Product recall crisis management: the impact on manufacturer's image, consumer loyalty and purchase intention

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Abstract

Purpose – This paper aims to examine the impact of recall crisis management on the manufacturer's image, consumers' loyalty and future purchase intentions. More specifically, this research aims to clarify the types of recall strategies that companies put forward, as well as their impact on consumers' behaviors and perceptions of the manufacturer's image.

Design/methodology/approach – The current study focuses on vehicle users who have either experienced automobile recalls or heard them discussed. Data were collected via car-related web sites. The final sample comprises 573 people. The direction and strength of the relationships between various consumers' attitudes toward the different recall methods and their purchase intention are assessed through structural equation modeling (SEM).

Findings – Results show that recalls contested by manufacturers have a significant negative impact on manufacturers' image, as well as on consumers' loyalty and purchase intentions. On the other hand, voluntary recalls or improvement campaigns have a significant positive impact on the manufacturer's image, as well as consumers' loyalty and purchase intentions.

Research limitations/implications – Proactive strategies are the best solution to avoid a loss in consumer loyalty to the manufacturer during a recall crisis. In the contrary, manufacturers' adoption of reactive strategies harms their image, as well as consumers' loyalty. This translates into a negative impact on future purchase intentions and manufacturers' market share. This study concludes by recommending appropriate strategies to limit possible negative effects of product recalls.

Research limitations – Some variables (such as media, the degree of severity of recalls and the frequency of recalls) are not investigated in this study. Additionally, the research is limited to the automobile industry. Other industries that also experience recalls (such as the pharmaceutical industry) might be considered in future research in order to confirm the consistency of the research findings.

Originality/value – The approach adopted by the current research is relatively different from earlier studies that directly link the types of recalls to the danger perceived by consumers that in turn affects their purchase intentions. In the current study, recalls indirectly impact purchase intentions principally via the manufacturer's image and brand loyalty. Additionally, the originality of this research stems from the fact that the manufacturer's image is considered as part of the changeable legacy of the company that itself may be affected by the "crisis situation," not a stable asset.

Keywords Product recall, Brand image, Customer loyalty

Paper type Research paper

An executive summary for managers and executive readers can be found at the end of this article.

Introduction

Product recalls have continued to increase over the last two decades, in particular in the automobile industry. In the US alone, the number of vehicles recalled in 2004 reached 29 million, exceeding the highest recorded number of 24.6 million vehicles in 2000 (www.autonet.ca dated May 24th, 2007). This constitutes a colossal expense for automobile manufacturers. The costs of the logistics, repairs, readjustment to the assembly line and finally communication amount to hundreds of millions of dollars per a recall.

In the US, the first automobile recall dates back to 1966. From this date until 2001, the National Highway Traffic Safety Administration (NHTSA) and manufacturers listed more than 10,262 automobile recalls in the world. Lately, recall campaigns have continued to increase and a recent article in *The Wall Street Journal* (Power and Lundegaard, 2004) says that more than 19 million vehicles worldwide were recalled in 2003 alone.

Nonetheless, despite the scale of product recalls in the last 30 years, companies' desire to better understand consumer reactions to these recalls and to implement proactive crisis management strategies is fairly recent. Since the start of the 1980s, empirical research on the impact of recalls on consumer behavior has increased. However, a number of avenues concerning product recalls remain to be explored.

From this perspective, this research aims to clarify the types of recall strategies that companies offer, as well as their impact

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on consumer behavior, in particular, their perceptions of the manufacturer's image, and consumer loyalty and purchase intentions with respect to models that were recalled.

This study has three major components: first on the basis of a review of the literature, we will identify various types of recalls, and their impacts on the manufacturer's image, and consumer loyalty and purchase intentions. This review will lead to the development of research hypotheses. Second, these hypotheses will be empirically tested. Finally, conceptual and managerial implications of the impact of various types of recalls on consumers' purchasing decisions will be discussed.

Review of the literature and research hypotheses

The phenomenon of the impact of recalls in general and automobile recalls in particular presents specific characteristics making its study complex and generalizations often challenging. For example, each recall takes place over a well-defined period, concerns a particular model of vehicle, may be initiated by a manufacturer or a governmental organization and may represent varying degrees of danger for drivers.

These characteristics partially explain the contradictory or counterintuitive results of certain studies. Thus, Wynne and Hoffer (1976) deny any eventual impact of recalls on sales volumes of recalled vehicles. Harrison *et al.* (1982) also show that 74 percent of owners who experienced automobile recalls are favorable to the purchase of the same model. In contrast, Crafton *et al.* (1981) demonstrate that automobile recalls for safety reasons have a short-term negative influence on sales of these products. Jarrell and Peltzman (1985) show that recalls may have an impact on the stock market of the company in question. Elsewhere, Weinberger *et al.* (1981, 1991), who examined various brands of vehicles under specific recall circumstances; believe that automobile recalls affect sales and manufacturer's market share. Nonetheless, the intensity of this impact seems to vary as a function of elements such as the length and intensity of media campaigns against defective vehicles, manufacturers' media responses and their respective reputations. The interaction observed between these elements and the type of crisis management adopted seems to create a unique situation for each automobile recall.

Faced with this diversity of results and the importance of contextual factors, researchers have therefore inclined towards listing all the elements that could explain an eventual impact of automobile recalls on consumer behavior. The value of these studies extends beyond demonstrating the existence of an impact on purchase intentions to include providing companies the necessary tools to effectively manage such crisis periods and minimize their effect. From this viewpoint, Siomkos and Kurzbard (1994) present three elements directly influencing the intensity of the impact of recalls on consumer behaviour. In their research, crisis management, the company's reputation and external effects (media, government agencies [...] etc.) are the principal factors. They may reduce or increase the impact of recalls on consumer behavior. Indeed, according to Siomkos (1999), when the company affected by the recall has a good reputation and the manufacturer's strategy of communicating with consumers and the media is perceived positively, the negative impact of recalls on purchase intentions is diminished. On the other hand, when a company with an average reputation proceeds to a recall after pressure by governmental agencies, not voluntarily, this may negatively affect consumers' purchase intentions. In other words, the company's reputation plays a moderating role with respect to the effect engendered by the impact of the recall. These results are consistent with the findings of Jolly and Mowen (1984) who, in their study on consumer recalls, highlight the influence of delays in repairs due to manufacturers' recalls, and the number of recalls of competitors, as well as the type of recall selected by the manufacturer, the latter's image and media coverage of the recall.

In order to better understand this phenomenon, Siomkos and Kurzbard (1994) returned to this conclusion and proposed an in-depth analysis of possible options for a manufacturer faced with a potential recall. These may be divided into four categories: denying the defect (no recall), involuntary recall, voluntary recall and finally, improvement campaign ("super effort"). Thus, in their study, they demonstrate that the more responsible manufacturers are towards their clients, the less negative the impact of the recall process on consumers. From the same perspective, Weinberger *et al.* (1991) in their study, present the negative impact of a few examples of approaches adopted by automobile manufacturers. They explain that manufacturers that completely deny product defects and/or refuse to proceed with a recall and shoulder their responsibilities create a negative consumer perception of the product and the company image. These studies underline the importance of the manufacturer's crisis management and adoption of the appropriate recall technique to retain consumers. Regardless, they do not allow for the measurement of consumer attitudes with respect to each recall procedure and empirically demonstrate their distinctive aspect since they rely on scenarios for each recall and simply place consumers in a given situation before measuring their future purchase intentions and their perception of danger with respect to the recalled product.

The current research closely follows that of Siomkos and Kurzbard (1994), aiming to further its contribution through proposing and validating a measure of consumer attitudes to different forms of automobile recall through displaying their distinctive aspects in consumers' eyes, as well as offering a detailed description of consumer reactions to manufacturers responsible for various types of recalls. Consequently, our first hypothesis concerns the very structure of recall possibilities available to manufacturers:

H1. The following four categories of recalls (denying the defect, involuntary recall, voluntary recall, and an improvement campaign) constitute four distinct options in consumers' eyes.

In the case where manufacturers deny any problems with their models and refuse to recall them, as well as in cases where governmental agencies oblige manufacturers to withdraw their products from the market (involuntary recall) (Siomkos, 1999), the manufacturer's image may be negatively affected. Therefore, we offer the following hypotheses:

H2. Denying the defect (refusing a recall) negatively affects the manufacturer's image.

H3. Involuntary recall negatively affects the manufacturer's image.

On the other hand, Kabak and Siomkos (1991) as well as Siomkos and Kurzbard (1994), suggest that voluntary recall does not negatively affect the image of the company concerned by the recall, and may even improve it. With this approach, manufacturers are demonstrating that they accept total responsibility *vis-à-vis* their clients and are constantly seeking to offer them safe products. As a result, this type of recall lessens consumers' perception of danger and may indirectly positively affect the consumer's image of the manufacturer. Let us refer, for example, to Chrysler that, in the 1990s, disconnected the endometers from its new vehicles during factory tests. However, when this news became public, the manufacturer apologized and admitted the error. Thus, Chrysler used this crisis to its advantage in increasing its "brand capital" by 20 percent, moving it from 45 to 65 percent (www.comanalysis.ch/index.html). In the same context, Shrivastava and Siomkos (1989) introduce the notion of a "super effort" recall or improvement campaign. These recall campaigns were not required by governmental agencies. They stemmed from internal decisions that usually aim to recall models with minor defects that do not compromise passenger safety, in order to correct them, thus the name of "improvement campaign." In so doing, the manufacturer demonstrates a concern with providing a superior quality of product and, therefore, creates an image of a reliable brand. Jolly and Mowen (1984) suggest that this type of approach is an element that may lessen consumer perception of danger. This discussion, consequently, leads to the following hypotheses:

H4. Voluntary recall positively influences a manufacturer's image.

H5. An improvement campaign positively influences the manufacturer's image.

The preceding discussion indicates that, regardless of the nature of the recall, this latter tends to have a significant effect on the manufacturer's image. Siomkos (1999) explains that the manufacturer's image plays an important role in determining the impact of recalls on consumer behavior. Aaker (1994) suggests that the brand image creates value for the brand for at least five reasons: it helps the consumer process information on the product, it differentiates the product and its positioning, it provides reasons for the purchase, it tends to develop a positive feeling towards the brand, and it allows for brand extensions. According to this definition, we understand why the manufacturer's image may have an impact on consumer behavior to the degree that the image "helps to process information on the product." Thus, Jolly and Mowen (1984) contend that, during a recall, a good image of the manufacturer may maintain consumer confidence in the manufacturer and the product. This opinion is confirmed by Dinnie *et al.* (2006) who have shown that the better the company brand image, the more positive are purchase intentions. Furthermore, Barber and Darrough (1996) present a study comparing American and Japanese brands between 1973 and 1992. In this research, governmental bodies reported 507 recalls affecting American manufacturers as opposed to 66 recalls for Japanese manufacturers. This statistically significant difference provides evidence for the common perception that Japanese vehicles are more reliable than American cars. Barber and Darrough (1996) explain that this perception has contributed to Japanese manufacturers' increased market share and American manufacturers' decreased market share of the total North American automobile market. Furthermore, Dinnie *et al.* (2006) explain that company image has a positive impact on retention of clientele. In the same context, a number of empirical studies have demonstrated that brand loyalty directly affects purchase intentions (Mittal *et al.*, 1998; Hennig-Thurau *et al.*, 2002). In addition, according to Souiden *et al.*, 2006, once confidence in the manufacturer is firmly established in the consumer memory, it may generate a positive evaluation of the company in general (of its image) and its products in particular. Thus, the degree of consumer brand loyalty increases. On the basis of this discussion, we will advance the following hypotheses:

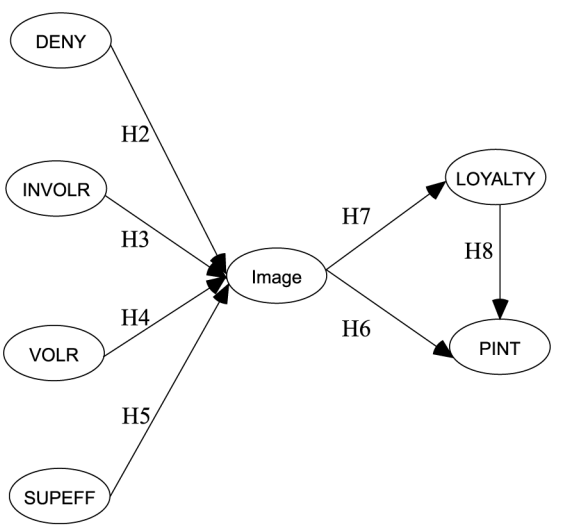
H6. The image of the manufacturer who experienced a product recall has a positive impact on consumer purchase intentions.

H7. The image of the manufacturer who experienced a product recall has a positive influence on consumer brand loyalty.

H8. Consumer brand loyalty has a positive influence on purchase intentions.

All the above hypotheses are presented in a single model that shows the simultaneous interactions between the research variables (Figure 1). Particularly, the model shows that the four types of company's responses when managing its product crisis (i.e. DENY, INVOLR, VOLR, and SUPEFF) are directly related to the manufacturer's image (IMAGE). The model hypothesizes that when the manufacturer denies or involuntarily recalls his defected product, his image will be affected negatively. On the other hand, when the manufacturer voluntarily recalls his defected products or proactively takes some "super effort actions", his image will be influenced positively. The model also shows that manufacturer's image has a direct impact on consumers' loyalty (LOYALTY). Both manufacturer's image and consumers' loyalty are shown to have a direct influence on consumers' purchase intention (PINT). In other words, the type of response of the manufacturer during a product crisis

Figure 1 A conceptual model of product recall crisis management and its impact on the manufacturer image, consumer loyalty and purchase intention



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would have an indirect effect on consumers' purchase intention through their impact on the manufacturers' image and consumers' loyalty.

Research methodology

Questionnaire

A self-administered questionnaire is used to gather the data. All the items are measured on a five-point Likert scale (1 = totally disagree to 5 = totally agree). The first set of questions deals with customers' familiarity with recalls in the automobile industry and their sources of information about recalls. In the second section, we assessed consumers' attitudes toward recall strategies that might be used by manufacturers. Items were developed and adapted using previous studies (e.g. Siomkos, 1999; Kabak and Siomkos, 1991; Siomkos and Kurzbard, 1994). Three to six items for each recall strategy are used. Sample items of the four recall strategies are provided:

1. *Deny*. I do not appreciate the fact that the manufacturer of my car:
   - Has denied (would deny) the defects of its vehicles.
   - Has refused (would refuse) to recall the models that were suspected for defect.
2. *Involuntary recall*. I do not appreciate the fact that the manufacturer of my car:
   - Has recalled (would recall) its defected vehicles only after being obliged to do so by Transport Canada.
   - Was (would be) satisfied to just make the minimum required by law on recalls.
3. *Voluntary recall*. I appreciate the fact that the manufacturer of my car:
   - Has taken (would take) the initiative to recall its defected models.
   - Has shown (would show) some responsibility and a particular interest with regard to the well being and safety of its customers.
4. *Super effort*. I appreciate the fact that the manufacturer of my car:
   - Has done (would do) some efforts to improve the quality and the safety of its vehicles despite that these actions are not required by law.
   - Rigorously inspects its vehicles.

In the next section, image issues, loyalty and purchase intention are measured using items that were mainly adapted and borrowed from Chinen *et al.* (2000), Laroche *et al.* (2005), and Souiden *et al.* (2006). In the last section, individual characteristics including age, revenue and education are also captured.

Sample selection and data collection

The current study's empirical research focuses on vehicle users who have either experienced automobile recalls or heard them discussed. Data was collected via car-related websites. This allowed us to reach an audience interested in the issue of automobiles and to ensure a higher rate of response and a quicker collection of responses than by other means (Comley, 2000). The questionnaire was posted on these sites from January 29 until February 18, 2006.

The questionnaire was pre-tested on a dozen individuals to ensure validity of the content for each construct. The final sample was comprised of 573 people, of whom 56.5 percent were female and 43.5 percent male. The age group from 18 to 25 was most represented in the sample with 61 percent, followed by those 26 to 35 at 26 percent. In third place, we find the group aged 36 to 45 with 9 percent and finally, in last place, the group 46 and older at 4 percent. Furthermore, we observe that the vast majority of respondents, 90 percent, have a rather high level of education (university degrees: undergraduate, master's and PhD), followed by those with some college studies at 9 percent, and finally respondents with a high school education at 1 percent. Of the sample, 69 percent already own vehicles while 31 percent have no cars and 9 percent are currently looking into the purchase of a vehicle. It is important to stress that 70 percent of owners are well informed on the subject of recalls, with 40 percent of the sample having already experienced this phenomenon and 60 percent having heard it discussed elsewhere such as on the Internet and in magazines. This effectively demonstrates that owners are largely aware of the phenomenon of recalls.

Analysis

The direction and strength of the relationships between various consumers' attitudes toward the different recall methods and their purchase intention are assessed through Structural Equation Modeling (SEM) using AMOS 4.0. Prior to specifying the overall structural model, preliminary analyses are performed to assess the measurement properties (dimensionality, internal consistency and configural issues) of the model. The maximum-likelihood (ML) is selected as the method of model estimation. The analysis tests used are root mean-square residual (RMR), root-mean-square error of approximation (RMSEA), goodness-of-fit index (GFI), Tucker-Lewis index (TLI), normed fit index (NFI) and the comparative fit index (CFI). Acceptable fit for the RMR is 0.05 or less and for the RMSEA is 0.08 or below. For GFI, TLI, NFI, and CFI, the acceptable fit is 0.9 or higher.

Measurements

As previously described, most of the dependent and independent measures used in this research are derived from previously validated but adapted instruments. Items having a factor loading below the cut-off of 0.6 were eliminated. The remaining items significantly load on their corresponding construct and, hence, all the independent and dependent variables present internal consistency ranging from 0.847 up to 0.96, satisfying the internal consistency criterion (DeVellis, 1991). Details on the number of retained items per construct and their corresponding alpha are presented in Table I.

A confirmatory factor analysis (CFA) on the measurement model derived from Figure 1 was performed. In order to

Table I Retained items per construct and their Cronbach's alpha

Constructs	Retained items	Alpha
Deny	5	0.960
Involuntary recall	3	0.933
Voluntary recall	4	0.926
Super efforts	6	0.918
Manufacturer's image	6	0.874
Consumer's loyalty	3	0.847
Consumer's purchase intention	5	0.902

assess the relative quality of the hypothesized structure, three competing models based on alternative factor structures were estimated as follows: a null model (model 1); a one-dimensional model for which all items were forced to load on the single factor of influence tactics (model 2) and finally a four-factor model (model 3) in which the four recall strategies (i.e. deny, involuntary recall, voluntary recall, and super efforts) are correlated.

The measurement model presented in Figure 1 exhibits very acceptable fit indicators, as indicated by its CFI or comparative fit index (0.96) and its RMSEA or root mean square error approximation (0.08), which all satisfy the established criteria (above 0.90 for the CFI and below 0.08 for RMSEA) (Bollen, 1989). Moreover, due to χ^2's sensitivity to relatively small sample sizes and distributions (Browne and Cudeck, 1989), a modified version of this indicator (the adjusted χ^2 (χ^2/df)) was adopted to take into account sample size issues. Therefore, while the χ^2 statistic was significant, it remained within the limits of 2.5 to 4 times the number of degrees of freedom (Bollen, 1989; Carmines and McIver, 1981) with an adjusted χ^2 of 4.60 ($\chi^2/\text{df} = 579.22/126 = 4.60$). In addition, all the item loadings are significant ($p < 0.05$) on their respective dimension. Model fit properties are compared to each other and results are presented in Table II. The significance of the chi-square difference, considering the difference in degrees of freedom, gives an indication of the model giving the best representation of the data. If the improvement in the chi-square difference is below the statistical significance threshold, the most parsimonious model (highest number of degree of freedom) will be chosen to fit the data (Byrne, 1994; Tepper *et al.*, 2001). As underlined by the results, the four first-order correlated factor model (model 3) provides the best fit to the data when compared with the other models considered. These findings support the hypothesized structure and the dimensionality of the recall method proposed in hypothesis one. Hence *H1* is supported.

Once the dimensionality, reliability and measurement structure are supported, it is important to assess the discriminant validity of the Recall strategy model. The discriminant validity refers to "the extent to which the concept considered differs from other concepts" (Zaltman *et al.*, 1973). For instance in our measures, each recall latent variable should be different from another even if they share some variance. However, they should reflect different aspects and therefore be different concepts. Our analysis shows that the correlation between each pair of factors, plus or minus two standard errors does not include the unity (Anderson and Gerbing, 1988; Bearden *et al.*, 2001), giving support to the discriminant validity of the recall strategies model.

Structural relationships: evaluation of the global model

The global model (Figure 2) was applied to the entire sample (573 respondents) to check for overall patterns of relationships between attitudes toward recall methods and purchase intention.

Table II Results of the CFA analysis of the three alternatives of measurement models

Model	Disc.	df	Disc/df	RMR	RMSEA	GFI	NFI	TLI	CFI
Model3	579.44	126	4.60	0.04	0.08	0.89	0.95	0.95	0.96
Model2	4100.51	132	31.06	0.15	0.23	0.41	0.63	0.58	0.64
Model1	2014.68	133	15.15	0.41	0.16	0.74	0.82	0.80	0.83

The hypothesized model produced a Chi-square value of 1319.71 with 448 degrees of freedom ($\chi 2/\text{df} = 2.95$). The CFI is 0.95, the RMR is 0.04, and the RMSEA is 0.06. This supports the good fit quality of the overall model. The standardized estimates of the parameters and their respective *t*-values are presented in Table III. As shown, all of the structural relationships but one are significant at $p < 0.01$ (t-value > 1.96; Anderson and Gerbing, 1988).

A look at the regression results shows that INVOLR has no significant impact on the manufacturer's image ($St.\beta = -0.10$, $t = -1.15$). However, DENY is reported to be negatively and significantly related to IMAGE ($St.\beta = -0.29$, $t = -3.52$). Thus, manufacturer's image will be deteriorated once he denies his defected products. Consequently, *H2* is substantiated and *H3* is rejected. On the other hand, VOLR is reported to have a positive and significant impact on IMAGE ($St.\beta = 0.25$, $t = 2.72$). Thus, the manufacturer who voluntarily recalls his defected product contributes significantly to ameliorating his image. Hence, *H4* is accepted. Similarly, SUPEFF is reported to have a positive and significant impact on IMAGE ($St.\beta = 0.27$, $t = 2.81$). In other words, the manufacturer who opts for a proactive action to improve his defected products and show a certain social responsibility towards his customers (i.e. super effort) would definitely improve his image. Therefore, *H5* is retained. The manufacturer's image in turn was found to have a positive and significant relationship with LOYALTY ($St.\beta = 0.79$, $t = 14.25$). This indicates that any damage caused to the manufacturer's image would weaken consumers' loyalty. Similarly, any improvement in the manufacturer's image would strengthen consumers' fidelity. Consequently, *H6* is substantiated. Finally, when examining consumers purchase intention from the auto manufacturer that experienced (or would experience) a product crisis, results show that both IMAGE ($St.\beta = 0.38$, $t = 6.80$) and LOYALTY ($St.\beta = 0.56$, $t = 9.27$) have a positive and significant impact on PINT. *H7* and *H8* are accepted.

Theoretical and managerial implications

Our investigation does not revolve around scenarios (as in the study of Siomkos) but is, instead, empirical, based on consumers who have either experienced or heard about a recall situation. We have shown that the nature of the manufacturer's decision on how to manage crisis periods related to defective products or models could have a varying impact on the manufacturer's image. This research also demonstrates that the type of recall chosen by the manufacturer has an indirect impact on consumer purchase intentions due to the manufacturer's image and customer loyalty.

Detailed analysis of standardized estimates reveals that, in most cases, the manufacturer's image is vulnerable to the type of recall adopted. Voluntary recalls and improvement campaigns have a positive and significant impact on the manufacturer's image. Also, the impact of improvement campaigns on the manufacturer's image turns out to be greater than the effect of voluntary recall. Furthermore, research shows that the refusal to acknowledge the product defect (DENY) has a significant, negative impact on the manufacturer's image while that this is not affected by involuntary recalls.

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Figure 2 The impact of product recall crisis management on image, loyalty and purchase intention

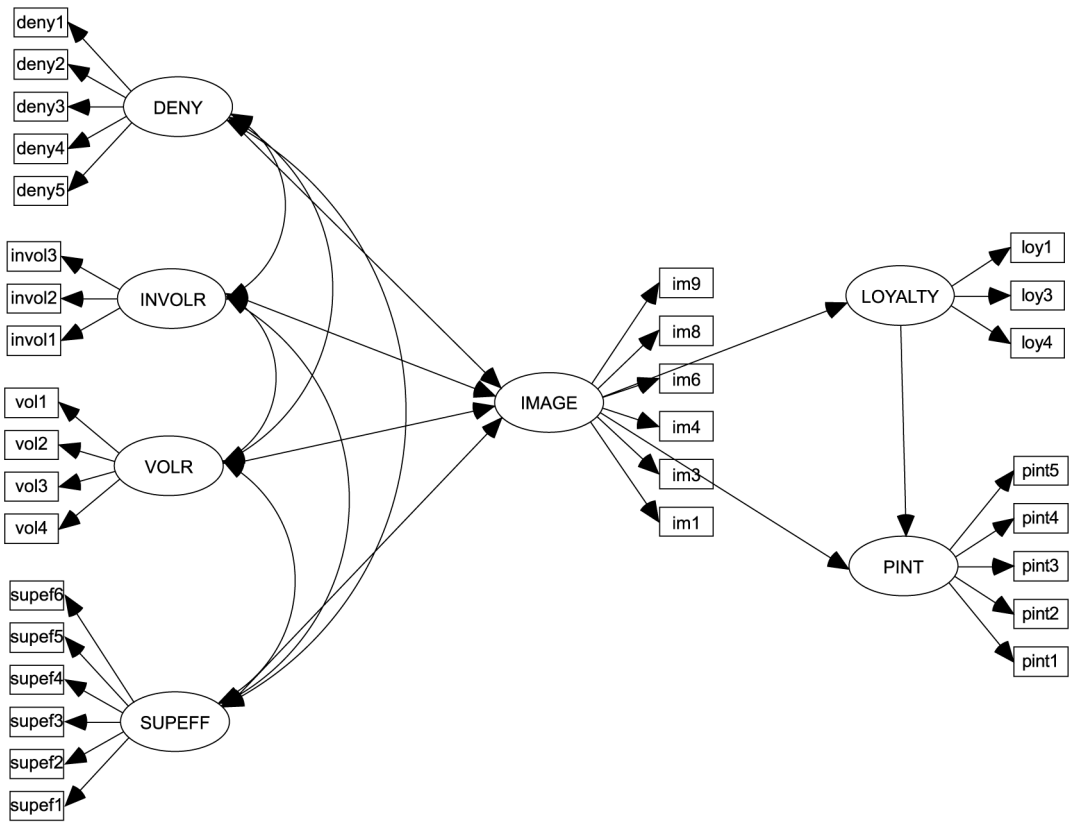

Table III Summary of the regression results

	Relationship	*St.ß*	*t*	*p*	
H2	DENY – IMAGE	−0.29	−3.52	0.01	Accepted
H3	INVOLR – IMAGE	−0.10	−1.15	0.25	Rejected
H4	VOLR – IMAGE	0.25	2.72	0.01	Accepted
H5	SUPEFF – IMAGE	0.27	2.81	0.00	Accepted
H6	IMAGE – PINT	0.38	6.80	0.00	Accepted
H7	IMAGE – LOYALTY	0.79	14.25	0.00	Accepted
H8	LOYALTY – PINT	0.56	9.27	0.00	Accepted

The nature of the manufacturer's decision (i.e. DENY, VOLR and SUPEFF) during a recall seems to influence customer loyalty and their purchase intentions by means of the manufacturer's image. In other words, if the impact of recalls on a manufacturer's image is negative, customer loyalty and their purchase intentions drop. On the other hand, when this impact is positive, customer loyalty and their purchase intentions rise.

This research may help manufacturers better comprehend the effect of the type of recall adopted in a crisis or when a product defect is discovered. Indeed, for a number of years now, the phenomenon of recalls has been widespread in the automobile industry and it continues to increase for a variety of reasons. Fierce competitions, as well as the rapid development of technologies used in the industry, push auto manufacturers to rush and precipitate the launch of their new models. Despite that this may help them gain competitive advantages, manufacturers are more likely to put vehicles on the market that stand a higher risk of being recalled. Therefore, it is crucial for manufacturers to prepare in advance for an eventual situation. Manufacturers should adopt a clear action plan allowing them to bolster their image and customer loyalty in recall situations. In this way, a crisis situation may be transformed into an advantage for the manufacturer. Indeed, this research proves that automobile recalls directly influence the image of the manufacturer that in turn influences customer loyalty and their purchase intentions. If at all possible, action plans to manage recall crises should favor improvement campaigns, as well as voluntary recalls, given that the latter have a positive impact on purchase intentions through increasing brand loyalty, on one hand, and, on the other, enhancing the manufacturer's image. In the same context, manufacturers should avoid refusing to admit defects in their products since this approach could negatively influence their image, as well as customer loyalty and purchase intentions.

In general, these results confirm those of earlier studies on the existence of an impact of automobile recalls on consumer purchase intentions. However, it must be emphasized that the approach adopted by the current research is relatively different from earlier research. Indeed, Siomkos (1999) as well as other researchers directly link the types of recalls to the danger perceived by consumers that in turn affects their purchase intentions. The model proposed by the current research shows that the type of recall first affects the manufacturer's image, which in turn affects customer loyalty and their purchase intentions. In other words, recalls indirectly impact purchase intentions principally via the manufacturer's image and brand loyalty. While this research

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did not directly explore the perception of the risk relative to danger of the recall, this is implicitly correlated to the way the consumer perceives the manufacturer's image.

Also, the originality of this research stems from the fact that the manufacturer's image is considered as part of the changeable legacy of the company that itself may be affected by the "crisis situation," not a stable asset. Indeed, earlier research, particularly that of Siomkos (1999), proposes a model in which the image variable and the crisis situation (i.e. the nature of the recall) are presented at the same stage. In other words, in previous studies, image is considered one amongst a number of elements creating an initial situation or a pre-existing environment for the company affected by the recall. In this context, the manufacturer's image is not at all influenced by the recall. Current research, on the contrary, proposes a model where the image variable is situated between managerial approaches during a crisis and future purchase intentions. Moreover, the hypotheses tested clearly show that these approaches have a direct impact on the image variable that in turn directly influences purchase intentions and customer loyalty.

Research limitations and future directions

The current research has emphasized only the effect of the type of recall on the manufacturer's image, customer loyalty and their purchase intentions. However other variables that might have a moderating role with respect to the impact of recalls on the manufacturer's image and customer loyalty were not investigated in this study.

First, the current research did not consider the effect of media. According to Siomkos (1999), media play an important role with respect to the perception of risk. Also, Jolly and Mowen (1984) describe how during a crisis, the information circulated by media and governmental agencies have greater credibility and influence on the perception of danger than that released by the manufacturer itself.

Second, this research did not distinguish between various degrees of severity of recalls. According to Hoffer *et al.* (1994), on one hand, there are major recalls due to mechanical problems that could seriously harm passenger safety. On the other hand, there are minor recalls due to defects that do not pose a real threat to drivers' safety. Thus, the nature of recalls reflects the degree of severity of the technical defect that starts the recall process. The stress is, therefore, put on the relation between the threat to drivers' safety on one hand, and the loss of confidence with respect to the defective vehicle model and the automobile manufacturer's brand, on the other. Earlier, Crafton *et al.* (1981) demonstrated that recalls of vehicles with serious defects have a negative short-term impact on the demand for the recalled vehicles and on other models from the same manufacturer.

Third, we have to stress that the current research has not considered the effect of repeated recalls on the manufacturer's image and customer loyalty. Indeed, costumers may make a connection between the manufacturer's image or product reliability and the frequency of this manufacturer's recalls. Manufacturers who often issue recalls leave the impression that their products are inferior to those of manufacturers who do so less frequently. The result is that a higher frequency of recalls by the same manufacturer may significantly harm this manufacturer's image and customer loyalty.

Finally, our research has studied the impact of automobile recalls on purchase intentions. However, there are other industries that also experience recalls. The pet food industry in the US and Canada is a prime example. The pharmaceutical industry is also often exposed to this recall phenomenon. These two industries may be more sensitive to recalls in the sense that they may have a much more negative impact, at least in the short term, given the high risk for consumers' lives. Consequently, managerial approaches would obviously differ, due to the intrinsic particularities of these industries. Further research might examine these questions and confirm the consistency and robustness of the model proposed in this research when applied to other industries.

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Executive summary and implications for managers and executives

This summary has been provided to allow managers and executives a rapid appreciation of the content of the article. Those with a particular interest in the topic covered may then read the article in toto *to take advantage of the more comprehensive description of the research undertaken and its results to get the full benefit of the material present.*

During the last two decades, the automotive industry has experienced an increase in the number of product recalls. For instance, 2004 saw 29 million vehicles recalled just in the US. This surpassed the previous high of 24.6 million on 2000. Tougher competition and rapid technological development are cited as reasons why recalls continue to rise and pose a significant financial burden for manufacturers in the shape of logistics, repairs, assembly line changes and communication.

Despite these increases, companies have only recently begun to adopt a more proactive approach to the recall problem. This is reflected in the concomitant growth in empirical research surrounding the issue. However, considerable scope remains for further investigation.

The impact of product recalls

Product recalls are somewhat specific in nature and therefore often make generalizations problematical. In the automotive industry, for example, each recall relates to a specific model of vehicle and occurs over a precise period of time. Any study must also take into account the level of danger to the driver and whether the manufacturer or a government body initiated the recall in question.

Souiden *et al.* believe that contradictory study results can be at least partly attributed to the specific nature of these

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characteristics. Some studies have found that recalls for safety-reasons negative influence sales in the short term, while participants in other studies have remained confident in the product following similar experiences. Various investigations have also suggested that sales, market share and stock value can all suffer in the aftermath of a recall. However, any effect could be moderated by factors that include the number of competitor recalls, how quickly faults are rectified and the intensity and extent of media attention.

Manufacturer response and consumer perception

A manufacturer's track record and how it responds to the situation also shapes consumer perception. Research has concluded that the negative impact of recalls will be less vehement when the company boasts a good reputation, voluntarily agrees a recall and is able to communicate effectively with consumers and the media. But any damaging effect can be significantly more profound with companies of average repute that only recall products when pressured to do so by relevant authorities.

Following on from such studies, others have developed a model that includes different possible responses to a recall situation. "Denying the defect", "involuntary recall", "voluntary recall" and "improvement campaign" are the options identified. Ultimately, it is posited that consumer perception of a manufacturer and its products is shaped by the level of responsibility the company displays towards its clients.

Voluntary recall demonstrates that companies "accept total responsibility" and are striving to provide safe products for their clients. And instead of a negative effect, some authors put forward the notion that companies taking this option can actually see their image get better. This action is taken even further with improvement campaigns. Manufacturers take the initiative and recall vehicles with minor faults unrelated to safety concerns and by doing so can be perceived as a reliable brand offering superior quality products. The importance of brand image is widely acknowledged, not least because it provides a key product reference point and enables positioning and differentiation. Any feel-good factor cannot be undervalued and a positive attitude towards the company will often extend to all its products not just the one involved in the particular recall.

The potential impact can be understood from a survey comparing recalls of Japanese and American products being 1973 and 1992. That Japanese recalls were substantially fewer in number helped to cultivate perceptions of greater reliability. Increased share of the North American market at the expense of US rivals has been the reward for Japanese manufacturers.

In the present work, the authors adopt the above framework and develop a measure for consumer reaction to these different forms of recall. Several hypotheses are formed and tested.

Data for the research was collected from automobile-related websites in early 2006 with the aim being to target vehicle users familiar with product recalls in the automotive industry. A self-administered questionnaire was devised to measure attitudes toward the recall strategies previously discussed. Of the 573 respondents 56.5 percent were female and 43.5 percent male. All but 13 percent of those taking part were aged between 18 and 35. Almost three-quarters were knowledgeable about recalls with over half of these having personal experience of the situation.

Findings indicated that:

- denying the defect has a strong negative effect on a manufacturer's image;
- the impact on image is significant and positive when a product is recalled voluntarily;
- an even greater positive impact results when the manufacturer embarks on an improvement campaign;
- both image and loyalty positively impact on consumer purchase intention towards a manufacturer with past or potential experience of a product crisis situation; and
- contrary to expectation, involuntary recall has no substantial effect on image.

Recommendations and further research

The empirical nature of current research differs from previous study based on scenarios. On this evidence, a manufacturer's choice of recall strategy is likely to impact on image and can indirectly influence future purchase intention. In the quest to secure competitive advantage, manufacturers are under growing pressure to get products to the marketplace swiftly. However, this invariably increases the risk of vehicles being recalled. Souiden *et al.* point out the importance of manufacturers being prepared for this scenario by adopting a "clear action plan" aimed at boosting both their image and consumer loyalty. They strongly recommend use of voluntary recalls and improvement campaigns and suggest that these approaches open the possibility of a manufacturer securing an advantage over competitors by adopting a proactive approach when product defects emerge.

Another original aspect of this study is the fact that the manufacturer's image is a fluid rather than a steady phenomenon that is vulnerable to the consequences of an emergency situation. In earlier models, image is considered stable and therefore not affected by recalls.

Future study could explore the impact of other variables. External bodies such as media and government agencies are invariably regarded as more credible than the manufacturer itself and can therefore significantly influence consumer perception of risk. The current investigation likewise does not consider that recalls vary in their severity from those that compromise driver safety down to problems where any such threat is minimal or non-existent. A further issue worthy of investigation is the frequency of product recalls and how this relates to perception of manufacturer's image and product reliability. The authors also recommend testing the model in other areas, such as the pharmaceutical industry. One assumption here is that product recalls may have a greater effect given the higher risks to consumer well-being.

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