Momentum in Social Media and Offline Sales after Automobile Recalls

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Abstract

Many firms have turned their attentions to social media to manage their recall campaigns due to the unique nature of social media. However, the role of social media before and after recalls has only received limited attention. This study attempt to (1) investigate the impact of social media contents related to customers' attentions to U.S. mid-size vehicle recalls on offline car sales, and (2) examine how the role of momentum in social media before and after the recall process is associated with automobile sales. We obtained all mid-size automobile recall events and supplemented with social media data on customers' discussion on defected vehicles and firms' recall process from around 1,000 different social media platforms from 2010 to 2015. Our results suggest that social media is a double-edged sword in the setting of vehicle recalls. Implications and future plans are discussed.

Keywords: Social media, momentum, offline car sales, U.S. mid-size vehicle recalls

Introduction

Automobile recalls in 2014 have reached a record of 63.5 million vehicles in 800 separate recall campaigns (Shepardson 2015). Recalls may expose firms to potential legal liability and reputation damage (Krisher 2015; Rhee and Haunschild 2006) and lead to losses in sales and market share (Chen et al. 2009; Van Heerde et al. 2007). For example, in 2010, Toyota announced a series of worldwide recalls of nine million vehicles due to the issues of accelerator pedals and floor mats. These recall events resulted in a loss of $2 billion because of the drop of worldwide sales (News 2010). Due to the potentially devastating effects of product recalls, firms need to show their dedication to consumer safety and issue rapid managerial actions to mitigate the impact during and after recall events (Liu and Shankar 2015).

One of the key processes in a recall campaign for the firm is to quickly and effectively disseminate recall information to a wide network of parties, including regulators, vehicle manufactures, and vehicle owners (Borah and Tellis 2016; Lee et al. 2015). Traditionally, when the vehicle manufacturers or the National Highway Traffic Safety Administration (NHTSA) issues a recall, the manufacturers are required by law to notify their customers via first class mail so that vehicle owners can take vehicles to dealers. However, a large body of vehicle owners either did not receive the recall notification or decided not to fix it, suggesting that there is still a huge gap between firms’ dedications on effective recall companions and customers’ awareness.
Momentum in Social Media and Offline Car Sales

Due to the unique nature of social media, many car manufacturers have turned their attentions to social media in an attempt to effectively engage and notify affected customers in a targeted manner, while letting them know the firm has the consumers’ well-beings in mind during the recall process (Abrahams et al. 2012; He et al. 2015; Lee et al. 2015). The Consumer Product Safety Commission (CPSC) has also set up a social media guide for firms issuing recalls.1 Although anecdotal evidence suggests that firms can leverage social media to increase customer awareness and mitigate the impact of a recall, social media may at the same time expedite the dissemination of the negative information2 and hurt the recall firm’s reputation (Borah and Tellis 2016). Additionally, most of the existing literature focuses exclusively on the “bright side” of social media, namely, social media as a new marketing channel (e.g., Chen et al. 2015; Wang et al. 2015). Our understanding about how firms could leverage social media to handle negative events is very limited. To the best of our knowledge, there has not been an in-depth investigation about the role of social media before and after product recalls. Therefore, scholars call for more systematic studies for the role of social media in the context of product recalls (Borah and Tellis 2016; Liu and Shankar 2015).

To fill in the current research gap, this research-in-progress attempts to (1) investigate the impact of social media contents related to customers’ attentions to U.S. mid-size vehicle recalls on offline car sales, and (2) examine how the role of momentum in social media before and after the recall process is associated with automobile sales. We focus on the mid-size segment because it is one of the most competitive segments in the U.S. automobile industry (Kallstrom 2015). Momentum refers to a sustained trend or repetitive actions by firms (Amburgey and Miner 1992; Kelly and Amburgey 1991; Lehman and Hahn 2013) and is defined as a systematic and sustained trajectory in social media sentiment of automobile recalls. Momentum has been examined in various settings such as merger activity (e.g., Amburgey and Miner 1992), financial portfolio management (e.g., Jegadeesh and Titman 2001), and dynamic performance (e.g., Lehman and Hahn 2013). In particular, it is the influential and customers’ consistent reaction regarding recalls on social media that would change the purchase intention and subsequent sales. We argue that once a recall occurs, the existing momentum may be interrupted or magnified, which would change customers’ purchasing activities on vehicles.

We focus on the U.S. automobile industry because of its considerable economic significance and its increasing reliance on social media marketing (eMarketer 2015; Tang et al. 2014). Due to its increasing reliance on social media marketing, customers also actively participate in numerous social media sites dedicated to the automobile industry (Borah and Tellis 2016). In addition, the number of automobile recalls is also greater than the number of all other product recalls in the U.S. (Chen et al. 2009; Tang et al. 2014) and therefore represents an appropriate setting to examine the role of social media in this regard. To address our research questions, we obtained all mid-size automobile recall events from the NHTSA and supplemented with social media buzz related to the recall discussions from January 2010 to June 2015. Our unique dataset on social media buzz covers around 1,000 different social media channels and thus allows us to have a comprehensive understanding about the impact of social media and the role of momentum in social media in the setting of vehicle recalls.

Our findings suggest that social media is a double-edged sword in the setting of vehicle recalls. Specifically, social media buzz about customers’ discussions on the defected vehicles and the recalling firms’ approaches to address quality concerns positively influence offline car sales. This positive impact of negative publicity on offline car sales may result from the increase in customers’ product awareness (Berger et al. 2010). However, when we take the change in momentum before and after automobile recalls into account, the higher the change in the momentum, the stronger the negative effect on automobile sales and such effect lasts for about four months though in a decreasing rate. Our study expects to contribute to the current literature by showing that social media could be a double-edged sword in the setting of product recalls. In particular, though more discussions can increase the visibility of the firm, the higher the positive image of the firm on social media before product recalls, the stronger the negative impact of product recalls on the firm’s sales.

This research-in-progress expects to contribute to the current literature by showing that social media could be a double-edged sword in the setting of product recalls and the underlying mechanisms that firms could leverage to develop their social media strategy to handle negative events. Furthermore, our examination on the role of social media and its momentum at the car model level could provide more depth and more insights than aggregate analyses. Managers also could leverage our findings for predicting the potential effect of product recalls on product sales in the future.

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2 http://www.nytimes.com/2014/03/24/business/after-huge-recall-gm-speaks-to-customers-through-social-media.html?_r=2
This research-in-progress is organized as follows. We briefly review relevant studies in the next section. Following that, we discuss our research methodology and preliminary results. We conclude with implications and our future plans.

**Literature Review and Hypothesis Development**

Our study is related to the existing literature that studies how firms handle recall events and how social media can influence marketing performance. After a careful review of relevant studies in this field, existing research on product recalls can be classified into three broad streams: (1) the appropriate strategy and managerial action during and after recalls (e.g., Chen et al. 2009; Cleeren et al. 2013; Laufer and Coombs 2006), (2) how consumers respond to recalls based on their expectations of the concerned brands (e.g., Dawar and Pillutla 2000; Lei et al. 2012), and (3) the impact of recalls on various performance measures (e.g., Freedman et al. 2012; Kalaignanam et al. 2013; Van Heerde et al. 2007). In the first stream of the literature, for example, Cleeren et al. (2013) assess the effects of post-crisis advertising and price adjustments on the change in consumers’ brand share and category purchases. They find that the effects were moderated by negative publicity and blame acknowledgment. In the second stream of the literature, many studies conducted lab experiments to study how customers’ existing expectations of the concerned brands would influence their responses to recalls. For instance, Lei et al. (2012) examine whether and how base-rate information affects consumers’ attribution of a product-harm crisis. In the setting of recalls, base-rate information refers to the frequency of recalls in the industry. Their results suggest that for brands with positive prior beliefs, a high (versus low) base-rate of product-harm crises leads to less blame if the crisis is similar to others in the industry. The last stream of research has examined the impact of recalls on various marketing performance. For example, Liu and Shankar (2015) study the dynamics in brand preference, advertising effectiveness, and consumer response to product recalls in the automobile industry and indicate that consumers respond more negatively to vehicle recalls with greater media attention, more severe consequences, and higher perceived product quality.

Although prior research provides some understandings on product recalls in different settings, they provide very limited insights on the role of social media before and after recalls with some exceptions in Borah and Tellis (2016) and Lee et al. (2015). Because product recalls can have devastating effects on brand preferences and sales (Liu and Shankar 2015), when a recall occurs, firms need to increase consumer awareness of the potential product defects in a timely manner, ask consumers to stop using the potentially hazardous product, and rebuild the brand reputation effectively (Lee et al. 2015; Prince and Rubin 2002). Social media enables a firm to update information rapidly and spread continual disclosure virally at an unprecedented speed to its customers and stakeholders (Luo et al. 2013). Given that product recalls involve uncertainty and increase information demand for all influenced parties, the unique nature of social media can provide additional details more efficiently on how the firm is dealing with the recall and addressing related quality concerns (Lee et al. 2015). Although Borah and Tellis (2016) provide the initial understanding of the role of social media in the setting of recalls, this study is different from theirs in the following ways. First, we focus on a wide range of social media discussions and car brands in a longer time period. Second, we consider how the existing momentum in social media would be interrupted due to the recall events and how this change would influence customer demands.

In particular, the current literature suggests that social media is one of the effective channels for firms to detect vehicle defect efficiently before it becomes crisis (Abrahams et al. 2015; Abrahams et al. 2012). In other words, if firms can monitor customers’ complaints or feedback on the defected vehicles effectively via social media interactions and address those concerns appropriately, these firms can still improve their product design and regain credibility. Furthermore, when a product recall constitutes a product crisis, the primary goals of the firm are to minimize the potential harm caused by the product and to repair damage to the firm’s reputation (Dawar and Pillutla 2000). Through social media, firms can reach a large network of customers quickly and show care and empathy for those affected by the product hazard efficiently, thereby lessening customers’ negative perceptions of the firm (Lee et al. 2015). Although customers’ complaints on the defected vehicles and discussions on firms’ approaches to handle recalls tend to be negative in essence, these negative publicity can still increase sales by increasing product awareness from both firms and customers perspectives (Berger et al. 2010). Thus, we hypothesize:

**H1: There is a positive association between the number of posts on social media and offline automobile sales.**

However, the first hypothesis fails to consider the change in the long-term trajectory of the firm’s image on social media due to product recalls. This long-term trajectory is labeled as momentum, which is the sustained trend or repetitive actions by firms (Amburgey and Miner 1992; Kelly and Amburgey 1991). Prior research has shown that decision makers look to momentum when forming expectations about future performance because they believe that
past trends will naturally persist and extend into the future (Bar-Eli et al. 2006; Gilovich et al. 1985). Momentum may also shape expectations of future performance by affecting the collective efficiency of organizational members (Audia et al. 2000; Lindsley et al. 1995). Thus, it is plausible to argue that the change in momentum in social media due to product recalls would change customers’ expectations on firms and then influences customer demands. In particular, in our setting, momentum in social media sentiment is customers’ consistent discussions on vehicle defects and firms’ approaches to address related concerns and handle recalls. We posit that once a recall occurs, the existing momentum in social media will be interrupted and this change would have the negative impact on offline car sales. Therefore, we formally state our second hypothesis:

**H2: The change in momentum after product recalls is negatively associated with offline automobile recalls.**

**Research Methodology**

**Research Context and Data**

In this study, as mentioned in the Introduction, we focus only on the U.S. mid-size automobile recalls from January 2010 to June 2015. We only focus on the mid-size segment because the mid-size segment is one of the most competitive segments (Kallstrom 2015). Thus, it represents an appropriate setting to measure the role of social media in the context of automobile recalls and momentum in social media before and after the recall process. The vehicle recalling process in the U.S. can be summarized briefly as follows. Vehicle manufactures can voluntarily issue recalls, or recalls can be ordered by the NHTSA. Voluntary or not, almost all car recalls are promoted by complaints that consumers make to the manufacturers or to NHTSA’s Office of Defects Investigation (ODI). If consumers file a sufficient number of complaints, or if a few complaints indicate a significant safety issue, the NHTSA can take a series of investigative steps that can lead to a recall order. Once a recall is ordered, federal law requires manufacturers to notify all registered owners by registered mail.

From this recalling process, as a first step of our data collection process, we obtained all mid-size automobile recall event data from the NHTSA from January 2010 to June 2015. In our final dataset, there are 34 mid-size car models from 18 car brands with 154 recall events involving about 13.84 million passenger cars. The average product recall event involves about 89,310 cars.

Based on this initial sample of recall events, we collected social media buzz specially related to discussions on defected vehicles and firms’ approaches to address quality related concerns and handle recalls by using a combination of web crawler and artificial intelligence based text miner provided by a third party commercial software. To start our data collection, we prepared a set of recall and quality concern keywords and used the combination of these keywords and the recall model (e.g., Audi A3) to identify our search boundary and collect social media buzz using the third party commercial software. To better understand the role of social media in the setting of recalls and how social media momentum changes over time, we collected social media buzz that occurred before and after 12 months of each recall event. The dataset includes information associated with automobile recalls on different platforms of social media (e.g., Facebook), various forums such as Automotiveforum.com, and review sites such as Edmunds.com. Approximately 1,000 different social media sites are included in our dataset. Please note that the algorithm from the third party commercial software did not take into account duplicated posts and we did not impose any weight on each single post.

The third party software then used its proprietary algorithm that quantifies the content of these social media buzz on two dimensions at the document level: volume (\(LNDOC\); the logarithm of total number of posts) and sentiment (\(LNPOS\), \(LNNEG\) and \(LNNEU\) for the logarithm of positive, negative, or neutral posts). To classify sentiment of posts, the third party software provider used its proprietary algorithm that quantifies the content of the post into positive, negative, or neutral posts.

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4 These 34 car models include Acura ILX, Audi A3, Buick LaCrosse, Buick Regal, Buick Verano, Chevrolet Camaro, Chevrolet Malibu, Chrysler 200 Series, Chrysler Sebring Sedan, Dodge Avenger, Dodge Challenger, Ford-C-Max, Ford Fusion, Ford Mustang, Honda Accord, Hyundai Azera, Hyundai Sonata, Kia Optima, Mazda 6, Mercedes CLA, Mitsubishi Galant, Nissan 370z, Nissan Altima, Nissan Leaf, Subaru Impreza, Subaru Legacy, Subaru WRX, Toyota Camry, Toyota Prius, Volkswagen CC, Volkswagen Passat, Volvo 30-Series, Volvo 40-Series, and Volvo 50-Series.
Following the current literature (e.g., Lehman and Hahn 2013), we calculated the momentum as follows. For each time period, we calculate the difference between the number of positive and negative posts. Momentum is the accumulation of this difference across periods, i.e., the long-term trend of a positive or negative image of the firm on social media. CHGMOMENTUM is the change in momentum one month before the recall month and one, two or four months after the recall. We collected monthly offline car sales (LNSALES, the logarithm of sales) and the listed prices (LNPRICE, the logarithm of prices) from the WardsAuto Premium database, and traditional media expenditure (LNEXP, the logarithm of expenditure) from Kantar Media. We also collected the consumer search volume index (GOOGLE) in the U.S. from Google Trends to control for the popularity effect of each car model. Finally, we collected some macroeconomic indicators to control for their potential impacts on offline car sales, including the monthly gasoline price index from U.S. Bureau of Labor Statistics, the conference board’s consumer confidence index. We focused on monthly data because offline car sale data is only available at the monthly level. Our final panel contains a total of 3,645 car model-month observations.

From the above discussion, we use Equation (1) and Equation (2) to test our hypotheses. Both equations are estimated with ordinary least square (OLS) models after controlling for year fixed effects and brand clustered standard errors. The dependent variable is captured at $t+1$ while all model specific independent variables are for model at time $t$ unless otherwise specified.

\[
\begin{align*}
LNSALES & = \beta_0 + \beta_1 LNDOC + \beta_2 LNPRICE + \beta_3 LNEXP + \beta_4 GOOGLE + \beta_5 CCI + \gamma Year + \varepsilon \\
LNSALES_{after} & = \beta_0 + \beta_1 CHGMOMENTUM + \beta_2 LNPRICE + \beta_3 LNEXP + \beta_4 GOOGLE + \beta_5 CCI + \gamma Year + \varepsilon
\end{align*}
\]

In Equation (1), we perform the analysis based on LNDOC or LNPOS, LNNEG, and LNNEU. For Equation (2) $LNSALES_{after}$ is the logarithm of sales after the recall, and it is either the first, the second, or the fourth month after the recall matching the time period used for CHGMOMENTUM.

### Results

Our results are presented in this section. First, Table 1 shows the descriptive statistics of the variables used in our analyses. In order to better explain the statistics, these numbers are not logarithm transformed (without the prefix LN). On average, the sales revenue is $11,000 million. In addition, there are on average 69 posts on social media and relatively more negative posts. The selling price of the cars is about $24,000 on average with $8.1 million of traditional media spending. The un-tabulated Pearson correlations demonstrate that none of the independent variables have high correlations.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>1st Quartile</th>
<th>2nd Quartile</th>
<th>3rd Quartile</th>
</tr>
</thead>
<tbody>
<tr>
<td>SALES</td>
<td>3,645</td>
<td>11,000.000</td>
<td>10,000.000</td>
<td>3,172.000</td>
<td>6,771.000</td>
<td>17,000.000</td>
</tr>
<tr>
<td>DOC</td>
<td>3,645</td>
<td>69,352</td>
<td>52,615</td>
<td>9,000</td>
<td>24,000</td>
<td>69,000</td>
</tr>
<tr>
<td>POS</td>
<td>3,645</td>
<td>21,101</td>
<td>50,902</td>
<td>3,000</td>
<td>10,000</td>
<td>24,000</td>
</tr>
<tr>
<td>NEG</td>
<td>3,645</td>
<td>26,659</td>
<td>68,122</td>
<td>2,000</td>
<td>6,000</td>
<td>25,000</td>
</tr>
<tr>
<td>NEU</td>
<td>3,645</td>
<td>14,463</td>
<td>40,359</td>
<td>0,000</td>
<td>4,000</td>
<td>12,000</td>
</tr>
<tr>
<td>EXP</td>
<td>3,645</td>
<td>1,100,000.000</td>
<td>10,000,000.000</td>
<td>480,000.000</td>
<td>4,100,000.000</td>
<td>12,000,000.000</td>
</tr>
<tr>
<td>PRICE</td>
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<td>24,000.000</td>
<td>3,763,219</td>
<td>22,000.000</td>
<td>23,000.000</td>
<td>26,000.000</td>
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<td>GOOGLE</td>
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<td>51,186</td>
<td>17,402</td>
<td>38,000</td>
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<td>62,000</td>
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<td>GPI</td>
<td>3,645</td>
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<td>2,945</td>
<td>3,502</td>
<td>3,690</td>
</tr>
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<td>CCI</td>
<td>3,645</td>
<td>78,651</td>
<td>13,876</td>
<td>68,700</td>
<td>79,400</td>
<td>90,300</td>
</tr>
</tbody>
</table>

Table 1. Descriptive Statistics

Our results are given in Table 2. There are five columns in Table 2. The first two columns are the results for our H1 and the last three columns are the findings for H2. The dependent variables for the first two models are LNSALES. The result in Model (1) shows that social media buzz (LNDOC), as measured by customers’ discussions on defected vehicles and firms’ approaches to address quality related concerns and handle recalls, positively influences offline car sales, supporting our H1. In addition, as expected, expenditures spent on traditional media (LNEXP), the popularity as captured by Google search index (GOOGLE), and the confidence index (Moon et al.) are all positively associated with sales revenue, the listed prices (LNPRICE) are negatively associated with sales revenue. Model (1) only considers the number of social media posts but does not take into account the sentiment of each post. In Model (2), we decompose the total number of posts into positive, negative, and neutral. The results demonstrate that
positive posts (LNPOS) and negative posts (LNNEG) positively influence office sales, supporting our H1 again, while neutral posts (LNNEG) do not have any impact on offline car sales. The fact that negative posts have the positive impact on sales seems to be contradictory at the first glance. However, it is possible that the social media interactions increase the visibility of the firm’s recalling program. In other words, although customers’ discussions on defected vehicles and the firm’s recalling program tend to be negative in essence, this negative publicity can still increase customers’ product awareness and then increase sales (Berger et al. 2010).

We next turn our attention to the change in momentum before and after the recall. Models (3), (4), and (5) focus on the change in social media momentum from one month prior to the recall to one month, two months, and four months after the recall, respectively. The findings in Models (3), (4), and (5) show that the change in momentum is negatively associated with the sales after recall. However, the negative effect decreases as time passes. The results from the change in momentum are intuitively appealing and can imply that social media is a double-edged sword in the setting of product recalls. It should note that to test some potential multicollinearity issues on independent variables, we changed our few variables to run our analysis and received similar results, suggesting that multicollinearity is not a major concern in our setting.

The mechanisms regarding the role of social media before and after recalls could be summarized as the followings. From the firms’ perspective, they can monitor customers’ discussions on defected vehicles and spread information about how they handle quality related concerns and recalls more efficiently via social media. Simultaneously, from the customers’ perspective, social media buzz on those defected vehicle and the firms’ recalling program can increase their product awareness. In other words, this negative publicity can still positively influence offline car sales by increasing customers’ product awareness (Berger et al. 2010). However, if firms cannot address customers’ complaints in a timely manner (i.e., a recall occurs), customers would lower their expectations and these changes would have the negative impact on sales, suggesting that social media plays different roles before and after recalls.

<table>
<thead>
<tr>
<th>Variables/DV</th>
<th>Model (1) LNSALES</th>
<th>Model (2) LNSALES</th>
<th>Model (3) LNSALES</th>
<th>Model (4) LNSALES</th>
<th>Model (5) LNSALES</th>
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<td>Intercept</td>
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<td>36.170***</td>
<td>38.360***</td>
<td>39.430***</td>
<td>39.340***</td>
</tr>
<tr>
<td></td>
<td>(5.63)</td>
<td>(5.65)</td>
<td>(6.93)</td>
<td>(6.64)</td>
<td>(6.65)</td>
</tr>
<tr>
<td>LNDOC</td>
<td>0.124**</td>
<td>0.123**</td>
<td>0.125**</td>
<td>0.120**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.29)</td>
<td>(2.33)</td>
<td>(2.33)</td>
<td>(2.22)</td>
<td></td>
</tr>
<tr>
<td>LNPOS</td>
<td>0.105*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.95)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNNEG</td>
<td>0.067**</td>
<td>0.073**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.12)</td>
<td>(2.12)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNNEU</td>
<td>-0.027</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(-0.93)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CHGMOMENTUM1</td>
<td>-0.001***</td>
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<td></td>
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<tr>
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<tr>
<td>CHGMOMENTUM2</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>(-1.75)</td>
<td></td>
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<tr>
<td>CHGMOMENTUM3</td>
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<td></td>
<td></td>
<td></td>
<td>-0.000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>LNEXP</td>
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<td>0.120***</td>
<td>0.099***</td>
<td>0.107***</td>
<td>0.104***</td>
</tr>
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<td></td>
<td>(4.31)</td>
<td>(4.33)</td>
<td>(4.93)</td>
<td>(5.13)</td>
<td>(4.15)</td>
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<tr>
<td></td>
<td>(-5.10)</td>
<td>(-5.17)</td>
<td>(-5.86)</td>
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<tr>
<td>GOOGLE</td>
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<td>0.0113**</td>
<td>0.007</td>
<td>0.005</td>
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<td>(2.47)</td>
<td>(1.35)</td>
<td>(0.95)</td>
<td>(1.49)</td>
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<td>0.0581</td>
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<td>-0.103**</td>
<td>-0.120**</td>
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<td></td>
<td>(0.55)</td>
<td>(0.84)</td>
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<td>(-2.60)</td>
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<tr>
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<td>0.001</td>
<td>0.003*</td>
<td>0.004***</td>
</tr>
<tr>
<td></td>
<td>(4.30)</td>
<td>(4.16)</td>
<td>(0.94)</td>
<td>(1.76)</td>
<td>(3.40)</td>
</tr>
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<td>N</td>
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<td>adj. R²</td>
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<td>0.624</td>
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<tr>
<td>F</td>
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Table 2. Empirical Results
Conclusion and Future Plans

The objective of this research-in-progress is to have a more detailed examination of how the interactions on social media may affect car sales before and after product recalls. Our findings suggest that social media buzz about customers’ discussions on recall and the recalling firms’ approaches to address related concerns positively influence offline car sales. This positive impact of negative publicity on offline car sales may result from the increase customers’ product awareness. However, when considering the change in momentum in social media, we find that the larger the change in the momentum, the stronger the negative effect on automobile sales and such effect gradually decreases in the first four months after the recall. These findings suggest that social media in the context of product recalls is a double-edged sword. Specifically, more discussion can at the same time increase the visibility of the recalling firm but such strong momentum on social media may harm more to the firm when a recall occurs. Although firms can monitor customers’ feedbacks on defected vehicles and spread out recall related information more efficiently through social media, customers may lower their expectations on firms if firms cannot address related quality concerns in a timely manner (i.e., a recall occurs).

Our future plans for this research-in-progress are the followings. First, building upon the current findings, we would take competitors’ strategic reactions into account. The competitors’ strategic reactions are defined as all externally directed, specific, and observable newly created moves (e.g., new products, product improvements, price cuts) initiated by a firm to enhance its competitive position (Jacobson 1992; Young et al. 1996). Specifically, recall is not a static decision that only affects the recalling firm, spillover effects may be changed due to the competitors’ strategic reactions. Such reactions from rivals can potentially moderate the association between the social media momentum after product recalls and purchasing decisions. We plan to include competitors’ strategic actions in our model to better understand the dynamics of social media in the setting of product recalls. Second, we are interested in how the current findings would vary by firm characteristics. In our current dataset, we have the US-based firms (e.g., Ford), Asian-based firms (e.g., Toyota), and European-based firms (e.g., Volkswagen). We plan to examine how the impact of social media and change in momentum would vary by this factor. Finally, we would take the SUV and small-size segments into account, which are two other competitive segments in the U.S. automobile industry. Depending on different segments, customers’ preferences may vary. Thus, including two more segments could help us have a more comprehensive understanding about the role of social media in the setting of product recalls.

More of the existing focuses considerably on the “bright side” of social media, i.e., social media as a new marketing channel (e.g., Wang et al. 2015) and thus ignores the role of social media when negative events happen. To the best of our knowledge, our study is the first academic study that examines the role of social media before and after product recalls and how social media momentum changes over time. We expect to advance the current literature by showing that social media is a double-edged sword in the setting of product recalls and the underlying mechanisms that firms could leverage social media to handle their recall programs. Particularly, our approach on the change in social media momentum would extend Borah and Tellis’s (2016) work by showing the dynamics of social media in this particular setting. Furthermore, we plan on competitors’ strategic reactions would also expect to advance the current literature by demonstrating the competitive nature in this industry. Practitioners can take into consideration of our results and determine ways to manage social momentum and initiate strategic actions to reduce the impact of product recalls.

References


