The impact of a product-harm crisis on customer perceived value

Baolong Ma
Beiji g I s i e Q f Tech Q Q g
Lin Zhang
T a S a e U i e si
Gao Wang
Chi a E Q e I e a Ŗ a B si ess SchQQ
Fei Li
Tsi gh a U i e si

The purpose of this research is to help better understand the effects of a product-harm crisis on crisis and non-crisis brands' customer perceived value and market competitive structure in the auto industry. The research first develops a four-dimensional customer perceived value (CPV) measure, and then uses the measure to collect data before, during and after the 2009–2010 Toyota product-harm crisis. These data are analysed and compared to investigate the impacts of the product crisis. The results show that the crisis can have a negative impact on the crisis brand's CPV, and the impact from experienced customers is different to that from inexperienced customers. Some non-crisis brands with the same country of origin (COO) and similar product attributes to the crisis brand will also be negatively affected by the crisis. Moreover, brands with significantly higher CPV will benefit from the crisis. However, these impacts from the product crisis are short-lived and most of the brand's CPV recovers in the post-crisis period to the pre-crisis level. The crisis also changes the competition rules of the product category by changing the weights of CPV dimensions across the pre-, during- and post-crisis periods. Therefore, all companies need to handle the product crisis carefully, so that they can adjust their strategy accordingly in the dynamic market. These findings have implications for understanding the influences of a product-harm crisis. The managerial implications are also discussed.

Introduction

The term product-harm crisis refers to well-known incidents when a firm's products are found to be defective, harmful or even dangerous (Mullan 2004). A product-harm crisis is often associated with costly product recall, in which the implicated firm has to retrieve the products from all distribution channels and from end consumers (Chen *e a*. 2009). One example is the recent 2009–2010 Toyota product-harm crisis, which was triggered by a deadly accident in 2009 when the accelerator in a Lexus got stuck and the car eventually crashed, killing the driver and all three passengers (Johar *e a*. 2010). Following this accident, Toyota Moto Corp. became the target of extensive and adverse media coverage for an extended period. Toyota had to issue a massive product recall, totalling 8.5 million vehicles recalled by February 2010 (ABC News 2010). It experienced huge financial loss during this crisis and its brand reputation also took a serious battering (Johar *e a*. 2010). More product-harm crises are likely to occur in the future due to the greater complexity of products, more rigid legislation and more demanding customers (Dean 2004; Dahlen & Lange 2006). Therefore, understanding the impact of product-harm crises has become a top priority for many firms and an interesting topic for academicians (Chen *e a*. 2009).

Customer value has been identified as a key driver of customer loyalty, customer satisfaction and purchase intention (Yang & Peterson 2004). The study by Vogel *e a*. (2008) even uses customer perceived value to predict future sales. During a product-harm crisis, extensive media coverage with negative information will overwhelm customers and definitely impact customer perceptions of the brand (Cleeren *e a*. 1994; Dawar & Pillutla 2000; Dekimpe & Helsen 2008), and the customer value of the crisis brand will eventually be affected (Dahlen & Lange 2006). However, whether or how the crisis impacts the perceptions of competing brands and the entire product category has not been systematically studied. Moreover, most of the past research about the impact of a product crisis on a crisis brand's customer evaluation was conducted in a laboratory setting and based on experimental data. It will be of great interest to investigate this impact using empirical data. This study will contribute to this research stream by investigating the effects of a product-harm crisis on crisis and non-crisis brands' customer perceived value and the competitive structure of the entire product category with empirical data.

Most previous research on product-harm crises has focused mainly on non-durable goods (Cleeren *e a*. 2008), but no such research has been conducted on durable goods like automobiles (Ma *e a*. 2010). Significant

differences between durable goods and non-durable goods, such as purchase frequency, extent of alternative evaluation and post-purchase evaluation, warrant the special attention paid to durable goods. Besides, the volume of recalled automobiles is much larger than that from other categories combined (Chen *e a*. 2009). Therefore this research using the 2009–2010 Toyota product-harm crisis to explore the relationship between product-harm crisis and consumers' perception of brand value should bear special academic and practical importance.

In the following sections, we will first introduce the theoretical background. Then, we will develop a practical customer value measure for Chinese automobile customers, and the customer value measure will be used to monitor the transition of consumer perceived value before, during and after the 2009–2010 Toyota product-harm crisis. By comparing the consumer perceived value among the pre-, during- and post-crisis periods, the study will try to understand how a product-harm crisis influences the consumer evaluation of the crisis brand, the non-crisis brands and the market structure. Managerial implications and limitations are discussed.

Theory development

The effects of a product-harm crisis on a crisis brand

Many studies have indicated that there are negative impacts of a product-harm crisis on customer perception of a crisis brand (e.g. Dawar & Pillutla 2000; Dahlen & Lange 2006; Cleeren *e a*. 2008; Dawar & Lei 2009). However, most of these studies were conducted in a laboratory setting and their conclusions require practical validation. In reality, a brand evaluation is a dynamic construct; any attitude-relevant information may influence a customer's perception of that brand (Reed *e a*. 2002). Besides, the perception and evaluation of the brands also varies depending on consumers' usage experience with the product (Heilman *e a*. 2000). Consumers who have used the products generally have more extensive knowledge and experience with the product than those who haven't. The differences in product knowledge and experiences could result in differences in processing product data among consumers (Alba & Hutchinson 1987). Consequently, a product-harm crisis might impact consumers' perception of the brand differently depending on consumers' past experience with the brand. Therefore, understanding the impacts of a product crisis on a different past usage group under a practical environment is very important.

Moreover, the brand's context may be as important as the brand itself when consumers evaluate brands (Weilbacher 2003). During a product crisis, the external environment of the brand changes constantly (e.g. the varying extent of publicity, the implementation of the company's response strategy). It is worthwhile to find out whether and how the changes in the external environment could cause any dynamic changes in consumers' perceptions of the brand. Unfortunately, little research has focused on the broader issue of how a crisis influences customer perception during different crisis periods. This paucity in the field is glaring because, if those changes are dynamic, then it is practically important for a firm to adjust crisis response strategies according to the dynamic changes in consumers' perceptions of the brand.

The effects of a product-harm crisis on a non-crisis brand

Past research has mostly focused on the impacts of a crisis on a crisis brand, while little focus has been on non-crisis brands. Ma *e a.* (2010) verify that a crisis may disturb the stable marketing structure and drive some customers from a crisis brand to non-crisis brands. This indicates that some non-crisis brands can benefit from a crisis. However, research by Gao and colleagues (2011) demonstrates the heuristic risks for foreign brands during a domestic brand crisis. In fact, the brand's context is important when consumers evaluate brands (Weilbacher 2003). By categorising and making inference, information about a crisis brand should be both accessible and relevant when evaluating non-crisis brands. Therefore it is possible for a crisis to affect the evaluation of some non-crisis brands.

According to Herr (1989), the degree of associative overlap between brands decides whether a brand is assimilated or contrasted to a context brand. A high degree of overlap fosters assimilation, and a low degree of overlap fosters contrast (Meyers-Levy & Sternthal 1993). The impact of product crisis on brand perception might work similarly. During the product crisis, negative impacts from the crisis brand can spill over on to a non-crisis brand if a high degree of associative overlap between the non-crisis brand and the crisis brand exists. Conversely, dissimilar brands can be exempted, or can even benefit, from a crisis because they have a low degree of associative overlap with the crisis brand. In some situations, if the non-crisis brand is commonly perceived as a superior brand compared to the crisis brand, it may even benefit from the crisis (Ma *e a.* 2010). In fact, these are consistent with past experiment results (Dahlen & Lange 2006; Roehm & Tybout 2006), which find that the crisis negatively affects

similar brands; however, when consumers are primed to think about the differences between the non-crisis brand and the crisis brand, the impact of the crisis is isolated.

There is another factor that can also moderate the spillover effect of crisis brand to non-crisis brands. According to Agrawal and Kamakura (1999) and Chu *e a*. (2010), the evaluation of products has some correlation with the country of origin (COO) of the brand due to the 'halo effect', and consumers tend to use COO as an extrinsic cue to make a judgement about the quality of products. Therefore, some non-crisis brands with the same COO will probably be negatively affected by the crisis.

The effects of a product-harm crisis on a product category

Categorisation helps consumers generate a set of alternatives in a purchase decision, and provides criteria when choosing among the competing brands (Ratnsshwar *e a*. 2001). Any new information may make consumers change their decision-making criteria. For example, generic advertising and new-product introductions may change how much weight consumers place on certain attributes (e.g. Shankar *e a*. 1998; Chakravarti & Janiszewski 2004). During a product crisis, the negative information associated with the crisis brand may make consumers re-evaluate their decision criteria (in order to reduce the perceived category risk introduced by the brand). For example, after the customers know that some beef may get mixed with horse meat, they may emphasise the beef's quality while paying less attention to the price. Therefore, it is important to investigate how the product crisis affects the entire product category.

Similar influence has been reported by past research. For example, Dahlen and Lange (2006) report that a brand crisis affects the evaluation of category attributes and perceived risk. According to Roehm and Tybout (2006), whether a brand scandal spills over and influences beliefs about a product category depends on whether the brand is typical of the category. However, these studies have not investigated the dynamic impacts of product crisis on the market's competitive structure. In addition, these studies used only laboratory experiment data, which lacks external validity.

Customer perceived value and its measure

Customer value has been identified as a key driver of customer loyalty, customer satisfaction, purchase intention and future sales (Yang & Peterson 2004; Vogel *e a*. 2008). Customer perceived value (CPV) is

a customer's overall assessment of the utility of a product (or service) based on perceptions of what is received and what is sacrificed. The most common such definition of CPV is the difference between the prospective customer's evaluation of all the benefits and all the costs of an offering. Total customer benefits is the perceived monetary value of the bundle of economic, functional and psychological benefits customers expect from a given market offering. Total customer cost is the bundle of costs customers expect to incur in evaluating, obtaining, using and disposing of the given market offering, including monetary, time, energy and psychological costs (Kotler & Keller 2006).

Customers assess the value of a product not only in terms of expected functional performance and costs, but also in terms of the enjoyment or pleasure derived from the product (emotional value) and the social consequences of what the product communicates to others (social value) (Sweeney & Soutar 2001). Therefore, we conceptualise CPV as a four-dimensional construct, and develop a CPV measure that capitalises on functional performance, perceived cost, emotional value and social value in this study. Functional performance refers to the utility derived from the perceived quality and expected performance of the product; perceived cost is the utility derived from the product due to the reduction of its perceived short-term and longer-term costs; emotional value is the utility derived from the feelings or affective states that a product generates; and social value is the utility derived from the product's ability to enhance social self-concept.

Even though it is commonly accepted that the crisis brand image will be negatively affected by the crisis, no research has investigated how the crisis affects each dimension of CPV. Are all dimensions of CPV evenly impacted or are some of the dimensions impacted more than others? Answering these questions is very important because it can help firms make better responses. During the crisis, the public acknowledges that the product is defective. As a result, we expect that the perceived functional performance of the crisis brand will be negatively affected. However, further research is needed to find out how other dimensions of CPV behave during the crisis.

Measurement and data

Measurement

In order to understand how Chinese customers form their perceived value about cars, we began to systematically collect data and investigate the Chinese CPV dimension in 2008 (Xu *e a*. 2010). We designed the original

questionnaire with measures of the CPV primarily based on focus-group discussions and scales taken from previous research (Dodds *e a*. 1991; Sweeney & Soutar 2001). To establish the face validity of the construct, we consulted a number of marketing professors and specialists in the auto industry.

To validate the original CPV measure, a pilot study and a main study were conducted in the Asian Games Village automobile market, Beijing (this market is Beijing's biggest car transaction market and almost all car brands can be purchased there), where customers were randomly selected and screened to make sure the final participants were those who planned to purchase an automobile within six months and who were the decision makers of the purchase. Because a car is a high-involvement product, most consumers are familiar with several brands or models. Therefore, we did not assign the participant to evaluate a special brand. Instead, the questionnaires asked participants with which brand and which model they were mostly familiar at that moment, and whether they had driven that model before, and then asked them about their perceived value of this car. Some demographic questions were also included.

The main questionnaire was tested in 2008 before the Toyota recall crisis. After finishing the computerised questionnaire, each participant was rewarded with a 100 RMB gift card. A total of 289 questionnaires were collected. To identify a final set of items with acceptable discriminant and convergent validity, and internal consistency reliability, a series of exploratory and confirmatory factor analyses were conducted, following the two-step approach recommended by Anderson and Gerbing (1988). An exploratory factor analysis of the remaining 13 items with Varimax rotation reveals a stable structure of four dimensions. Confirmatory factor analyses show that the loadings of the items to their corresponding dimensions range from 0.77 to 0.98 and are statistically significant. These 13 selected items also show excellent reliability (all coefficient α are higher than 0.7). The composite reliability estimates, which are internal consistency reliability measures as evidence of convergent validity (Fornell & Larcker 1981), are also acceptable, ranging from 0.89 to 0.97 (see Table 1). The average variance extracted (AVE) for each dimension is greater than the squared correlation between the dimension and any other dimension and 0.50, which indicates the independence of the dimensions (Fornell & Larcker 1981). Finally, confirmatory factor analysis was run to confirm that a four-dimensional model is a better fit than any three-dimensional or one-dimensional model. Therefore, we used this four-dimensional model in the following analyses.

Table 1 Internal consistency of the CPV

Items	Loading	t value	Composite α	Coefficient α	AVE
Emotional value			0.963	0.949	0.897
1. Driving this car makes me joyful	0.921				
2. I really enjoy driving this car	0.981	34.442			
3. Driving this car is a lot of fun	0.939	29.752			
Social value			0.965	0.964	0.874
1. This car can show my social identity	0.945				
2. This car distinguishes me from others	0.979	40.596			
3. This car makes me feel respected	0.959	36.528			
4. This car represents my personality	0.852	23.720			
Perceived cost			0.888	0.885	0.726
1. This car's maintenance cost is lower	0.888				
2. It is cheaper for me to maintain this car	0.772	15.689			
3. This car's price is more reasonable	0.890	18.637			
Functional performance			0.949	0.948	0.860
1. This car is reliable	0.925				
2. This car is durable	0.956	30.074			
3. This car is safe to drive	0.900	25.551			

Data collection

The pre-crisis data were collected in 2008, before the outbreak of the crisis. The sampling location and data collection procedures were exactly the same as those used in the pilot and main study, and were also exactly the same for all three sets of data. A total of 4,917 questionnaires were collected; 4,439 of them were valid and were used in the following analysis.

The Toyota product crisis and subsequent recall received extensive media coverage in China during the period from January 2010 to April 2010, and especially around 1 March when Toyota's president and CEO issued a public apology to Chinese customers. Therefore we chose the end of March to collect the during-crisis data. A total of 2,688 valid questionnaires were collected.

The post-crisis data were collected between December 2010 and January 2011, eight months after the end of the crisis; 2,145 valid questionnaires were collected.

These three data sets covered 61 automobile brands and 338 models in total. Considering that several models of Toyota automobiles were

involved in the recall, and the media coverage about product crisis was focused mostly on the brand, we analysed the data on the brand level. Also, we focused only on those automobile brands with more than 30 valid questionnaires across all three periods. These brands were Mercedes-Benz, Audi, BMW, Volkswagen (VW), Honda, Mazda, Toyota, Ford, General Motors (GM), Peugeot, Hyundai, Citroën, BYD (Chinese auto brand) and Chery (Chinese auto brand); 77% of the collected questionnaires mentioned these 14 brands (details about the sample number and percentage of each brand are listed in Table 3). They were also the leading auto brands in the Chinese market, with a total market share of more than 65% (China Association of Automobile Manufacturers 2011).

Analysis and results

Measure validation

The Anderson and Gerbing (1988) two-step approach was also employed to evaluate the measure validation of CPV for the three periods. The results of goodness-of-fit statistics show that the four-dimensional CPV model is a good model for all three data sets. The analysis also shows that this CPV structure is valid and reliable. (Further details can be provided by the authors on request, if needed.)

The higher-order CPV model and the CPV figure

We suggest this 13-item measure of multidimensional CPV (M-CPV) as a scale of CPV. Adding up the raw scores of the 13 items of the M-CPV may not be an appropriate way to develop an M-CPV index because they are not evenly distributed among the four dimensions. More importantly, these four dimensions may contribute differently to CPV. To develop the formula for a single M-CPV index, the relationships between the dimensions and CPV should be considered. Therefore, we generated the higher-order four-dimensional model that comprises the same dimensions and loading specifications as the M-CPV four-dimensional measure model. The higher-order model is equivalent to the M-CPV model because the intercorrelational paths of the M-CPV model can be converted into the causal paths of the higher-order model without adding any new path or deleting any existing path (Stelzl 1986). In the higher-order model, the four dimensions are related to a higher-order factor, which can be named 'higher-order CPV'. The fit indexes remain the same between these two different models because

they are statistically equivalent (Yoo & Donthu 2001). In the high-order model, all the causal paths of higher-order CPV to the dimensions coefficients become the weights of the dimensions when computing the M-CPV index. Then the weight of a dimension is the portion of the path coefficient of that dimension in the sum of the four path coefficients.

To visually display customers' perceived benefits and costs of a brand relative to its competitors, a customer value figure (Christopher 1996) was used in the following analysis. Social value, emotional value and functional performance were combined into the total customer perceived benefit index, and perceived cost alone was left as the dimension of customer cost (Sweeney & Soutar 2001; Kotler & Keller 2006). The procedure used to generate the M-CPV index was also used to calculate the customer perceived benefit index.

We estimated the higher-order four-dimensional model for each period using the corresponding data. All the path coefficients of higher-order CPV to the four dimensions are significant at the 0.00 level. The weights of each dimension for CPV and customer benefits were computed based on the path coefficient, and these weights are the same for all 14 brands during the same period (see Table 2). Based on these weights, an M-CPV index and a perceived benefit index were calculated for each brand.

CPV and market competitive structure before the crisis

For the pre-crisis data, emotional value was the most important dimension in CPV (weight was 0.31), followed by functional performance (0.27). Perceived cost (0.20) and social value (0.21) were less important (Table 2). This indicates that, in the China pre-crisis automobile market, consumers

Table 2 The path coefficient of and weight of each dimension for three periods

	Period	n	Social value	Emotional value	Functional performance	Perceived cost
Path coefficient	Before	4,439	0.534	0.780	0.688	0.513
	During	2,688	0.531	0.764	0.726	0.480
	After	2,144	0.548	0.710	0.764	0.581
Weight for CPV	Before	4,439	0.212	0.310	0.274	0.204
	During	2,688	0.212	0.305	0.290	0.192
	After	2,144	0.211	0.273	0.294	0.223
Weight for customer benefits	Before	4,439	0.267	0.390	0.344	
	During	2,688	0.263	0.378	0.359	
	After	2,144	0.271	0.351	0.378	

placed more importance on emotional and performance value than on cost or price.

Table 3 illustrates M-CPV indexes, customer benefit indexes and each dimension of CPV of all 14 brands, in which higher values indicate better evaluations.

Based on detailed M-CPV indexes from Table 3, we used SPSS's Hierarchical Cluster to categorise these 14 brands. The results show that three classes can be categorised. The first class consisted of three brands (Mercedes-Benz, Audi and BMW), which had much higher CPV indexes: Mercedes-Benz and Audi's high CPV derived from their high customer benefit indexes and average perceived cost; while BMW had a high perceived benefit index and a very high perceived cost. The second class included VW, Honda, Mazda, Toyota, Ford, GM and Peugeot. Generally, there was no significant difference in perceived benefit index for brands in this class and M-CPV index. The main differences among brands result from differences among consumers' perceived cost index. Besides, the

Table 3 The M-CPV of the pre-, during- and post-crisis periods (the percentage refers to the total samples of each period)

Brand	Period	N (%)	M-CPV index	Customer Benefits index	Social value	Emotional value	Perceived cost	Functional performance
Audi	Before	188 (4.24)	7.56	7.84	6.70	8.04	6.50	8.47
	During	103 (3.83)	7.69	8.03	6.60	8.43	6.30	8.64
	After	64 (2.98)	7.59	7.96	6.51	8.53	6.26	8.46
Mercedes-Benz	Before	30 (0.68)	7.95	8.32	7.43	8.46	6.51	8.83
	During	31 (1.15)	8.31	8.75	8.06	8.88	6.52	9.11
	After	32 (1.49)	7.58	7.96	6.84	8.27	6.21	8.48
BMW	Before	67 (1.51)	7.54	7.95	6.93	8.15	5.99	8.48
	During	42 (1.56)	**8.39****	**8.96****	**8.17***	**9.30***	6.06	**9.17***
	After	40 (1.86)	7.83	8.35	7.30	8.74	5.99	8.73
BYD	Before	39 (0.88)	6.42	6.38	5.26	6.68	6.62	6.90
	During	43 (1.60)	6.46	6.45	5.25	6.81	6.54	6.95
	After	43 (2.00)	6.68	6.64	5.58	6.98	6.78	7.09
Chery	Before	110 (2.48)	6.69	6.58	4.91	7.38	7.15	6.95
	During	77 (2.86)	6.42	6.36	4.61	7.25	6.71	6.71
	After	74 (3.45)	6.49	6.38	4.66	7.35	6.85	6.71
Citroën	Before	96 (2.16)	6.78	6.90	5.34	7.33	6.33	7.60
	During	76 (2.83)	6.78	6.88	5.84	7.41	6.39	7.10
	After	48 (2.24)	6.77	6.83	5.51	7.37	6.51	7.29

(continued)

Table 3 (continued) The M-CPV of the pre-, during- and post-crisis periods (the percentage is referred to the total samples of each period)

Brand	Period	N (%)	M-CPV index	Customer Benefits index	Social value	Emotional value	Perceived cost	Functional performance
Ford	Before	153 (3.45)	6.97	7.23	5.81	7.54	5.99	7.95
	During	112 (4.17)	6.80	6.99	5.65	7.56	6.03	**7.36***
	After	98 (4.57)	6.73	6.93	5.67	7.53	6.00	**7.27***
GM	Before	319 (7.19)	6.93	7.10	5.59	7.61	6.29	7.66
	During	209 (7.78)	6.88	7.00	5.94	7.28	6.41	7.46
	After	121 (5.64)	6.79	6.91	5.87	7.30	6.36	7.29
Honda	Before	560 (12.62)	7.07	7.15	5.82	7.64	6.77	7.62
	During	294 (10.94)	**6.80***	**6.84***	5.96	7.59	6.66	**6.70****
	After	266 (12.40)	6.93	7.03	5.90	7.55	6.58	7.35
Hyundai	Before	169 (3.81)	6.78	6.86	5.41	7.29	6.50	7.48
	During	106 (3.94)	6.74	6.83	5.47	7.36	6.40	7.26
	After	94 (4.38)	6.67	6.73	5.74	7.30	6.45	**6.90***
Mazda	Before	280 (6.31)	7.05	7.20	5.89	7.61	6.47	7.73
	During	180 (6.70)	**6.46****	**6.48****	5.60	7.34	6.44	**6.21****
	After	137 (6.39)	6.99	7.19	6.28	7.74	6.31	7.32
Peugeot	Before	166 (3.74)	6.88	7.04	5.71	7.42	6.28	7.62
	During	107 (3.98)	7.25	7.45	**6.45***	7.89	6.46	7.72
	After	77 (3.59)	6.96	7.16	6.15	7.61	6.22	7.46
Toyota	Before	278 (6.26)	7.01	7.17	5.86	7.45	6.40	7.85
	During	121 (4.50)	**6.15****	**6.10****	**4.31****	**6.94***	6.39	**6.53****
	After	100 (4.66)	6.87	6.98	5.96	7.48	6.45	**7.25***
VW	Before	1,047 (23.59)	7.19	7.30	5.73	7.65	6.75	8.11
	During	579 (21.54)	7.25	7.37	**6.11***	7.58	6.80	8.07
	After	460 (21.45)	7.07	7.18	5.94	**7.39***	6.65	7.88

**p < 0.001, *p < 0.01 (these p values indicate the comparison to the pre-crisis data)

distances among all brands in the graph also indicate that the competition was intensive among these brands. Toyota, the focus of this research, was also in this class. Its M-CPV index was close to the average CPV of this category. The third class consisted of Korean Hyundai, French Citroën, and some Chinese brands like BYD and Chery. Their CPV indexes were relatively low. Specifically, if we focus only on the benefit indexes, Audi, BMW and Mercedes-Benz (first-class brands) evidently had significantly higher benefit indexes than the third-class brands (Chery, BYD, Hyundai and Citroën). Similarly, if we focus only on perceived cost, BMW was the most expensive, while Chery was the cheapest.

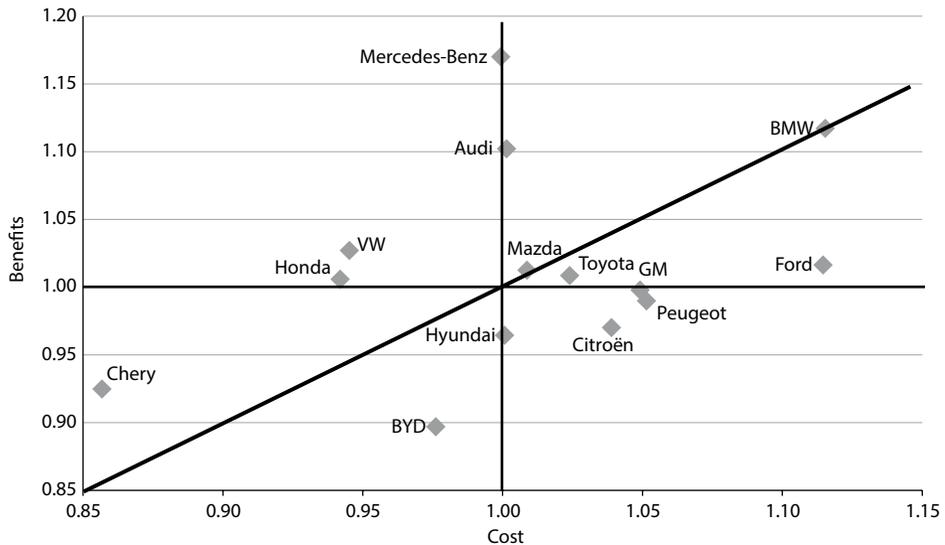Figure 1 illustrates the CPVs of the automobile brands in the pre-crisis

Figure 1 The customer value figure in the pre-crisis period

period. In order to cancel the variation of the entire segment during these different periods, all parameters were normalised for each period before generating the figure. We also reverse-coded the perceived cost so that a larger number on the horizontal index indicates larger perceived cost.

The solid lines represent the average benefit index and average perceived cost of all brands. Mercedes-Benz, Audi, VW, Honda and Chery were above the diagonal benefit–cost curve, which indicates that they had competitive advantages over other brands. However, their advantages lay in different areas. The advantages of Mercedes-Benz and Audi were that they could provide customers with relatively higher perceived benefit at average perceived cost. On the contrary, the advantages of VW and Honda were that they could still provide customers with close-to-market-average perceived benefit at relatively lower perceived cost. Chery's advantage was that its perceived cost was much lower than the average of the market.

The proximity of Toyota with brands like Mazda, GM, Peugeot and Citroën in Figure 1 indicates that the customers' perceptions of these brands were similar, resulting in intense competition between these brands.

CPV and market competitive structure during the crisis

A comparison of the pre-crisis and during-crisis data in Table 3 shows that the crisis has substantially impacted the CPV of Japanese brands. Toyota's

M-CPV index reduced from 7.01 to 6.15 (< 0.00); Mazda's M-CPV index reduced from 7.05 to 6.46 (< 0.00); and Honda's M-CPV index reduced from 7.07 to 6.80 (< 0.01). On the contrary, BMW's M-CPV index increased from 7.54 to 8.39 (< 0.00). These changes were consistent with the respective changes of perceived benefit index and, specifically, functional performance. It is apparent that customers' performance perceptions of these brands were the major contributor of the change on the M-CPV indexes. Detailed data show that BMW's social value and emotional value both were improved compared to the pre-crisis period, while Toyota's social value and emotional value both decreased. In addition, Peugeot and VW's social value improved, while Ford's functional performance dropped. No brand showed significant change on the perceived cost.

Hierarchical Clustering was used to categorise these 14 brands to three classes during the crisis. The first class still included BMW, Mercedes-Benz and Audi; their M-CPV indexes were higher than the market average. The second class included VW, Peugeot, Citroën, Ford, GM, Honda and Hyundai. The third class consisted of BYD, Mazda, Chery and Toyota. Apparently the Toyota product crisis disturbed the market structure: two Japanese brands dropped from the second class into the third (Toyota and Mazda), and some brands emerged from the third class into the second (Hyundai and Citroën).

The customer value figure of the during-crisis period is shown in Figure 2. Brands like Mercedes-Benz, Audi, BMW, VW and Peugeot showed clear competitive advantages over other brands (they are located above the diagonal benefit–cost line), while Honda maintained only marginal advantage. If focusing only on the benefit index, Mercedes-Benz, Audi and BMW still kept their leading positions, while Toyota dropped to the bottom. Comparing Figures 2 and 1, product crisis had a significant impact on Toyota, Mazda and Honda; their benefit indexes were at the average level in the pre-crisis period, but dropped considerably during the crisis. At the same time, all the first-class brands' relative perceived benefit indexes experienced some improvement from the pre-crisis period to the during-crisis period.

CPV and the market competitive structure after the crisis

In the post-crisis period, the functional performance had the highest weight of 0.29, followed by emotional value (0.27) (Table 2). This indicates that consumers were most concerned about automobile quality and performance after the Toyota product crisis.

Detailed data in Table 3 show that the first-class brands of Mercedes-Benz,
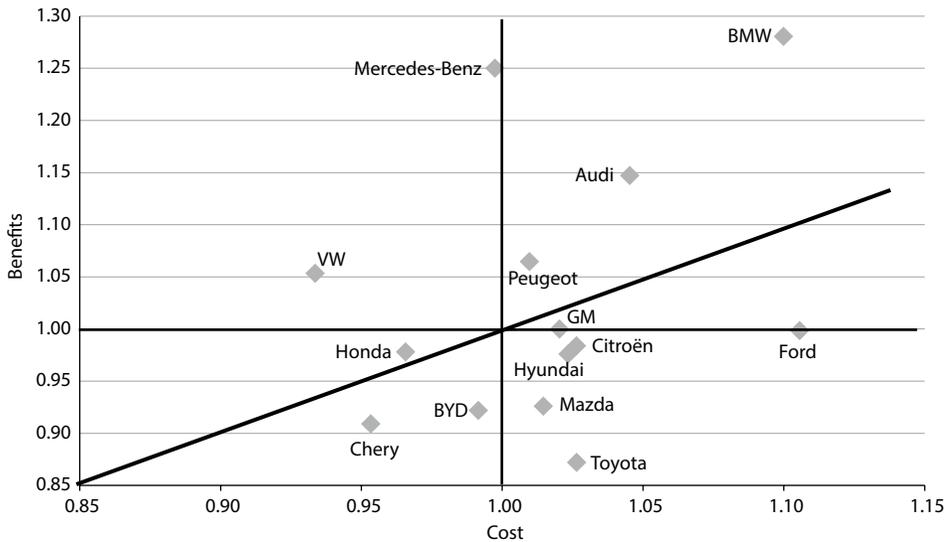
Figure 2 The customer value figure in the during-crisis period

Audi and BMW still kept high M-CPV indexes, due to their excellence in terms of customer perceived benefit. When we compare the post-crisis data to the pre-crisis data, it is surprising that most of the changes observed during the crisis have disappeared. For example, there was no significant difference on any dimension of BMW, Honda and Mazda between the post-crisis and pre-crisis periods. Even Toyota's M-CPV index recovered to the pre-crisis level. Generally speaking, the post-crisis CPVs of all these brands are not significantly different from those in the pre-crisis period, and the Toyota crisis had only a temporary impact on its CPVs during the crisis.

The brands in the post-crisis period are also classified into three classes. The first class still consisted of Audi, BMW and Mercedes-Benz. Chery stayed in the third class, while all other brands were in the second class. Apparently, having recovered from the product crisis, both Toyota and Mazda moved back into the second class, and Honda also recovered to its pre-crisis level. At the same time, Chinese brand BYD also experienced an improvement on customer benefit index, and made its way into the second class. Only Chery remained in the third class.

The customer value figure in the post-crisis period is shown in Figure 3. According to this figure, Mercedes-Benz, Audi, BMW, VW, BYD and Honda show competitive advantages over other brands. The benefit indexes of Audi, BMW and Mercedes-Benz were significantly higher than those of other brands. Toyota and Mazda recovered from the crisis, with
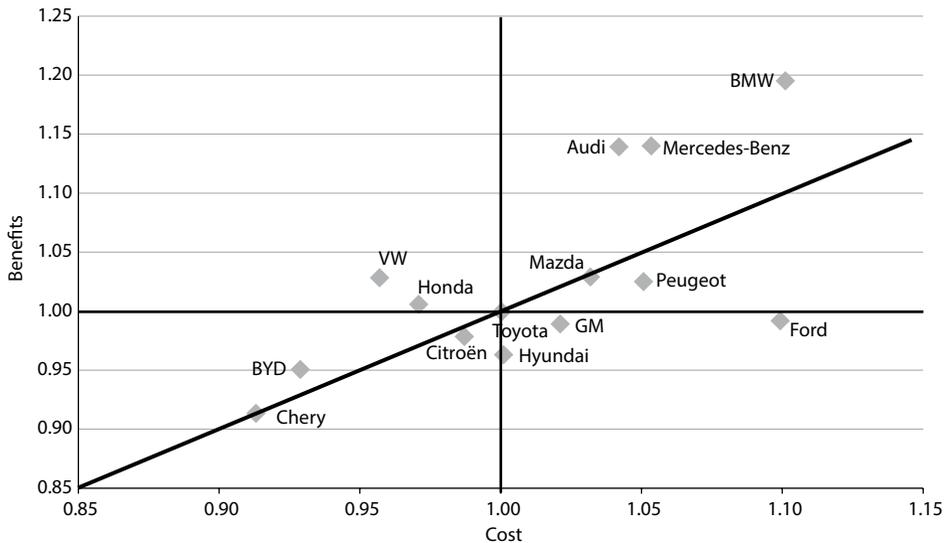
Figure 3 The customer value figure in the post-crisis period

both perceived customer benefit and perceived cost close to the market average value. Honda also went back above the average line. Overall, Figure 3 shows that the advantages of the first-class brands remained unchanged and kept them distant from other brands. However, the distance between the second- and third-class brands was closer, showing a blurred border between these two classes. The Chinese brands BYD and Chery in particular showed improved customer benefits.

We noticed that only the M-CPV indexes of Toyota, Honda, Mazda and BMW were significantly impacted during the crisis process. In order to illustrate the M-CPV index changes across the pre-, during- and post-crisis periods, we generalised Figure 4. We could see clearly that, although the degrees of product crisis impact on Toyota, Honda and Mazda vary, the patterns of the changing impact are the same. All three brands were negatively impacted during the crisis, and the impacts gradually receded with time. On the contrary, the impact on BMW was in the opposite direction; the Toyota crisis improved the M-CPV of BMW during the crisis, which also decreased over time.

Similarity among Toyota, Honda and Mazda

The results during the crisis and after the crisis show that Toyota's crisis had similar impacts on Toyota, Honda and Mazda. To investigate the
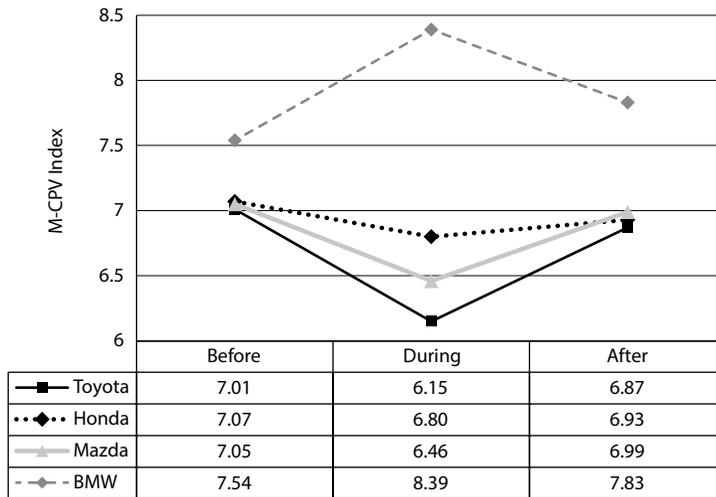
	Before	During	After
Toyota	7.01	6.15	6.87
Honda	7.07	6.80	6.93
Mazda	7.05	6.46	6.99
BMW	7.54	8.39	7.83

Figure 4 The M-CPV indexes of Toyota, Honda, Mazda and BMW during three periods

similarity among these brands, we did another study. In the Asian Games Village automobile market, we randomly picked a group of customers and asked them to list four properties (two positive and two negative) to evaluate an assigned brand. These customers were randomly assigned to one of these six brands: BMW, Toyota, Honda, Mazda, GM and VW. Thirty customers were assigned to each brand. Our results show the most frequently listed positive description for Toyota is fuel efficient (62%) and the negative description is fragile (32%). Similarly, the most frequently mentioned positive and negative attributes about Honda and Mazda are also fuel efficient (Honda 52% vs Mazda 38%) and fragile (Honda 28% vs Mazda 35%). On the other hand, customers think BMW is easy to operate (28%) but too expensive (64%); GM powerful (28%) but fuel inefficient (19%); and VW reliable (39%) but too noisy (9%). Apparently, these three Japanese brands were perceived very similarly by the customers.

Experience as a moderator

It would be interesting to find out whether experience plays a role when a product crisis impacts the crisis brand's CPV. According to whether the customers have past usage or not, we separated Toyota customers into two groups. Their respective CPV during these three periods are listed in Table 4.

Table 4 The M-CPV of Toyota during three periods from experienced customers and inexperienced customers

Brand	Period	Experience	N	M-CPV index	Customer Benefits index	Social value	Emotional value	Per- ceived cost	Functional perfor- mance
Toyota	Before	Yes	135	6.86	6.99	5.78	7.19	6.40	7.67
		No	143	7.15	7.35	5.93	7.70	6.40	8.02
	During	Yes	54	6.12	6.08	4.44	6.86	6.28	6.47
		No	67	6.18	6.12	4.21	7.00	6.47	6.59
	After	Yes	39	6.57	6.69	5.41	7.17	6.11	7.15
		No	61	7.06	7.17	6.31	7.67	6.67	7.32

Table 4 shows that Toyota's crisis generally has a similar impact on experienced customers' CPV and inexperienced customers' CPV – for example, both CPVs dropped during the crisis and recovered in the post-crisis period (see Figure 5). However, detailed comparison shows that there are some differences between these two groups in each period. In the pre-crisis period, inexperienced customers' CPV was higher than that from experienced customers at the 0.1 significance level (7.15 > 6.86), and this difference was mostly from the differently perceived benefits (performance value and emotional value) between these two groups. This may indicate that experienced customers gave a more conservative and rational evaluation. During the crisis, the CPV difference between the two groups disappeared. After the crisis, the CPVs of both groups recovered to their pre-crisis levels, and the CPV from the inexperienced group was significantly higher than that from the experienced group (7.06 > 6.57, < 0.1). Based on Figure 5, it is fair to say that the product crisis had more impact on inexperienced customers than on experienced customers. This difference can be confirmed by the different significance level: the inexperienced customers experienced more significant change (< 0.001) from the pre-crisis CPV to the during-crisis CPV than did experienced customers (< 0.05). In other words, inexperienced customers are more likely to be affected by a product crisis. Similar patterns were also found in Honda and Mazda customers.

Discussion and conclusion

This research focused on the 2009–2010 Toyota product-harm crisis. Based on the survey data collected from the pre-, during- and post-crisis
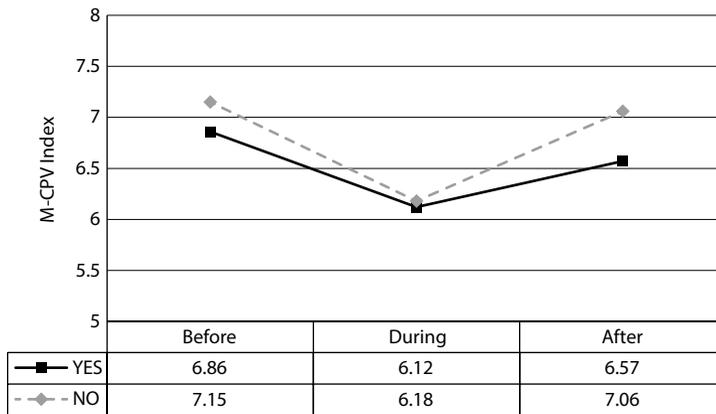
	Before	During	After
YES	6.86	6.12	6.57
NO	7.15	6.18	7.06

Figure 5 The M-CPV indexes of Toyota during three periods from experienced customers (YES) and inexperienced customers (NO)

periods, we studied the effects of the product crisis on the CPVs of some popular automobile brands. Our study revealed the following results.

First, Toyota's CPV and relative market position is negatively affected during a product crisis. This impact is reflected in the drop in customers' perceived functional performance, social value and emotional value. However, the impacts of the product crisis are different across dimensions of the CPVs. Functional performance is most directly impacted, followed by social value and emotional value. Perceived cost is not affected at all.

Second, the product crisis negatively affects some closely related non-crisis brands. In our study, Mazda and Honda both experienced a significant drop in their M-CPV index and perceived functional performance during the crisis. This can be explained by two aspects. On one hand, these two brands and the crisis brand Toyota are all Japanese brands, and the Toyota product crisis affected customers' perceptions of Toyota brand, which further infers customers' negative belief about brands with the same COO. This 'halo effect' has also been observed by past research (Agrawal & Kamakura 1999; Chu *e a*. 2010). On the other hand, these two brands share many common features with Toyota: they all belonged to the second class before the crisis, and in customers' eyes have similar advantages (fuel efficient) and disadvantages (fragile). Because of the high degree of associative overlap, the negative influences of the Toyota crisis naturally spill over on these two brands; this is also consistent with the findings of past studies (Dahlen & Lange 2006; Roehm & Tybout 2006).

Third, the CPV is different between experienced customers and inexperienced customers, and the product crisis also has different impacts

on them. Even though the crisis generally has similar influence on all customers, detailed data show that it has a more significant impact on inexperienced customers. Experience provides customers with more knowledge about the brand, and this knowledge distinguishes them from inexperienced customers in terms of how to process brand-related information. According to Alba and Hutchinson (1987), experienced customers are capable of identifying and understanding product-related essential attributes, while novices rely more on the information's accessibility, therefore they are more susceptible to easily assessable information like advertising and other external attributes (for example, branding). As a result, inexperienced customers are impacted more by negative information during a product crisis.

Fourth, our study shows that most of the non-crisis brands were not significantly affected by the Toyota product crisis, except for Honda and Mazda. Among these non-crisis brands, two lower-end brands (French brand Citroën and Korean brand Hyundai) moved from the third class into the second class during the crisis. This may have something to do with the crisis blurring customers' perceived difference among these brands. The higher-end brands also benefited from Toyota's product crisis. All first-class brands' perceived benefit indexes experienced some improvement from the pre-crisis period to the during-crisis period. (Among these brands, BMW is the biggest winner, with its social value, emotional value and functional performance all being significantly higher than the pre-crisis levels.) This is the only class that came through Toyota's product crisis relatively unscathed. This is probably related to how consumers categorise their knowledge of brands. Since Toyota is considered as second class, any negative information associated with the crisis is not applicable to first-class brands. These brands can actually benefit from the fact that consumers would be more likely to identify price as a very important indicator of product performance, and thus would be willing to pay extra for a quality and reliable product. As a result, a product's functional performance will be emphasised, while price will be less important.

Fifth, our study shows that the weights of CPV change across the pre-, during- and post-crisis periods. These changes may indicate that the product crisis changes the competition rules of this product category. In one aspect, the crisis presents challenges to other brands because the way customers perceive the product has been modified. For example, Honda and Mazda are direct victims of this crisis, partly because customers think their functional performance is as bad as Toyota's. Another extreme example is the 2008 Sanlu infant formula crisis (*People's Daily* 2008). After

the media exposed that Sanlu formula was the cause of many babies' illness, customers became suspicious about all local brands, and more and more customers began to purchase formula from the foreign market. Apparently, the crisis made customers consider Chinese formula brands inferior to foreign brands. On the other hand, changing the rules also brings opportunities to other brands. For example, because customers emphasise functional performance during a crisis, those brands with better functional performance are given a better evaluation.

Sixth, our study shows that the effects of a product crisis may well be short-lived. In this case, most of Toyota's CPV has recovered from the post-crisis period to the pre-crisis level, except for functional performance. Similarly, both the functional performances of Honda and Mazda have nearly returned to their pre-crisis levels. On the other hand, the higher-end brands like BMW experienced a slight drop from the during-crisis period to the post-crisis period, and their CPV has returned to pre-crisis levels.

Our research also shows that Chinese consumers place more importance on the emotional and performance value of a product rather than on its cost or price. Considering that Chinese consumers' average income is not high, it is safe to assume that they are very price sensitive and more likely to be drawn towards low-price cars. However, this research presented a different picture, which is probably related to Chinese collectivist culture. In a collectivist culture, personal relationships and personal prestige are some of the most important anchors for consumers to make purchase decisions. They usually emphasise gaining acceptance and impressing others with possessions. This finding is quite valuable for companies that are constructing and communicating CPVs for the Chinese market, as they need to focus more on the social and emotional values of the products.

Managerial implications

To the best of our knowledge, this study is one of the first attempts to investigate the transitions of CPV during a real product-harm crisis event. This research provides a methodology to evaluate the impact of product crisis on customer value in a quantitative way.

Our results show that the product-harm crisis can significantly impact the crisis brand's CPV. However, this influence is not long-lived. The management does not need to panic during the product crisis. They just need to take necessary actions to minimise the impact on their customers, and eventually they will have the chance to regain their customers' confidence and acceptance. The quick recovery of Toyota from the

product crisis might be related to the way the company addressed the crisis (Dutta & Pullig 2011). In addition, Siomkos and Shrivastava (1993) found that reputable companies can regain consumer confidence more easily after a product-harm event. Toyota is an international company with a good reputation for its world-leading TQM practices and well-established relationships with suppliers. This may partly have contributed to its fast recovery from the crisis. Therefore, companies should create and maintain their reputation carefully, as their reputation may help them in future crisis events.

Our study also shows that some similar brands are vulnerable to the spillover effects of the product crisis, especially those brands sharing the same country of origin and similar product attributes with the crisis brands. On the contrary, those dissimilar brands are immune to the crisis influence. This may indicate that the company needs to distinguish its brand from other brands. One way to do this is to compare its brands to those of competitors, and choose some dissimilar attributes to differentiate themselves from other brands. These special attributes can be used to protect the company from the negative impacts of similar brands. Van Auken and Adams (1998) proposed a similar strategy (across-class positioning), where they suggest that companies can distinguish their own brands from those of competitors by establishing connections between their own brand and the brands from the other category.

Our study shows the weights of CPV change across the pre-, during- and post-crisis periods, and this may indicate that the product crisis changes the competition rules of this product category. Therefore, management should keep track of their brand dynamically. Corporations need to be responsive to their own product-harm crisis; they also need to prepare for a widespread product crisis incident in their industry. In addition, they need to adjust their sales and advertising strategies according to market dynamics and customer perceptions.

Our study also finds that the CPV of experienced customers is different to that of inexperienced customers, and their response to the product crisis is also different. This difference is due to their different ways of handling the information: inexperienced customers are more likely and quicker to accept the straightforward external product information, and also are subject to advertising and negative media information, while experienced customers are more capable of identifying and understanding essential product information; this ability is especially important when purchasing a high-involvement product like a car. In addition, because inexperienced customers are more risk avoidant, they are more sensitive

to risk (Heilman *e a .* 2000). Therefore, management should be aware of these differences, and should adjust their product development and sales strategy accordingly. For example, during a product crisis, they can benefit by communicating more technical information with experienced customers, while interacting with inexperienced customers using some simple and straightforward information like brand image and corporate social responsibility.

Limitations and future research

This study has its limitations. First, it is based on the 2009–2010 Toyota product crisis. Therefore, the conclusions are mostly based on this special event. Whether these findings apply to other product categories needs further validation. Second, this study used data only from the Beijing area, while most of Toyota's recalls were in America. Whether the results can be generalised to the US market also requires further investigation. Future research collecting data from a more representative population might provide greater insights. Third, this research considered only the impact from the product crisis and ignored other market activities (like some large-scale market strategies and the firm's response). If future research focusing on other product crises can include consideration of more extensive market strategies, more interesting results might be revealed. Fourth, this research does not differentiate the customers based on their loyalty. Future research may find out that loyal customers are less impacted by the product crisis. Fifth, if future research tracks what individuals are exposed to, and determines the relationships between the communication and their intentions, it would be more valuable in understanding the impacts of crisis.

Acknowledgement

References

ABC News (2010) Toyota to recall 136,000 cars over steering fault. Available online at: http://www.abc.net.au/news/stories/2010/11/04/3057600.htm (accessed 11 September 2012).

Agrawal, W. & Kamakura, A. (1999) Country of origin: a competitive advantage? *International Journal of Research in Marketing*, **16**, pp. 255–267.

Alba, J.W. & Hutchinson, J.W. (1987) Dimensions of consumer expertise. *Journal of Consumer Research*, **13**, March, pp. 411–454.

Anderson, J.C. & Gerbing, D.W. (1988) Structural equation modeling in practice: a review and recommended two-step approach. *Psychological Bulletin*, **103**, 3, pp. 411–423.

Chakravarti, A. & Janiszewski, C. (2004) The influence of generic advertising on brand preferences. *Journal of Consumer Research*, 30, 2, pp. 487–502.

Chen, Y., Ganesan, S. & Liu, Y. (2009) Does a firm's product-recall strategy affect its financial value? An examination of strategic alternatives during product-harm crises. *Journal of Marketing*, **73**, November, pp. 214–226.

China Association of Automobile Manufacturers (2011) The top 10 automobiles sales ranking in December 2010 (including the entire year). Available online at: http://www.caam.org.cn/zhengche/20110112/1405051220.html (accessed 10 October 2011).

Christopher, M. (1996) From brand values to customer value. *Journal of Marketing Practice: Applied Marketing Science*, **2**, 1, pp. 55–66.

Chu, P., Chang, C., Chen, C. & Wang, T. (2010) Countering negative country-of-origin effects: the role of evaluation mode. *European Journal of Marketing*, **44**, 7/8, pp. 1055–1076.

Cleeren, K., Dekimpe, M.G. & Helsen, K. (2008) Weathering product-harm crisis. *Journal of the Academy of Marketing Science*, **36**, 2, pp. 262–270.

Dahlen, M. & Lange, F. (2006) A disaster is contagious: how a brand in crisis affects other brands. *Journal of Advertising Research*, **46**, 4, pp. 388–397.

Dawar, N. & Lei, J. (2009) Brand crises: the roles of brand familiarity and crisis relevance in determining the impact on brand evaluations. *Journal of Business Research*, **62**, 4, pp. 509–516.

Dawar, N. & Pillutla, M.M. (2000) Impact of product-harm crises on brand equity: the moderating role of consumer expectations. *Journal of Marketing Research*, **37**, 2, pp. 215–226.

Dean, D.H. (2004) Consumer reaction to negative publicity. *Journal of Business Communication*, **41**, 2, pp. 192–211.

Dodds, W.B., Monroe, K.B. & Grewal, D. (1991) Effects of price, brand, and store information on buyers' product evaluations. *Journal of Marketing Research*, **28**, August, pp. 307–319.

Dutta, S. & Pullig, C. (2011), Effectiveness of corporate responses to brand crises: the role of crisis type and response strategies. *Journal of Business Research*, **64**, 12, pp. 1281–1287.

Fornell, C. & Larcker, D.F. (1981) Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, **18**, 1, pp. 39–50.

Gao, H., Knight, J.G., Zhang, H. & Mather, D. (2011) Guilt by association: heuristic risks for foreign brands during a product-harm crisis in China. *Journal of Business Research*, doi:10.1016/j.jbusres.2011.12.029.

Heilman, C.M., Bowman, D. & Wright, G.P. (2000) The evolution of brand preferences and choice behaviors of consumers new to a market. *Journal of Marketing Research*, **37**, 2, pp. 139–155.

Herr, P.M. (1989) Priming price: prior knowledge and context effects. *Journal of Consumer Research,* **16**, 1, pp. 67–75.

Johar, G.V., Birk, M.M. & Einwiller, S.A. (2010) How to save your brand in the face of crisis. *MIT Sloan Management Review*, **51**, 4, pp. 57–64.

Kotler, P. & Keller, K.L. (2006), *Marketing Management* (12th edn). Upper Saddle River, NJ: Prentice-Hall.

Ma, B., Zhang, L., Wang, G. & Li, F. (2010) The effects of product-harm crisis on brand performance. *International Journal of Market Research*, **52**, 4, pp. 443–457.

Meyers-Levy, J. & Sternthal, B. (1993) A two-factor explanation of assimilation and contrast effects. *Journal of Marketing Research*, **30**, 3, pp. 359–368.

Mullan, J.G. (2004) Reporting safety problems: US perspective. Available online at: http://www.icphso.org/oldfiles/international/2004Euro/2004/London1.pdf (accessed 21 September 2011).

People Daily (2008) The number of baby sufferers of milk powder incident reached 6244, among which 158 suffered from acute renal failure, 17 September. Available online at: http://society.people.com.cn/GB/86800/8060739.html (accessed 12 October 2008).

Ratnsshwar, S., Barsalou, L.W., Pechmann, C. & Moore, M. (2001) Goal-derived categories: the role of personal and situational goals in category representations. *Journal of Consumer Psychology*, **10**, 3, pp. 147–157.

Reed, A., Wooten, D.B. & Bolton, L.E. (2002) The temporary construction of consumer attitudes. *Journal of Consumer Psychology*, **12**, 4, pp. 375–388.

Roehm, L. & Tybout, A.M. (2006) When will a brand scandal spill over, and how should competitors respond? *Journal of Marketing Research*, **43**, 3, pp. 366–373.

Shankar, V., Carpenter, G.S. & Krishnamurthi, L. (1998) Late mover advantage: how innovative late entrants outsell pioneers. *Journal of Marketing Research*, **35**, 1, pp. 54–70.

Siomkos, G.J. & Kurzbard, G. (1994) The hidden crisis in product-harm crisis management. *European Journal of Marketing*, **28**, 2, pp. 30–41.

Siomkos, G. & Shrivastava, P. (1993) Responding to product liability crises. *Long Range Planning*, **26**, 5, pp. 72–79.

Stelzl, I. (1986) Changing a causal hypothesis without changing the fit: some rules for generating equivalent path models. *Multivariate Behavioral Research*, **21**, July, pp. 309–331.

Sweeney, J.C. & Soutar, G.N. (2001) Consumer perceived value: the development of a multiple item scale. *Journal of Retailing*, **77**, 2, pp. 203–220.

Van Auken, S. & Adams, A.J. (1998) Attribute upgrading through across-class, within-category comparison advertising. *Journal of Advertising Research*, **38**, 2, pp. 6–16.

Vogel, V., Evanschitzky, H. & Ramaseshan, B. (2008) Customer equity drivers and future sales. *Journal of Marketing*, **72**, November, pp. 98–108.

Weilbacher, M.W. (2003) How advertising affects consumers. *Journal of Advertising Research*, **43**, 2, pp. 230–234.

Xu, Y., Wang, G. & Zhao, P. (2010) Value formation and its impact on purchase intention – the case of the passenger car market in Beijing. [In Chinese] *Journal of Marketing Science*, **6**, 1, pp. 1–12.

Yang, Z. & Peterson, R.T. (2004) Customer perceived value, satisfaction, and loyalty: the role of switching costs. *Psychology & Marketing*, **21**, 10, pp. 799–822.

Yoo, B. & Donthu, N. (2001) Developing and validating a multidimensional consumer-based brand equity scale. *Journal of Business Research*, **52**, 1, pp. 1–14.

About the authors

Baolong Ma is an Associate Professor of Marketing at Beijing Institute of Technology and a primary researcher of The Retailing Research Center at Tsinghua University. He works primarily in the areas of customer relationship management, brand management and crisis management, and has written numerous scholarly articles on topics in these areas.

Lin Zhang is an Associate Professor of Marketing at Truman State University. She completed her PhD in Marketing at Mississippi State University in 2006. Her research interests include brand management, comparative advertising and unhealthy consumption behaviour. Her research has been published in journals such as *I e a R a R a Q f Ma e Resea ch*, *E Q ea R a Q f Ma e i g*, *Ma e i g Ma age e R a* and *Ma age e Resea ch Ne s*.

Gao Wang is Professor of Marketing at China Europe International Business School.

Fei Li is Professor of Marketing at Tsinghua University.

Address correspondence to: Lin Zhang, School of Business, Truman State University, Kirksville, MO 63501, US.

Email: linzhang@truman.edu