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Effect of vehicle safety recalls on the perception towards other vehicles from the same country of origin

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HIGHLIGHTS

- The study examined the impact of vehicle safety recalls on other vehicle brands originating from the same country of origin (COO).
- The study used a case study related to Toyota recalls and the impact of the recalls on the attitudes toward other Japanese brands.
- The findings indicated that vehicle safety recalls have an indirect negative effect on other vehicles from the same COO.
- The results suggest that brands from the non-transgressor's COO should not make the transgressor's betrayal salient.
- Non-transgressing brands might consider assisting the transgressing company to recover in order to avoid spillover effects.

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ABSTRACT

A vehicle safety recall significantly impacts the demand for these specific manufacturer vehicles. The effect of this recall on the other manufacturers from the same country of origin (COO) that are not involved in the recall is poorly understood. The purpose of this study is to examine the impact of a vehicle safety recall on other vehicle brands originating from the same COO. The study uses a case study related to Toyota recalls and the impact of the crises on the attitudes toward three other Japanese brands—namely, Honda, Nissan, and Mazda. A questionnaire was conducted with 375 participants who are familiar with the recalls. The findings from the questionnaire indicated that product-harm crises have an indirect negative effect on brands from the same COO. Thus, brands from the transgressor's COO should not make the transgressor's betrayal salient, which might hurt their brands. For example, if Honda makes the betrayal of Toyota salient through comparative advertising, Honda's efforts might hurt the company directly through consumers' image of Japanese products. Future research should examine the extent to which comparative advertising impacts non-transgressing brands that originate from the same country as the transgressing brand. The current results suggest that the non-transgressing companies might even assist the transgressing company to recover from such crises if consumers

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perceive a strong association between the non-transgressing brands and transgressing brands.

1. Introduction

Buying a new personal vehicle is one of the main investments for any consumer. One of the main factors that affect the decision of the consumer is the safety of the vehicle according to researchers, vehicle manufacturers, and insurance companies. Some studies list the safety of the vehicle as the most important factor considered by the consumer when searching for a new vehicle (Koppel et al., 2008). One of the factors that give an indication of the safety of the vehicle is vehicle safety recalls. A vehicle safety recall occurs when the manufacturer of the vehicle finds a safety problem in their vehicle after selling it to the consumers. Recalls usually occur due to non-conformance to quality standard or specification or due to health and safety risk, which the manufacturer did not address or was unaware of before selling the product (Beamish and Bapuji, 2008; Lyles et al., 2008). In the case of a recall, the manufacturer will try to find the vehicles with issues to have the recall issue fixed at the cost of the manufacturer. These cases are significant events that must be carried out to protect the consumers and the general public but can be expensive and can cause severe damage to the manufacturer (Bates et al., 2007).

Different studies show that a vehicle recall can lead to major financial and reputation impact on the manufacturer (Bates et al., 2007). Hartman found that there is a substantial effect on the price of vehicles subjected to major recalls leading to lower prices (Hartman, 1987). Crafton et al. found the sales of these vehicles are impacted in the short term, especially if the recall is safety related (Grafton et al., 1981). The heavy publicity surrounding product-harm crises puts pressure on companies to deal with such crises in an effective way (Yannopoulou et al., 2011). According to existing literature, how a company deals with product-harm crises will impact post-crises perceptions about the company and its brands (Dutta and Pullig, 2011; Vassilikopoulou et al., 2011). On the other hand, a proactive recall can have a significant positive impact when it comes to the manufacturer's reputation and the consumers' loyalty and future purchase intentions (Souiden and Pons, 2009). When companies do not react appropriately to product-harm crises, consumers might perceive that the company intended to take advantage of them. Thus, it is the intent to hide the issue or even betray customers that aggravate the matter (Veil and Yang, 2012). During a recent major recall, Toyota was also accused of hiding the problems that its cars had with the acceleration of its vehicles. Toyota was accused of knowing about the problem and not doing anything about it (Ross, 2010). Research also reveals that not only do the crises influence the subject brand, but spillover

consequences also occur from the brand in question to other brands within the brand's family (Lei et al., 2008) or even with competing brands (Roehm and Tybout, 2006). However, research has not examined the spillover of such negative effects to other brands of the same country of origin (COO).

The primary objective of the current study is to examine the impact of a vehicle recall on other vehicle brands originating from the same COO. More specifically, this study examines the impact of the transgressing brand's betrayal on the attitudes toward non-transgressing brands from the same COO. In this case, betrayal is the extent to which the company has intentionally performed an action that has the potential to harm its consumers. This study further examines the extent to which the transgressing and non-transgressing brands' association with their COO strengthens spillover from the transgressing to the non-transgressing brand. This research first reviews the literature on product-harm crises and spillover effects. The subsequent discussion explains the research methodology and presents the results. Finally, the study outlines managerial implications, limitations, and future research suggestions.

2. Literature review

2.1. The spillover of perceived betrayal

In this study, the effect of the perceived betrayal of a company during product-harm crises was examined. Betrayal occurs when "one party trusts another to follow important relational norms, but the other party violates these norms often to their advantage" (Ward and Ostrom, 2006). In the current research, the main interest is whether a company is perceived as betraying its customers, not whether an actual violation took place. In the marketing literature, perceived betrayal is "a customer's belief that a firm has intentionally violated what is normative in the context of their relationship" (Grégoire and Fisher, 2008). Research supports that consumers experience betrayal when they believe that companies repetitively ignore consumers' complaints, have taken advantage of them, have violated their trust, or have cheated them (Grégoire and Fisher, 2008; Ward and Ostrom, 2006). According to Grégoire and Fisher (2008), airline passengers perceive betrayal when they experience a service failure and a failed service recovery; such betrayal leads to both problem solving and destructive forms of complaining. Ward and Ostrom (2006) find that consumers set up websites to express betrayal experienced when they feel that a company violated their consumer rights.

Therefore, the perceived betrayal of a company might become apparent in the way it reacts to product-harm crises.

Consumers might expect product recalls due to inadvertent mistakes in production. However, if companies show that they are intentionally trying to cover up the issue, then they might be inclined to perceive that the company is taking advantage of them and betraying them.

COO is an important extrinsic cue that consumers consider when making decisions about product purchase. The current research here focuses on product country image (PCI) as a conceptualization of COO, where PCI refers to the image that consumers have of products from a specific country. It is expected that the perceived betrayal of the transgressing brand will have a negative effect on the product country image of such a brand—an expectation consistent with Han's conceptualization of PCI as a summary construct (Han, 1989). According to Han (1989), when PCI acts as a summary construct, "consumers can construct country-specific information by generalizing product-information over brands with the same country of origin." Consumers store information they collect about the different brands into the PCI, then use the PCI as a construct to evaluate other brands from the same PCI. The betrayal of the transgressing brand represents new information that consumers abstract into the PCI of the brand. This PCI subsequently impacts consumers' attitudes toward other brands (non-transgressing brands) that originate from the transgressing brand's COO. Recent research also supports that PCI impacts attitudes toward the brands that originate from such a country (Hamzaoui-Essoussi et al., 2011; Pappu et al., 2007). Thus, the current study focuses on the following hypothesis:

Hypothesis 1. The product country image of the transgressing brand will mediate the effects of perceived betrayal of the transgressing brand on the attitude toward the non-transgressing brands of the same country of origin.

2.2. Moderators of the spillover effects

Previous studies show that negative consumers' attitudes resulting from a product-harm crisis will spillover from the transgressing brand to other brands in the same brand portfolio (Lei et al., 2008) and even to different brands in the same category of the product (Janakiraman et al., 2009; Roehm and Tybout, 2006). Such research utilizes the accessibility-diagnosticity model to explain these spillovers (Feldman and Lynch, 1988) and the branding literature (Keller, 1993). According to the brand equity literature, consumers store knowledge about a certain brand represent a set of associations that consumers form with concepts such as attitude towards a brand or country and that these associations form an associative network (Keller, 1993). The accessibility-diagnosticity model asserts that consumers are more likely to incorporate any concept within such an associative network in their judgments and intentions if the concept is more accessible and diagnostic (Feldman and Lynch, 1988).

Furthermore, perceptions of a product-harm crisis that inflicts a brand become accessible and diagnostic and influence the evaluations of other brands when the affected brand is typical of its product category (Roehm and Tybout, 2006) and
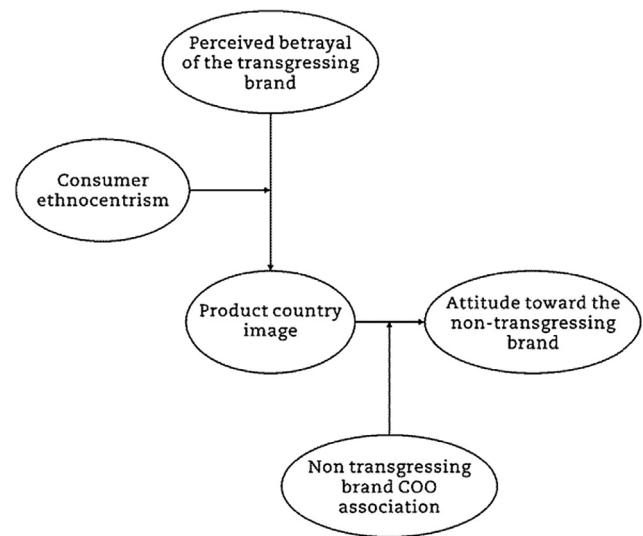

Fig. 1 – Conceptual model.

when consumers view the scandalized brand and the other brands within the same product category as similar (Janakiraman et al., 2009). The current study extends this previous research by suggesting that COO is one of the factors that can enhance accessibility and diagnosticity. The study asserts that the extent to which consumers view the transgressing brands and non-transgressing brands as associated with their COO moderates the indirect effect of betrayal on attitude toward the non-transgressing brands. COO association is the extent to which a consumer views a brand as being a brand from a certain country. When consumers strongly associate the non-transgressing brand with its COO, the effect of PCI becomes greater. This understanding leads to the following hypothesis:

Hypothesis 2. The brand-country association of the non-transgressing brands moderates the mediating effect of PCI. The stronger the brand-country association, the stronger the mediating effect of the PCI.

It is expected that consumer ethnocentrism is another factor that might enhance the accessibility and diagnosticity of the betrayal. Consumer ethnocentrism (CET) is defined as "the beliefs held by consumers about the appropriateness, indeed morality, of purchasing a foreign-made product" (Shimp and Sharma, 1987). Several studies support that consumers scoring high on CET tend to be biased against foreign products in the forms of lower attitudes toward foreign products and a lower intention to buy foreign products (Shankarmahesh, 2006; Sharma et al., 1995). Therefore, it is expected that information about a foreign company's perceived betrayal is likely to be salient to consumers with high levels of ethnocentrism and thus are more likely to incorporate information about the betrayal into their evaluations of the product's PCI.

Hypothesis 3. CET moderates the effect of perceived betrayal on PCI: the stronger the brand-country association, the stronger the effect of the perceived betrayal.

Table 1 – Descriptive statistics of sample characteristics.

Variables	Categories	Number of respondents	Percentages of respondents
U.S. citizen	Yes	371	98.9
	No	4	1.1
Gender	Male	180	48.0
	Female	195	52.0
Annual household income	Below $16,000	49	13.1
	$16,000–$29,999	73	19.5
	$30,000–$74,999	168	44.8
	$75,000–$149,999	69	18.4
	$150,000 or more	15	4.0
	Not reported	1	0.3
Age	18–30	73	19.5
	31–45	78	20.8
	46–60	126	33.5
	Over 60	97	25.9
	Not reported	1	0.3
High level of education attained	Less than high school	8	2.1
	High school degree	79	21.1
	Some college	114	30.4
	2-year college degree	30	8.0
	4-year college degree	102	27.2
	Master's degree	29	7.7
	Doctoral degree	4	1.1
	Professional degree	8	2.1
	Missing	1	0.3
Ethnicity	White/Caucasian	315	84.2
	African American	31	8.3
	Hispanic	8	2.1
	Asian	10	2.7
	Native American	3	0.8
	Other	7	1.9
	Missing	1	0.3

2.3. Conceptual model

In summary, the current study tests a conceptual model in which the PCI of the brand mediates the effect of the transgressing brand's betrayal on the attitude toward the non-transgressing brands of the same COO. This model is consistent with Han's conceptualization of PCI as a summary construct (Han, 1989). The different elements of the conceptual model are shown in Fig. 1. When PCI acts as a summary construct (Han, 1989), consumers store the information they collect about the different brands into the PCI and use the PCI as a construct to evaluate other brands from the same PCI. The model also tests whether two moderators—COO association of the non-transgressing brand and consumer ethnocentrism—moderate the indirect effect of perceived betrayal on the attitude toward the non-transgressing brands' attitude through PCI. This model also controls for the effects of prior brand ownership of the transgressing and non-transgressing brands.

3. Methodology

The study examines the impact of a recall crisis in the Japanese car manufacturer Toyota on the attitudes toward three Japanese brands—namely, Honda, Nissan, and Mazda. Toyota recalled 4.2 million cars in the US in 2009 due to floor mats that could trap accelerator pedals. In 2010, Toyota also recalled 2.3 million cars in the US due to sticking accelerator pedals. During the same year, 1.1 million cars were recalled due to floor mat problems. These three recalls affected Toyota's profit, share price, and reputation. Due to these recalls, the Japanese manufacturer had to pay approximately US$7 billion in litigation fees, and estimated losses were in the billions due to lost sales, reduced manufacturing output, and enhanced incentive campaigns (Marucheck et al., 2011).

The current research uses these product-harm crises as the scenario for the study. The researchers collected data through a web-based survey and used an online consumer panel in the United States to recruit the respondents. Respondents 18 years and older were recruited. The survey was sent out to 900 respondents, and 805 completed the survey. The participants were first asked whether they recall any crises related to any of the automotive companies, and then asked to identify the company implicated, and finally the type of crisis afflicting such a company. Out of the 805 respondents, 375 reported that they had heard that Toyota was recalling several of its models. The sample characteristics are reported in Table 1. The data are balanced with regard to gender (52% females), and the median income of the sample ($30,000–$75,000) was in agreement with the median income in the U.S. ($50,000) (Noss, 2012). The median age of the sample (40 years old) was slightly older than the U.S. median (37 years old) (Howden and Meyer, 2010). This finding, however, is not

Table 2 – List of constructs and items used.			
Constructs and items	Standardized factor loadings		
	H	N	M
Perceived betrayal (Grégoire and Fisher, 2008): 1 = extremely disagree, 7 = extremely agree			
I feel Toyota cheated its customers.	0.91	0.93	0.91
I feel Toyota betrayed its customers.	0.94	0.92	0.91
I feel Toyota lied to its customers.	0.94	0.94	0.91
Toyota intended to take advantage of its customers.	0.81	0.83	0.84
Brand attitude (Roehm and Tybout, 2006): —although Mazda is provided as an example, attitude was assessed for Honda and Nissan as well			
My overall attitude toward Mazda is-Negative: Positive	0.92	0.96	0.96
My overall attitude toward Mazda is-Unfavorable: Favorable	0.99	0.96	0.91
My overall attitude toward Mazda is-Bad: Good	0.70	0.75	0.72
Product country image (Klein, 2002): 1 = extremely disagree, 7 = extremely agree			
Japanese cars are carefully produced and have fine workmanship.	0.87	0.86	0.86
Japanese cars usually show a very clever use of color and design.	0.74	0.73	0.85
Japanese cars show a very high degree of technological advancement.	0.83	0.83	0.80
Japanese cars are usually quite reliable and seem to last the desired length	0.90	0.91	0.92
Brand-country association (Russell and Russell, 2010): 1 = not at all, 7 = very			
To what extent do you perceive each of the following brands as Japanese.	0.94	0.93	0.93
Consumer ethnocentrism (Klein, 2002): 1 = extremely disagree, 7 = extremely agree			
It is not right to purchase foreign products because it puts Americans out of jobs.	0.86	0.91	0.86
A real American should always buy American-made products.	0.88	0.90	0.86
We should purchase products manufactured in America instead of letting other countries get rich off of us.	0.85	0.90	0.88
Americans should not buy foreign products because this hurts American business and causes unemployment.	0.89	0.91	0.87

Note: H = Honda; N = Nissan; M = Mazda.

unexpected since the recruited respondents were 18 years and older, thus resulting in a higher average age in the sample.

The researchers asked respondents who had heard about the incidents to respond to questions about Toyota's perceived betrayal, the attitudes toward three other Japanese brands (i.e., Honda, Nissan, and Mazda), the measure of PCI, and finally the extent to which they perceived each brand as Japanese. To minimize the length of the questionnaire,

Table 3 – Intercorrelation matrices.						
		Perceived betrayal	Consumer ethnocentrism	PCI	Brand COO association	Brand attitude
Honda	Perceived betrayal	0.78	0.16	0.23	0.00	0.01
	Consumer ethnocentrism	0.41	0.75	0.27	0.00	0.03
	PCI	−0.48	−0.52	0.75	0.02	0.22
	Brand COO association	0.06	0.04	0.14		0.00
	Brand attitude	−0.11	−0.19	0.47	−0.05	0.77
	Construct reliability	0.94	0.93	0.90		0.91
	Explained variance	0.78	0.75	0.75		0.77
Nissan	Perceived betrayal	0.81	0.13	0.27	0.03	0.02
	Consumer ethnocentrism	0.36	0.81	0.31	0.03	0.08
	PCI	−0.52	−0.55	0.75	0.00	0.11
	Brand COO association	0.17	0.17	−0.06		0.04
	Brand attitude	−0.15	−0.28	0.34	−0.21	0.80
	Construct reliability	0.95	0.95	0.90		0.92
	Explained variance	0.81	0.81	0.75		0.80
Mazda	Perceived betrayal	0.79	0.14	0.22	0.00	0.03
	Consumer ethnocentrism	0.38	0.75	0.19	0.00	0.00
	PCI	−0.47	−0.43	0.74	0.00	0.08
	Brand COO association	0.07	0.07	−0.07		0.02
	Brand attitude	−0.18	−0.07	0.28	−0.14	0.76
	Construct reliability	0.94	0.92	0.92		0.90
	Explained variance	0.79	0.75	0.74		0.76

Note: AVE for each construct is presented in the diagonal; numbers below the diagonal are the correlations; numbers above the diagonal are squared correlations.

researchers asked respondents to evaluate only two of the three Japanese brands. For example, some respondents evaluated Honda and Nissan while others evaluated Nissan and Mazda, resulting in evaluations of three different models—one for each brand.

Table 2 includes the items used to measure all constructs. The researchers adapted Grégoire and Fischer's measurement to measure Toyota's betrayal and capture the extent to which observers perceived that Toyota had betrayed its customers (Grégoire and Fisher, 2008). In addition, the tool used three items from Roehm and Tybout to measure overall brand attitudes (Roehm and Tybout, 2006). The assessment of PCI of Japanese products used four items from Klein (2002). These items reflect consumers' perceptions of (1) workmanship, (2) technological advancement, (3) reliability, and (4) design of Japanese products. Consistent with previous research, this current study measures PCI at the product level (Verlegh, 2007) as COO perceptions might vary by product category (Ahmed and d'Astous, 2008). The researchers also used an item measuring the strength of country–brand association from Russell and Russell (2010) to measure the extent to which respondents perceived the four brands as Japanese (1 = not at all, 7 = very). A four-item measure of consumer ethnocentrism, adapted from Klein (2002), was used as several studies indicate that consumer ethnocentrism relates to negative attitudes toward foreign products (Sharma et al., 1995; Zarkada-Fraser and Fraser, 2002). Lastly, one question was used to measure brand ownership by asking the respondents if they have owned the brand or not.

4.   Results

This study uses SEM to test the measurement model and then utilizes OLS regression to test the conceptual model while testing mediated moderation using continuous data. The data indicate that the measurement model for all three brands was an acceptable fit (Honda: $\chi^2 = 183$, df = 95, $p < 0.001$, CFI = 0.95, RMSEA = 0.06; Nissan: $\chi^2 = 226$, df = 95, $p < 0.001$, CFI = 0.96, RMSEA = 0.07; Mazda: $\chi^2 = 163$, df = 95, $p < 0.001$, CFI = 0.98, RMSEA = 0.05). In addition, the data establish convergent validity as the composite reliability for each construct exceeds the minimum cutoff value of 0.7, and the average variance extracted (AVE) for all constructs exceeds the cutoff point of

0.5 (Fornell and Larcker, 1981) (Table 3). The data also demonstrate discriminant validity as the AVE for each construct exceeds the squared correlation between the construct and every other construct in the model (Fornell and Larcker, 1981) (Table 3).

Common method variance is often a problem in behavioral research, especially when researchers collect all data at one point in time using the same method (Podsakoff et al., 2003). To address this issue after data collection, Podsakoff et al. (2003) recommended a single-common-method-factor approach whereby all of the indicators in a confirmatory factor analysis can load on their respective constructs as well as one single latent factor to capture the common method variance. If the inclusion of this single latent factor improves the fit of the model, then the study suffers from common method variance, and the analysis should, therefore, include the factor (Podsakoff et al., 2003). In the current study, for all three brands, adding the single common factor to the model resulted in a worse fit (Honda: $\chi^2 = 1151$, df = 79, $p < 0.001$, CFI = 0.77, RMSEA = 0.24; Nissan: $\chi^2 = 1439$, df = 79, $p < 0.001$, CFI = 0.76, RMSEA = 0.27; Mazda: $\chi^2 = 1141$, df = 79, $p < 0.001$, CFI = 0.77, RMSEA = 0.23); therefore, common method variance is not a threat to the validity of the results (Podsakoff et al., 2003).

The current study uses OLS regression to test the conceptual model presented. The procedures suggested by Preacher et al. (2007) and the process module provided by Hayes (2013) to test the moderated mediations were adopted. The 95% confidence intervals generated through bootstrapping (10,000 samples) were used to test for statistical significance as recommend by Preacher et al. (2007).

To test the first hypothesis, two OLS regressions were tested (Tables 4 and 5). First, perceived betrayal, previous ownership of Toyota, and the other Japanese brand were all regressed on PCI. Then perceived betrayal, PCI, previous ownership of Toyota, and the other Japanese brand were all regressed on brand attitude.

The results indicate that perceived betrayal is negatively related to PCI for all three brands (Honda: $b = -0.312$, Nissan: $b = -0.351$, Mazda: $b = -0.316$), that PCI is positively related to brand attitude (Honda: $b = 0.532$, Nissan: $b = 0.354$, Mazda: $b = 0.292$), and that betrayal is not directly related to brand attitude (Honda: $b = 0.051$, Nissan: $b = -0.008$, Mazda: $b = -0.038$) (Tables 4 and 5). However, the results reveal a

Table 4 – Test of mediation using OLS regressions, dependent variable PCI.											
	Honda				Nissan				Mazda		
	Value	p-value	Lower limit	Upper limit	Value	p-value	Lower limit	Upper limit	Value	p-value	Lower limit	Upper limit
Control variables												
Ownership (Toyota)	−0.056	0.362	−0.177	0.065	−0.116	0.059	−0.237	0.004	−0.050	0.350	−0.153	0.054
Ownership Main effect	−0.240	<0.001	−0.354	−0.126	−0.219	0.009	−0.382	−0.056	−0.130	0.093	−0.281	0.022
Perceived betrayal	−0.312	<0.001	−0.391	−0.234	−0.351	0.000	−0.432	−0.270	−0.316	<0.001	−0.394	−0.238
R^2	0.286				0.302				0.230			

Table 5 – Test of mediation using OLS regressions, dependent variable brand attitude.

	Honda				Nissan				Mazda			
	Value	p-value	Lower limit	Upper limit	Value	p-value	Lower limit	Upper limit	Value	p-value	Lower limit	Upper limit
Control variables												
Perceived betrayal	0.051	0.381	−0.063	0.165	−0.008	0.881	−0.116	0.099	−0.038	0.528	−0.154	0.079
Ownership (Toyota)	0.112	0.157	−0.043	0.266	0.065	0.363	−0.075	0.204	−0.070	0.323	−0.209	0.069
Ownership Main effect	−0.484	<0.001	−0.635	−0.333	−0.405	<0.001	−0.595	−0.215	−0.283	0.007	−0.486	−0.080
PCI	0.532		0.361	0.702	0.354	<0.001	0.201	0.507	0.292	0.001	0.124	0.461
R^2	0.339				0.209				0.114			

negative indirect relationship between perceived betrayal and the attitude toward all three non-betraying brands and that this effect is mediated through PCI (Honda: $b = 0.051$, Nissan: $b = −0.008$, Mazda: $b = −0.038$) (Tables 6 and 7). Therefore, the first hypothesis is supported.

Next, the moderated mediation hypotheses were tested. The model was tested in two stages. In the first stage, perceived betrayal, CET, and prior ownership of the betraying and non-betraying brand, as well as the interaction between perceived betrayal and CET, were regressed on PCI. Next, PCI, perceived betrayal CET, and prior ownership of the betraying and non-betraying brand, as well as the interaction between PCI and non-betraying brand COO association, were regressed on the non-betraying brand attitude (Tables 6 and 7). The analysis first examined whether CET moderates the path from perceived betrayal to PCI or not and whether COO association moderates the path from PCI to brand attitudes. The interaction between CET and perceived betrayal was significant (Honda: −0.221, Nissan: −0.257, Mazda: −0.258), as was the interaction between COO association and PCI (Honda: 0.122, Nissan: 0.201, Mazda: 0.171), indicating that the analysis can proceed to examine the indirect relationship at different values of the moderator as recommended by Preacher et al. (2007) (Tables 6 and 7).

Each moderator was examined separately. The process module automatically generates the indirect effect at the mean and at one standard deviation above and below the mean as well as at the bootstrap confidence interval. Upon examining the coefficients of the indirect effect, it was found that the negative indirect effect of betrayal of the brand attitude becomes stronger as CET increases in magnitude (Tables 8–10) and as COO association increases in magnitude (Tables 8–10).

To examine whether this increase in magnitude is significant, a procedure suggested by Hayes (2013), who expresses the moderated mediation as a linear function of the moderator was used. A statistical test of the slope of this function then confirms whether evidence of moderated mediation exists or not. If the bootstrap confidence interval around the slope does not contain zero, then evidence of a moderated mediation exists.

The linear function linking the indirect effect of perceived betrayal on brand attitudes through PCI to CET is expressed as

$$W = a_1 b_1 + a_3 b_1 V \tag{1}$$

where V is COO association, a_1 is the coefficient of the perceived betrayal on PCI, b_1 is the coefficient of PCI on brand attitude, and a_3 is the coefficient of the interaction between PCI and COO association. The slope of the function $(a_3 b_1)$ represents the index of moderation. If this function is applied to Nissan, it results in the following

$$W = (−0.258 \times 0.292) + (−0.068 \times 0.292) \times V \tag{2}$$

Table 6 – Tests of moderated mediation, dependent variable PCI.

	Honda				Nissan				Mazda			
	Value	p-value	Lower limit	Upper limit	Value	p-value	Lower limit	Upper limit	Value	p-value	Lower limit	Upper limit
Control variables												
Ownership (Toyota)	−0.024	0.670	−0.137	0.088	−0.052	0.357	−0.163	0.059	−0.014	0.781	−0.112	0.084
Ownership Main effect	−0.212	<0.001	−0.318	−0.106	−0.166	0.0288	−0.315	−0.017	−0.110	0.116	−0.246	0.027
Perceived betrayal	−0.221	<0.001	−0.303	−0.138	−0.257	<0.001	−0.337	−0.178	−0.258	<0.001	−0.336	−0.180
CET	−0.240	<0.001	−0.330	−0.150	−0.274	<0.001	−0.361	−0.187	−0.211	<0.001	−0.296	−0.126
Interaction effect												
Perceived betrayal x CET	−0.075	0.013	−0.134	−0.016	−0.077	0.012	−0.136	−0.017	−0.067	0.031	−0.127	−0.006
R^2	0.376				0.429				0.315			

Table 7 – Tests of moderated mediation, dependent variable brand attitude.

	Honda				Nissan				Mazda			
	Value	p-value	Lower limit	Upper limit	Value	p-value	Lower limit	Upper limit	Value	p-value	Lower limit	Upper limit
Control variables												
Perceived betrayal	0.070	0.214	−0.041	0.181	0.016	0.754	−0.086	0.118	−0.023	0.693	−0.138	0.092
Ownership (Toyota)	0.118	0.121	−0.031	0.267	0.054	0.416	−0.077	0.186	−0.074	0.282	−0.209	0.061
Ownership	−0.497	<0.001	−0.643	−0.351	−0.402	<0.001	−0.581	−0.223	−0.255	0.009	−0.446	−0.063
Main effect												
PCI	0.538	<0.001	0.371	0.705	0.276	<0.001	0.131	0.453	0.202	0.023	0.029	0.376
COO association	−0.140	0.002	−0.228	−0.051	−0.154	0.001	−0.243	−0.065	−0.086	0.064	−0.1173	0.005
Interaction effect												
PCI x COO association	0.122	0.022	0.018	0.226	0.201	<0.001	0.110	0.291	0.171	0.003	0.060	0.282
R^2	0.380				0.310				0.150			

$$W = -0.075 - 0.020V \tag{3}$$

The index of moderation is negative (−0.020), meaning that the indirect effect becomes more negative as CET increases. Next, the analysis tested whether this index is significantly different than zero using bootstrap intervals to provide a formal test of the moderated mediation effect. Each moderator was tested separately. The analysis first tested whether CET moderated the indirect relationship between perceived betrayal and brand attitude or not; the results revealed that the moderated mediation indices for all three brands were significantly different from zero, indicating that CET moderated the relationship (Tables 8–10). The analysis tested whether the COO association moderated the indirect relationship between perceived betrayal and brand attitude or not. The results revealed that the moderated mediation indices for all three brands were significantly different from zero, indicating that the COO association moderated the relationship (Tables 8–10). Thus, hypotheses 2 and 3 are supported.

5. Discussion

According to this study's literature review, limited research has examined whether effects from a product-harm crisis affect brands from the same COO that are not involved in the product-harm crisis. This research attempts to fill this gap. Managers should be able to gauge how product-harm crises involving other companies could affect their company and under what conditions this effect would occur. The results indicate that product-harm crises have an indirect effect on brands from the same COO. Perceptions of a company's betrayal do not have a direct negative impact on attitudes toward other brands from the same COO, but rather have indirect effects through the PCI of its COO.

These results suggest that the perception of betrayal is crucial to the formation of a negative PCI. Thus, brands from the non-transgressor's COO should not make the transgressor's betrayal salient, which might hurt their brands. For example, using the examined Toyota scenario, if Honda makes the betrayal of Toyota salient through comparative advertising, Honda's efforts might actually hurt the company directly through consumers' image of Japanese products. Future research should examine the extent to which comparative advertising impacts non-transgressing brands that originate from the same country as the transgressing brand. The current results suggest that the non-transgressing companies might even assist the transgressing company to recover from such crises if consumers perceive a strong association between the non-transgressing brands and transgressing brands. For example, their advertisements should be designed to limit the potential spillover by not referring to the affected brand or affected features in the vehicle. Furthermore, foreign trade ministries can intervene to assist companies in responding to such crises. For example, they can assist companies from the same COO to form a relief fund to help the affected company.

The negative effects of product-harm crises might not extend to any company originating from the transgressing brand's COO. The extent to which consumers perceive the non-transgressing brand to be from the COO of the PCI measured moderates the indirect effect of the transgressing brand's betrayal on the attitude toward the non-transgressing brands. These results suggest that, if consumers do not

Table 8 – Conditional indirect effects and indices of moderation, COO association as a moderator.

	Honda				Nissan				Mazda			
	Value	p-value	Lower limit	Upper limit	Value	p-value	Lower limit	Upper limit	Value	p-value	Lower limit	Upper limit
Low COO association	−0.133	0.038	−0.216	−0.065	−0.014	0.041	−0.091	0.066	0.004	0.047	−0.083	0.100
Mean	−0.166	0.036	−0.244	−0.105	−0.098	0.037	−0.161	−0.045	−0.065	0.031	−0.135	−0.007
High COO association	−0.199	0.047	−0.306	−0.121	−0.182	0.030	−0.263	−0.119	−0.133	0.036	−0.213	−0.068

Table 9 — Conditional indirect effects and indices of moderation, CET as a moderator.

	Honda				Nissan				Mazda			
	Coefficient	*p*-value	Lower limit	Upper limit	Coefficient	*p*-value	Lower limit	Upper limit	Coefficient	*p*-value	Lower limit	Upper limit
Low CET	−0.149	0.047	−0.244	−0.064	−0.060	0.022	−0.118	−0.027	−0.054	0.021	−0.105	−0.022
Mean	−0.165	0.036	−0.244	−0.103	−0.091	0.026	−0.154	−0.049	−0.075	0.026	−0.136	−0.030
High CET	−0.182	0.041	−0.276	−0.110	−0.122	0.035	−0.198	−0.059	−0.096	0.036	−0.172	−0.034

Table 10 — Conditional indirect effects and indices of moderation, moderated mediation index.

	Honda				Nissan				Mazda			
	Coefficient	*p*-value	Lower limit	Upper limit	Coefficient	*p*-value	Lower limit	Upper limit	Coefficient	*p*-value	Lower limit	Upper limit
CET	−0.041	0.032	−0.084	−0.009	−0.027	0.012	−0.118	−0.034	−0.019	0.024	−0.049	−0.002
TYP	−0.032	0.041	−0.075	−0.006	−0.070	0.037	−0.055	−0.008	−0.054	0.017	−0.111	−0.014

associate a brand with the transgressor's COO, the product-harm crises might have less of an impact on brand attitude than when they associate a brand with the transgressor's COO. Thus, managers should assess the extent to which consumers perceive their brand to be from the transgressor's COO. In the context of service failures, previous research supports that consumers perceive betrayal when they perceive low levels of distributive, interactional, and procedural fairness in the recovery process (Grégoire and Fisher, 2008). Applying these findings to product-harm crises, it is expected that companies that do not react swiftly, in an empathetic manner, and with appropriate compensation might be perceived as betrayers. Thus, non-transgressing brands that are strongly associated with a transgressing brand must quickly help the transgressing brand react quickly and positively to product-harm crises to avoid spillover effects. Another interesting implication that emerges is that companies should consider not trying to promote their association with their COO if the company is not strongly connected to the COO and if other competing companies from the same COO face product-harm crises.

In the case examined, Toyota was clearly responsible for the product-harm crises; no third-party involvement occurred. However, other cases (e.g., Ford Explorer crisis in 2001) have involved a third party (e.g., Firestone). In such cases, ethnocentric consumers might shift the blame to the third party if it is perceived as a foreign company. The current study's results provide initial evidence for such an assertion as consumer ethnocentrism moderates the impact on the betrayal on PCI. Thus, future research should examine whether consumers with high consumer ethnocentrism are more likely to shift the blame from the local to a foreign company. In addition, anecdotal evidence suggests that Toyota is an iconic Japanese brand in the United States. Thus, the impact of the incident on the image of Japanese was great. Future research should examine the extent to which the current results hold when the transgressing brand is not an iconic brand of its COO.

In this study, only consumers who recalled the crisis were allowed to participate in the study. To quantify the impact of the product-harm crises, future research should consider comparing the behavior of participants who recall the incident to those who do not. Also, the impact of the perceived betrayal of a brand on other brands from the same COO was examined. An interesting avenue for future research would be to examine the impact of the perceived betrayal of a brand on the trust toward that brand.

This study finds that the perceived betrayal of a vehicle brand has negative spillover effects on vehicle brands from the same COO. However, the study did not consider that the incident might have positive spillover effects. It is suspected that the Toyota crises could have a positive impact on the PCI of U.S. products as well as the attitude to U.S. brands like Ford, Chevrolet, and Chrysler. It is also suspect that these positive effects might be higher for consumers who score high on consumer ethnocentrism or patriotism.

This study involved a cross-sectional study of a real product-harm crisis. Future studies should employ an experimental design to examine whether perceived betrayal leads to a worse PCI. In this study, the impacts of betrayal on PCI were studied. Future studies should examine the impact on the trust toward the brand itself as well as the COO as a whole.

Conflict of interest

The authors do not have any conflict of interest with other entities or researchers.

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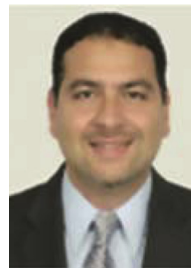
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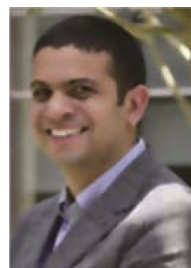
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