that residents had confidence in the capability of newly constructed buildings to withstand earthquake damage, even in risky zones.

Housing convenience for evacuations. To improve survival rates in an earthquake event, individuals will concern themselves with those factors that expedite rapid evacuation from hazardous areas. This type of housing attribute is specially defined as “housing convenience for evacuations” in this study. For instance, the floor on which a room is located in a building is an important factor affecting risk perception. Shocks are felt more strongly at the

upper floors and many people believe that their chances of surviving are higher at lower floors, as they can exit a building more quickly. Deng *et al.* (2015) suggested that an earthquake may result in a higher risk perception and greater fear of living on upper floors while feeling safer on lower floors. In addition, housing convenience for evacuations may be influenced by building density and the physical spaces between the buildings.

3. The case of the Wenchuan earthquake in China

The deadliest and strongest earthquake to hit China since the 1976 Tangshan earthquake, the Wenchuan earthquake occurred at 2:28 p.m. on May 12, 2008, with a moment magnitude of 7.9 (Deng *et al.*, 2015). The epicenter was located 90 kilometers northwest of Chengdu, which is Sichuan Province's capital city of about 10m residents (Deng *et al.*, 2015). The earthquake caused severe damage to the city and was felt across most of mainland China. The official report by the Chinese Ministry of Civil Affairs stated that 69,227 people had died, 17,923 had gone missing and 374,643 people had been injured[1]. There is no doubt that this disaster was a sad experience for the Chinese people and had caused great psychological trauma. May 12 was designated as the "National Day for Disaster Prevention and Reduction" by the State Council.

The earthquake provoked a reaction from government agencies, NGOs, and other social forces to come to the aid of those who were affected. Anecdotal evidence indicated that enterprises had quickly and effectively responded to calls for donations and disaster response efforts (Zhang *et al.*, 2010). Such reactions signified that enterprises had become increasingly aware of the importance of "enterprise behavior" during disasters and how their efforts could help establish positive public images.

4. Method

This study evaluated advertising messages related to the Wenchuan earthquake by employing the content analysis method. The sample of ads was derived from two newspapers, *Chengdu Economic Daily* and *West China City Daily*, which are the two major regional business newspapers in Sichuan Province and usually feature an abundance of commercial ads. All real estate ads were collected from every daily issue of both newspapers from March 11 to November 10, 2008. Advertising messages displayed before the earthquake were used to compare with those after the earthquake. The sample period after the earthquake was half a year, which can provide a relatively long observation period to explore change features of advertising message. In addition, the deadline was November 10, 2008 because advertising message related to the earthquake turned to be very rare after that. Finally, 4,150 ads were collected: 1,277 ads displayed before the Wenchuan earthquake and 2,873 ads afterward.

4.1 Coding categories

An encoding rule was constructed to evaluate each ad. McMellon and Long (2006) and Uribe *et al.* (2015) developed content analysis to identify catastrophe-related advertising topics, with each ad being coded according to its obvious topic. However, we encountered one issue with the encoding rule of McMellon and Long (2006) and Uribe *et al.* (2015). For example, many product information ads had "commercial intent" as the most obvious topic but also included other key message elements (e.g. image and participation). If these ads were coded as "commercials alluding to the disaster," most of the messages related to the earthquake may be ignored. According to Kinnick (2003), ad content was examined not only for thematic emphases but also language choices. In the study by Kinnick (2003), coders were primarily looking for the presence or absence of certain words or message elements. If ad text included more than one type of message element, both of these types were coded.

Therefore, this study adopted the encoding rule of Kinnick (2003), in which an ad may be coded as multi-typed according to its various message elements.

On the basis of the likely variations in the post-disaster advertising mentioned in the theoretical analysis, we developed a pre-research study and a seminar (featuring the six authors of this paper) to determine the categories. Finally, we identified that 15 types of distinct message elements may be affected by the earthquake:

- (1) Image: depicts the human side of an organization, and offers condolences and inspirational messages.
- (2) Patriotic: communicates pride in the country.
- (3) Participation: provides information about participation in disaster relief.
- (4) Informative: provides information about cancellations, business hours, work shifts, and general announcements.
- (5) Company capabilities: announces enterprise's capabilities for emergency management during the earthquake.
- (6) Fundraising promotion: promotes sales of products by associating them with donations.
- (7) Gratitude: thanks employees, suppliers, customers, and donors.
- (8) Special sales due to the earthquake: provides information about special sales due to the earthquake.
- (9) Safety slogan: displays slogans, such as "safe houses" and "safe living," about housing safety.
- (10) Quality assurance: mentions or implies about the quality of housing safety, which includes eight aspects: supervision, ground and foundation, design, engineering construction, material, seismic performance, quality appraisal, and structure.
- (11) Building age: mentions buildings constructed after the earthquake.
- (12) Refuge space: mentions the word "refuge."
- (13) Low-rise floors: mentions low-rise floors.
- (14) Low-density buildings: mentions low-density buildings.
- (15) Wide spacing between buildings: mentions the wide spacing between buildings.

The ads were coded as the corresponding types if they mentioned any of these 15 types of distinct message elements; otherwise, the ads were coded as unrelated to the earthquake.

4.2 Procedure

The six authors of this paper served as the coders and were given training, including discussions about and examples of coding definitions, in the definitions and identification of these 15 types of message elements. Each ad was assigned to two coders who recorded each ad's identifying variables, such as special messages relating to the earthquake, ad sponsors and publication dates. Any disagreements between the two coders occurred primarily when a coder "missed," "mistook" or "failed to judge" a special word when reading the ad. Discussions among all six coders were held to resolve any such disagreements.

4.3 Data analysis

Once the classification is determined, the advertising frequency of each type can be evaluated to measure the most common messages used to respond to the earthquake.

By comparing the frequencies of various advertising types, Kinnick (2003), McMellon and Long (2006) and Uribe *et al.* (2015) consistently found that “image” messages were the most common. However, their studies failed to evaluate the frequency change in each advertising type from the dimension of time. A reason for this may be the variation in the most common messages between different periods. Therefore, to expand upon their findings, this study also evaluated the changes in advertising frequency over time.

The advertising frequency of each message type during a given time period cannot be used directly as an evaluation indicator because the frequency is greatly affected by the gross quantity of ads per period, which should be controlled. To distinguish advertising frequency, an innovative indicator termed “advertising density” was developed. We use the following equation to calculate the advertising density:

$$D_{it} = \frac{n_{it}}{N_t}, \tag{1}$$

where N_t is the quantity of all real estate ads published in week t , n_{it} is the advertising frequency of message type i in week t and D_{it} is the advertising density of message type i in week t .

5. Analysis and discussion

5.1 Changes in the numbers of ads before and after the earthquake

Figure 2 shows changes in the numbers of real estate ads placed per day. A greater number of ads are placed on Wednesdays, Thursdays and Fridays, possibly due to most housing purchases being made on non-working days. Buyers tend to search for information about housing two to three days ahead of making a purchase. Because of the periodic changes in the number of ads, one week was used as the time scale to estimate the advertising density.

Another significant finding is the temporary reduction of ads within one month after the earthquake (Seen the gray bar in Figure 2). From May 13 to June 12, 2008, 67 ads were placed in *West China City Daily* and 120 in *Chengdu Economic Daily*. The average numbers of ads per month were calculated as 146 and 372, respectively.

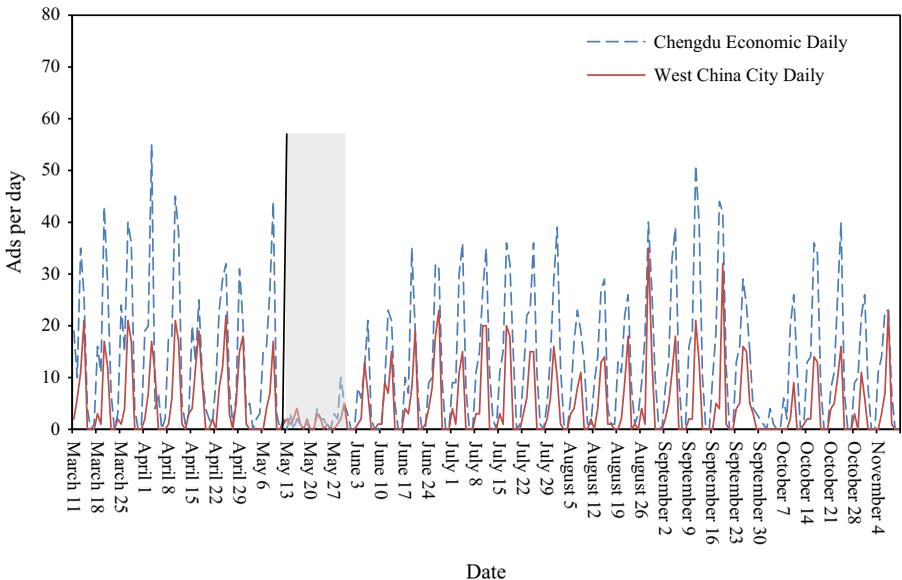


Figure 2.
The numbers of real estate ads per day

5.2 Advertising messages for managing public relations

To manage public relations, 247 pieces of advertising messages responding to the earthquake were published (Table II). These public relation messages were classified into five types: “image,” “participation,” “informative,” “company capability” and “fundraising promotion.”

5.2.1 *Image*. Of these ads, 110 ones contained the message of “image,” which portrayed the human side of the company. “Image” advertising contained words to convey feelings of empathy through condolatory messages (e.g. “prayers,” “sadness” and “sympathy”) and inspirational information (e.g. “Go Sichuan” and “We are united”).

To examine the temporal distributions of “image” messages, changes in the advertising density were analyzed (Figure 3). The curves show that the “image” messages had rapidly increased soon after the earthquake but had begun to drop off two weeks later. More than 90 percent of the ads during the first two weeks after the earthquake contained “image” messages but hardly any did so after nine weeks.

The violent earthquake elicited feelings of shock, sadness and sympathy. Advertising contents should be consistent with public sentiments rather than merely promoting business. McMellon and Long (2006) found that 62 percent of consumer comments on “image” advertising were positive.

Participation. In total, 93 ads presented information about participation in disaster relief. Enterprises advertised their efforts, such as donations of money and supplies, to provide relief and organize their employees to volunteer in the affected area. Some ads also invited

Types	Chengdu Economic Daily	West China City Daily	Total
Image	71	39	110
Participation	57	36	93
Informative	11	6	17
Company capability	11	4	15
Fundraising promotion	7	5	12
Total	157	90	247

Table II. Advertising frequencies of public relations messages after the earthquake (May 13–November 10, 2008)

Note: These 247 pieces of public relation messages were found in 157 ads (60 in *West China City Daily* and 97 in *Chengdu Economic Daily*)

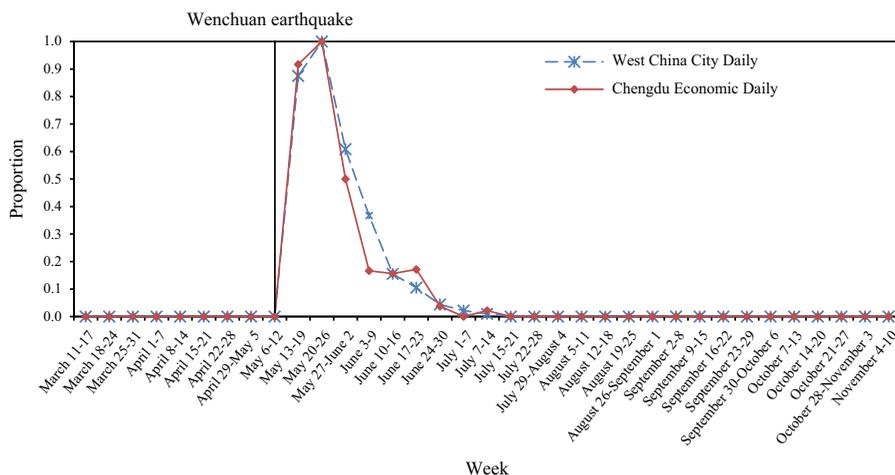


Figure 3. Advertising densities of “image” messages

readers to participate with donations of money and blood. “Participation” advertising received the highest evaluation by Uribe *et al.* (2015). The participation of businesses in disaster relief efforts was the most representative form of socially responsible corporate activities, which are associated with the corporate image, and so, help corporations increase consumer loyalty and lessen possible damaging effects to corporate reputations. Such benefits have motivated the practice and advertising of proactive social responsibility.

The density of ads with “participation” messages was the highest during the first two weeks (Figure 4). Gao and Hafsi (2015) showed that the timing of donations or relief after a disaster was a competitive factor for a company. A rapid response to disasters is seen as a genuine manifestation of caring for social goals. In contrast, a slow response is resented and perceived as insensitive. After the Wenchuan earthquake, almost half of the firms listed on the Chinese stock market participated in relief efforts (Zhang *et al.*, 2010). More publicity about earthquake relief tends to strengthen the effect of an enterprise’s participation.

Informative. “Informative” messages provided information that was not available through other media or was provided to supplement other messages, such as those about cancellations, business hours, work shifts, and general announcements. Informative messages were related to the buyers’ interests. After the earthquake, 17 ads containing “informative” messages were announcements about “deferring housing deliveries.”

Company capability. “Company capability” messages conveyed that developers provided a well protect or service for housing owners when the earthquake happened, e.g., about “organizing community residents for immediate evacuation” and “maintaining normal operations of community equipment during an earthquake.”

Fundraising promotion. This type of message advertised products but associated them with donations. Companies stated their intentions to match the sales of their products with donations. From a public relation standpoint, “fundraising promotion” is a type of cause-related marketing strategy that aims to enhance an organization’s reputation (Kinnick, 2003). However, in the Wenchuan case, only 12 ads included this type of message.

For comparison, this study adopted the coding rules of McMellon and Long (2006) and Uribe *et al.* (2015) to estimate and classify real estate ads during the first month after the earthquake. McMellon and Long (2006) and Uribe *et al.* (2015) collected only those ads that were related to the disaster within a sample period of one month and half a month,

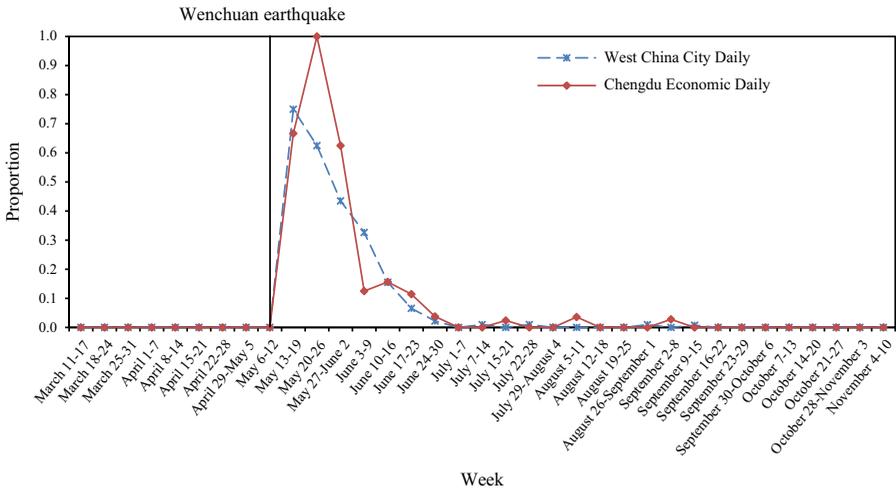


Figure 4. Advertising densities of “participation” messages

respectively, after the disaster. In the two newspapers, a total of 187 ads were found to have been released within the first month, but 71 were unrelated to the earthquake, and so, were excluded. Every ad related to the disaster was coded as only one type according to the ad's most obvious theme. The results are presented in Table III. We found that ads whose most obvious theme was commercial intent included other message elements (e.g. image and participation) that were coded as "commercials alluding to the disaster" (58.6 percent). Most of the messages related to the earthquake were ignored. Therefore, the coding rule of this study was based on advertising message elements rather than the most obvious advertising themes.

5.3 Advertising messages for handling earthquake risk perceptions

Message changes in product advertising mainly aim to reduce or compensate for consumers' earthquake risk perceptions. Eight types of product messages that may be affected by earthquake risk perceptions have been identified (Table IV).

5.3.1 Special sales due to the earthquake. Messages about "special sales due to the earthquake" were found in 478 ads that provided price discounts and preferential loan policies for quake-affected victims. These messages began to appear in the second week after the earthquake and lasted for nineteen weeks (Figure 5). Special sales due to the earthquake could compensate for the buyers' perceived risk and showed an enterprise's concern for the disaster area, thereby benefiting its corporate image. Hence, such special sales were featured heavily in ads.

Safety slogan. Slogans about safety, such as "safe house," "safe living" and "rest-assured building" were always conspicuous and frequent in advertising contents.

Table III.
Results employed by the coding rules of McMellon and Long (2006) and Uribe *et al.* (2015) during the first month after the earthquake (May 13–June 12, 2008)

Types	Percentage
Image	13.8
Participation	8.6
Informative	5.2
Company capability	4.3
Fundraising promotion	0.0
Patriotic	0.0
Mixed	9.5
Gratitude	0.0
Commercials alluding to the disaster	58.6
Others	0.0
Sample	116

Table IV.
Advertising frequencies of product messages after the earthquake (May 13–November 10, 2008)

Types	Chengdu Economic Daily	West China City Daily	Total
Special sales due to the earthquake	329	149	478
Safety slogan	160	51	211
Quality assurance	458	132	590
Building age	30	5	35
Refuge space	10	9	19
Low-rise floors	249	100	349
Low-density buildings	228	134	362
Wide spacing between buildings	95	42	137
Total	1,559	622	2,181

Note: These 2,181 pieces of special messages were found in 1,314 ads (378 in *West China City Daily* and 936 in *Chengdu Economic Daily*)

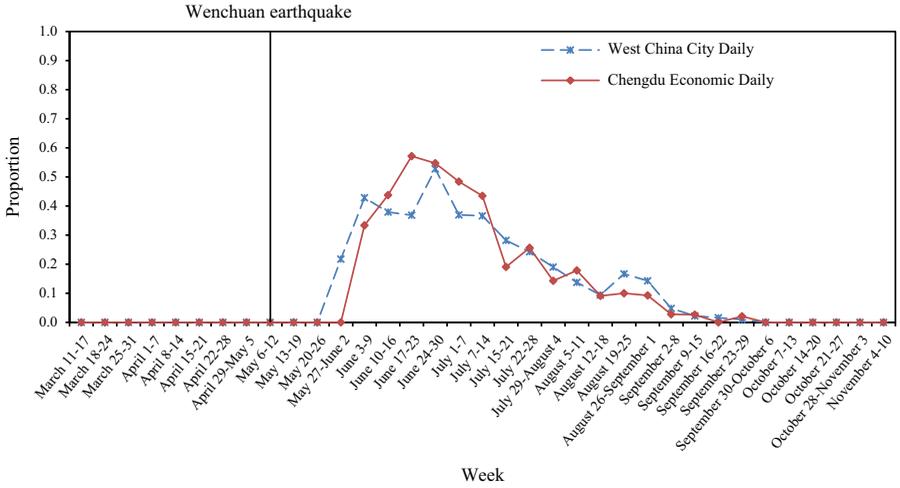


Figure 5. Advertising densities of “special sales due to the earthquake” messages

Although these messages did not directly mention the earthquake event, they were related to the disaster. Changes in the advertising density of “safety slogan” messages are shown in Figure 6.

Quality assurance. A total of 530 ads contained messages about quality assurance. Eight subcategories of information were identified as reflections of quality assurance (Figure 7). Of these, “building structure” messages were the most numerous. He *et al.* (2011) found that damages to buildings caused by the Wenchuan earthquake were strongly related to their structure types, as the destruction of the main structure was the primary cause of damage to buildings. Housing buyers and sellers regard a solid building structure as the best proof of high seismic performance. In addition, messages of quality appraisal from an authority were published mainly because favorable evidence from a third-party perspective may be more objective and persuasive.

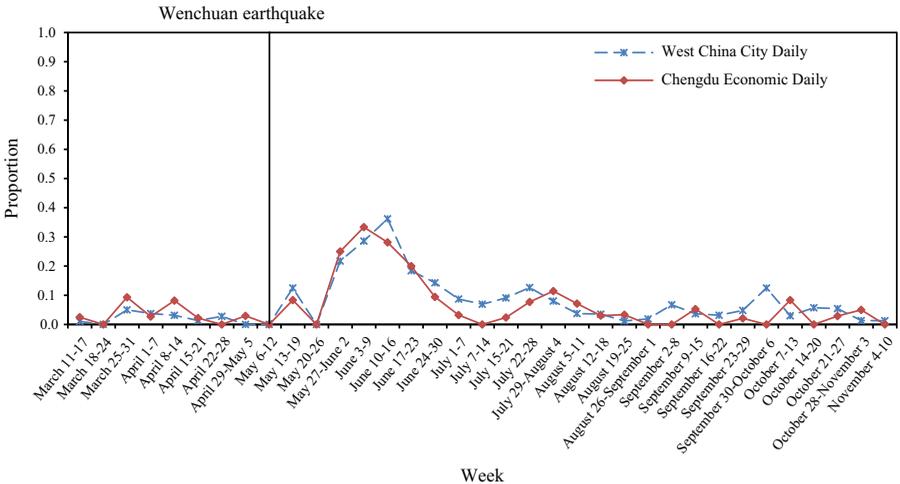


Figure 6. Advertising densities of “safety slogan” messages

The advertising densities of “quality assurance” messages were stronger after the earthquake. The enhancement continued for at least half a year (Figure 8). As people had been affected for a long time after the earthquake, these messages were aimed at reducing their high-risk perceptions of the safety of buildings.

Building age. Newly constructed buildings are regarded as more resistant than older ones to earthquake damage (Hidano *et al.*, 2015). However, messages about “building age” were rarely broadcasted because the buildings featured in the ads were almost always new ones. Of these ads, 35 featured buildings built after the earthquake.

Housing convenience for evacuation. Nineteen ads contained “refuge spaces” messages, which referred to the level of a building’s convenience for being evacuated during an earthquake. According to the theoretical analysis mentioned in Section 2, “low-rise floors,” “low-density buildings” and “wide spacing between buildings” were aimed at enhancing perceptions of the convenience of buildings for evacuations. To estimate whether the earthquake had affected these three kinds of messages, changes in advertising density before and after the earthquake were compared.

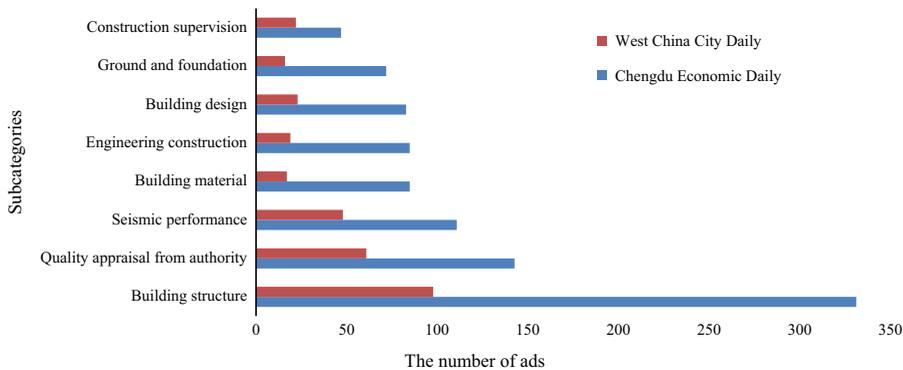


Figure 7. Advertising frequencies of subcategories of “quality assurance” messages after the earthquake

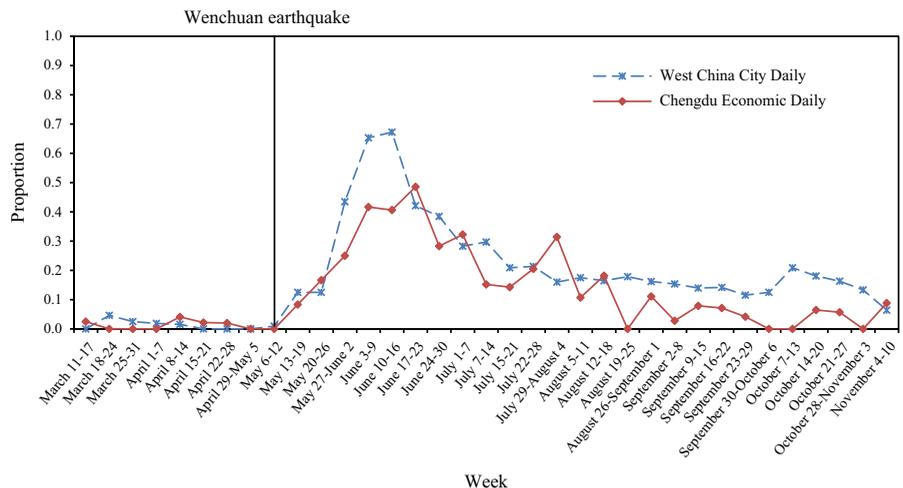


Figure 8. Advertising densities of “quality assurance” messages

Ads with messages about “low-rise floors” increased after the earthquake (Figure 9). According to Deng *et al.* (2015), after the earthquake, individuals preferred residing on the lower floors of a building because they felt that the upper floors would be more dangerous. Hence, property companies advertised low-rise buildings more strongly. The advertising density of “low-density buildings” messages also improved after the earthquake (Figure 10). However, the information about “wide spacing between buildings” showed no significant changes before and after the earthquake (Figure 11).

5.4 Changes in advertising strategies

The empirical analysis suggests that 12 types of advertising messages, which are “image,” “participation,” “informative,” “company capability,” “fundraising promotion,” “special sales

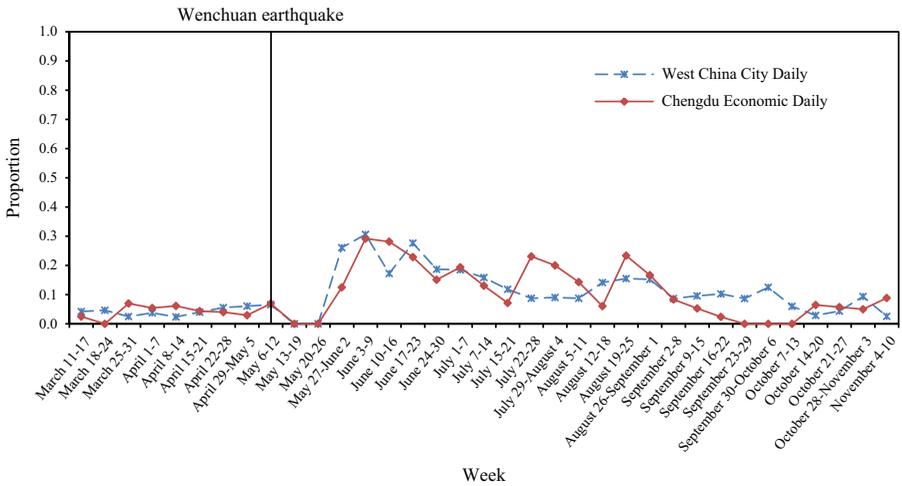


Figure 9. Advertising densities of “low-rise floors” messages

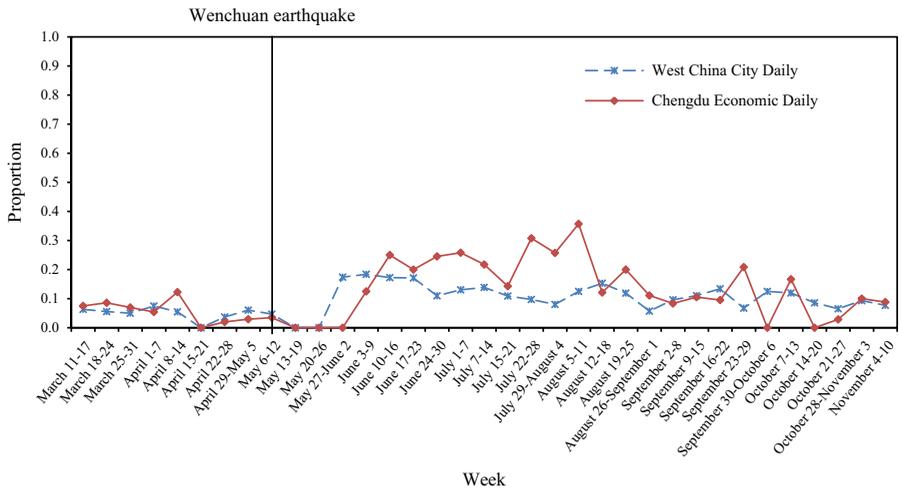


Figure 10. Advertising densities of “low-density buildings” messages

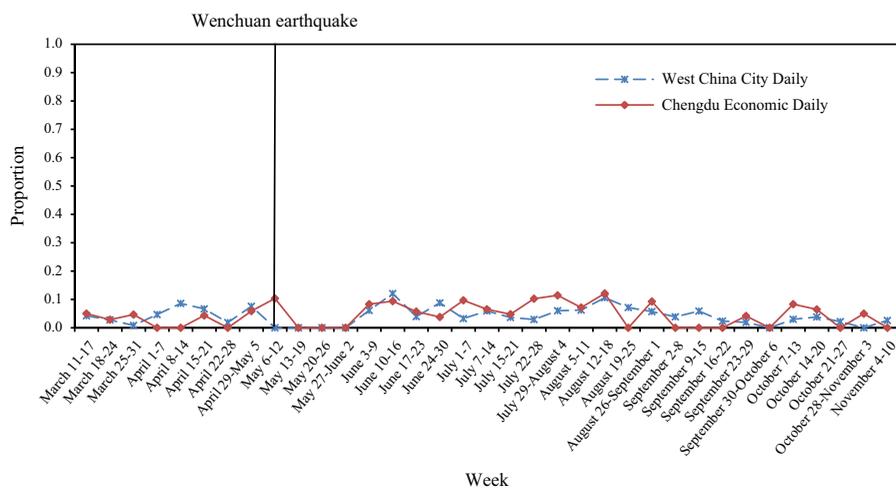


Figure 11. Advertising densities of “wide spacing between buildings” messages

due to the earthquake,” “safety slogan,” “quality assurance,” “building age,” “low-rise floors,” “low-density buildings” and “refuge space” were used to respond to the earthquake event.

The advertising densities of most message types in the two newspapers show a high correlation (Table V). We used the totals of the two newspapers (Tables II and IV) to calculate the advertising density of each type. Comparing the changes in the advertising densities of different message types after the earthquake (Figure 12), we found that the initial advertising strategy had been mainly to manage public relations. Then, advertising related to the earthquake seemed to aim at reducing or compensating for buyers’ earthquake risk perceptions.

Ads with public relation messages increased rapidly during the first two weeks after the earthquake. Because consumers were initially emotional and sensitive after the earthquake, advertisers dropped their regular advertising, which was out of sync with the mournful public mood (Kinnick, 2003). After two weeks, the emotional and sensitive atmosphere lifted and consumers displayed more risk perceptions about the safety and prices of housing. Public relation messages decreased but product messages, such as those advertising housing safety and price discounts, related to the earthquake increased.

Types	Pearson’s correlation coefficient
Image	0.986
Participation	0.939
Other message types about public relations ^a	0.808
Special sales due to the earthquake	0.935
Safety slogans	0.895
Quality assurance	0.834
Low-rise floors	0.703
Low-density buildings	0.478
Other message types about products ^b	0.202

Notes: These 12 types of special messages were found in 1,327 ads after the earthquake (390 in West China City Daily and 937 in Chengdu Economic Daily). The initial 13 types of special messages were found in 1,375 ads after the earthquake (403 in *West China City Daily* and 972 in *Chengdu Economic Daily*). ^aOther message types about public relations include “informative,” “company capability” and “fundraising promotion” ^bother message types about products include “building age” and “refuge space”

Table V. Correlation coefficients of advertising densities of various message types between the two newspapers

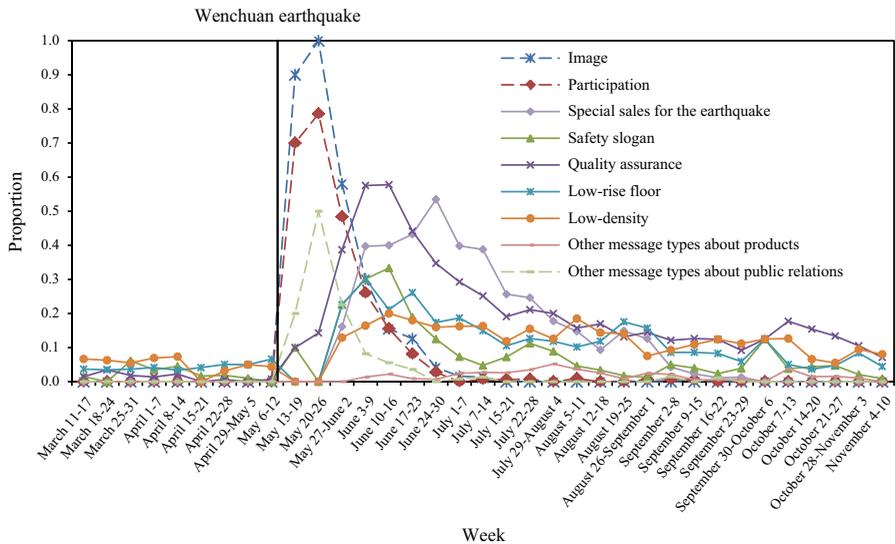


Figure 12. Advertising densities of various message types

6. Conclusions

This study analyzed how real estate advertising is used in response to a disaster event, such as the Wenchuan earthquake. First, a theoretical analysis based on theories of public relations and earthquake risk perceptions was conducted to explore the mechanism of the earthquake’s impact on real estate advertising, then 15 types of advertising messages related to the earthquake were identified. On the basis of the likely variations in post-disaster advertising messages, the content analysis approach was used to evaluate the message changes in the post-quake advertising. The results revealed 12 types of advertising messages alluding to the earthquake. Of these types, five were used to manage public relations and seven were used to reduce or compensate for buyers’ earthquake risk perceptions.

Second, the distribution changes in these 12 advertising messages were evaluated and compared from the dimension of time. We found that the initial advertising strategy was mainly to manage public relations after the earthquake. Then, the strategy changed with the aim of reducing or compensating for buyers’ increased earthquake risk perceptions. We explained the development of advertising strategies as being consistent with the changes in the consumers’ perceptions. The consumers were initially emotional and sensitive soon after the earthquake, so this period was a good time for corporations to promote their images. The emotional and sensitive atmosphere gradually faded and consumers focused on the safety and prices of housing.

Third, previous studies on post-disaster advertising provided a list of relatively important advertising types but focused on public relation advertising. This study further explored message changes in product advertising affected by the consumers’ risk perceptions over time. The findings should stimulate additional studies regarding anomalies in corporate behavior caused by disasters. In the event of a future disaster, our findings could help enterprises to develop more effective marketing strategies and manage the negative effects of disasters.

Note

1. The casualty figures were published by the “Chinese Ministry of Civil Affairs,” www.mca.gov.cn

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