IMPACT OF FIRM-GENERATED CONTENT ON FIRM PERFORMANCE AND CONSUMER ENGAGEMENT: EVIDENCE FROM SOCIAL MEDIA IN CHINA

Lijuan Bai
School of Economics and Management, Harbin Engineering University
145 Nantong Street, Nangang District, Harbin, 150001
baileejuan@126.com

Xiangbin Yan
Donlinks School of Economics and Management, University of Science & Technology Beijing
30 Xueyuan Road, Haidian District, Beijing, 100083
xbyan@ustb.edu.cn

ABSTRACT

Social media has become an important channel for firms to market and promote their brands, products, etc., but research on its marketing effect, especially the effect of different types of marketing content, is still in its infancy. Based on the dynamic capability theory, we analyzed the relationship between social media marketing, measured by firm-generated content, and firm performance and consumer engagement. Then, we validated the relationship with the panel simultaneous equation model using firm social media marketing and consumer engagement data from Sina Microblog, which is the most popular social media platform in China. The results show that firm social media marketing has a significant positive impact on firm performance. Informative and Persuasive firm-generated content have significant impacts on firm performance in direct way as well as indirect way by achieving with influencing consumer engagement. Our findings have various implications for academic research and practice.

Keywords: Social media marketing; Firm-generated content; Firm performance; Consumer engagement behavior

1. Introduction

Social media has become an important channel for firms' product and brand marketing [A. Kumar et al. 2016]. Corporate engagement in social media can assist in promoting product sales, enhancing brand awareness, improving brand image, reducing marketing costs, and enhancing brand loyalty [S. Kim et al. 2015; Mohammadpour et al. 2014; Vries et al. 2012; Wan & Ren 2017]. In addition, because of the interactive nature of social media, companies can monitor and analyze consumers' attitudes and opinions about them [Schweidel & Moe 2014]. Such firm behavior in social media is defined as social media marketing. According to Pentina and Koh [2012], social media marketing triggers viral communications amongst consumers across online communities, brand and fan pages, and promotion-related content generated by companies or organizations on popular networking sites such as Twitter and Facebook. Jara et al. [2014] define social media marketing as a new generation marketing tool, encouraging higher attention and participation from consumers through the use of social networks. Richter et al. [2015], on the other hand, regarding social media marketing as a marketing strategy of engaging with social platforms to facilitate two-way communication with consumers. Taken together, social media marketing is a marketing strategy of a firm, which takes social media as a channel to satisfy the purposes of customer relationship management and business promotion. Marketing strategies are updated in real-time in social media to achieve the best marketing results [Ashley & Tuten 2015; Bianchi & Andrews 2015; Schultz & James 2013] and are a way companies create value for stakeholders to achieve organizational goals [Felix et al. 2017].

The effectiveness of corporate social media marketing for firm performance has been recognized by managers and scholars. Corporate marketing behavior, such as information richness, intensity, and receptivity, were proved that have significantly effect on brand value [Godey et al. 2016; Ismail 2017; Manthiou et al. 2016; Seo & Park 2018], consumers' purchasing attention [Balakrishnan et al. 2014; A. J. Kim & Ko 2010; Laksamana 2018], and consumer management [Ashley & Tuten 2015; Lee & Hosanagar 2014]. In addition, Goh et al. [2013] analyzed the topics and sentiments of firm-generated content; Wan and Ren [2017] classified advertising content into three categories, informative, persuasive, and promotional; Lee et al. [2013] adopted advertising theory and divided the content into two groups: informative and persuasive. Moreover, all kinds of marketing content have been proven to have a significant effect on consumer engagement [A. Kumar et al. 2016; Lee et al. 2013; Lee et al. 2018] and product sales [Wan & Ren 2017].

However, there are still some research gaps on the impact of corporate social media marketing on firm performance. First, prior research regards consumer engagement as the metric to evaluate the corporate marketing effect, without considering the direct impact of corporate social media marketing on firm performance. Second, the theoretical basis of the impact of social media marketing content on firm performance and consumer engagement has not been fully elaborated. In this study, we analyze the relationship between corporate social media marketing and corporate performance using the dynamic capabilities theory. Then we examine how different types of content in corporate social media marketing influence firm performance and consumer engagement. The results show that firm-generated content consistently affects corporate performance and consumer engagement.

This study makes several contributions to research and practice. First, based on the dynamic capability theory, we analyze the impact of corporate social media marketing on firm performance and determine how different types of marketing content influence firm performance. Second, our study makes a contribution by examining the influence of different types of marketing content on consumer engagement. Furthermore, the significant impact of consumer engagement on firm performance in social media is determined. In particular, we make a novel contribution to the literature examining the efficiency of corporate social media marketing by validating different types of firm-generated content and analyzing the effects of consumer engagement on firm performance. Finally, our findings can help managers gauge the financial returns of firms' social media marketing actions and realize the importance of investing in firm-owned social media and customer engagement. Our study also provides valuable insights into how firms should formulate their social media marketing strategies to increase the return on their investment in social media.

The paper is organized as follows. In Section 2, we briefly review the literature related to our study. Section 3 presents the theoretical background. Research hypotheses are discussed in Section 4. Section 5 describes our data and model specifications. Our empirical results are presented in Section 6, and Section 7 summarizes and discusses the theoretical and managerial implications as well as the limitations.

2. Literature Review

Corporate social media marketing may bring many potential advantages to firms, such as expanding the audience, powerful additional channels, interaction with consumers, word-of-mouth, monitoring, and response. The effect of social media marketing has received much attention from many scholars in fields such as marketing, management, and economics. Scholars have conducted in-depth research on the impact of corporate social media marketing at the firm and individual levels. We will summarize the existing research from the perspective of firms and individuals.

Individual-level impact

Social media applications have changed the ways consumers interact with brands. Scholars have assessed consumer motivations to use social media and measured the social media investment customers make as they engage with marketers' brands [Hoffman & Fodor 2012].

Impact on individual engagement

Consumer engagement is a widely used metric in the fields of marketing and management to evaluate the marketing effect of corporate social media [Vries et al. 2012]. Notably, based on cross-sectional data of 5,035 hospital Facebook pages, Miller and Tucker [2013] found that firms (e.g., hospitals) who actively manage their Facebook pages through regular posts are likely to induce more postings from internal employees, compared to external customers. Vries et al. [2012] analyzed 355 brand posts from 11 international brands spread across six product categories and indicated that different drivers influence the number of likes and comments. Namely, vivid and interactive brand post characteristics enhance the number of likes; the share of positive comments on a brand post is positively related to the number of likes; the number of comments can be enhanced by interactive brand post characteristics; the shares of both positive and negative comments are positively related to the number of comments. More recently, Lee et al. [2018] analyzed the impact of firm-generated content on consumer engagement. Specifically, they compare the impact of informative (i.e., deals, promotions) content versus brand personality-related content on consumer engagement captured by the number of consumers' likes and comments.

Impact on individual purchasing behavior

Consumer purchase behavior or intention is an important indicator of the consumer's recognition of a firm. In social media, there are studies on the impact of corporate social media marketing on consumers' purchasing behavior. Xie and Lee [2015] instantiated on a unique single-source dataset of 12-month home-scanned brand purchase records of a group of fast-moving consumer good brands and Facebook brand fan page messages related to the brands and found that exposure to earned and owned social media activities for brands have significant and positive impacts on consumers' likelihood to purchase the brands.

Some scholars analyze the impact of corporate social media marketing strategies on consumers' purchasing behavior from the perspective of different types of content. Notably, Goh et al. [2013] integrated qualitative user-marketer interaction content data from a fan page brand community on Facebook and consumer transactions data to assemble a unique dataset at the individual consumer level and validated that social media content affects consumer purchase behavior through embedded information and persuasion. Kumar et al. [2016] indicated that after accounting for the effects of television advertising and email marketing, valence receptivity and customer susceptibility of firm-generated content have a positive and significant effect on customers' behavior. Yang et al.[2016] found that affiliation, conversation, and responsiveness of brand engagement in social media increase consumers' click-through rate and conversion rate.

Firm-level impact

While a few studies have examined the value of firms' marketing on social media, they have seldom focused on the direct impact on product sales and firm performance. Chen et al. [2015] employed a panel vector autoregression model to investigate the interrelationship between broadcasting promotions in social media and music sales. The results showed that personal and automated broadcasting in social media has a significant effect on sales. More importantly, the effect mainly comes from personal messages rather than automated messages. And the timing and content of personal messages play a role in affecting sales. Wan and Ren [2017] proposed that marketing content is key in generating sales. In general, informative social media marketing content is more effective in stimulating product sales than persuasive and promotional content. However, such content effect is subject to product categories. Specifically, for sales of high-involvement products, informative content is more effective, whereas persuasive content and promotional content are more sales effective for low-involvement products.

Chung et al. [2014b] collected data from Facebook pages of 63 firms between 2010-2012 and found that information richness and responsiveness of a firm's social media efforts are significantly associated with market performance; the volume of firm's social media effort is not significantly associated with firm performance. Chung et al. [2014a] also investigated the financial returns of firms' communication actions on a firm-initiated social media platform by focusing on Facebook business pages through a sample of 63 South Korean firms across industries over a three-year period (5,566 firm-week observations) and indicated that the volume and timeliness of a firm's responses to negative customer messages are significantly associated with an increase in the firm's market performance; a firm's one-to-one communication for responding to positive customer messages and a firm's broadcast communication are not significantly associated with firm performance; a firm's responses to negative customer messages and broadcast communication are complementary in contributing to firm performance.

3. Theoretical Background

Financial impact of social media marketing is grounded in the dynamic capability theory [Augier & Teece 2007]. The dynamic capability (DC) theory assumes that the market environment is dynamic, and the performance of a firm depends on matching the acquisition and deployment capabilities of the firm with the market environment [Augier & Teece 2007]. These capabilities involve complex coordinated patterns of skills and knowledge that, over time, become embedded as organizational routines and are distinguished from other organizational processes by being performed well relative to rivals [Bingham et al. 2010]. Capabilities are dynamic when they enable the firm to implement new strategies to reflect changing market conditions by combining and transforming available resources in new and different ways [Augier & Teece 2007]. Thus, DC theory provides an influential and compelling basis for elucidating the development and impact of social media marketing capability on firm performance. Social media marketing capabilities are conceptualized as the competence of firms to serve customer needs of acquiring and sharing authentic, reliable, and timely information through effective and prompt online activities. It is a kind of dynamic capability formed by the combination of social media resources and marketing strategy, which conforms to the dynamic characteristics of market and ability in the dynamic capability theory. Therefore, as a dynamic capability of a firm, the difference between the combination of social media technology and marketing strategy is the main reason for the difference in corporate performance. Many studies have proved that social media marketing capabilities are positively associated with firm performance for both large firms in industrialized countries and small firms [Morgan et al. 2009].

Based on this theoretical perspective, we hereafter develop more detailed and testable hypotheses.

4. Research Hypotheses

In social media, a brand's overt goal is to attract an audience and improve business performance by providing value or gratification through its content [Malthouse et al. 2013]. Therefore, content must be designed in a way that creates value for individual consumers to build a stronger level of engagement and facilitate value outcomes [Malthouse et al. 2013]. Thus, we aim to examine the impact of corporate social media marketing capability, measured by firm-generated content, on firm performance and consumer engagement in social media. We focus on the two dimensions of firm-generated content, namely informative content and persuasive content. Information content refers to the marketing content related to product attributes, including product introduction, promotion information, product acquisition methods, prices, etc. Persuasive content refers to the marketing content related to brand image, including the humanistic care of customers, interaction with customers, and the embodiment of corporate social responsibility.

4.1 Effect of Firm-generated Content on Firm Performance

In line with the dynamic capability theory, previous studies suggest that social media marketing capabilities can be a source of superior organizational performance [Zhan & Kim 2017]. Literature on the link between a company's marketing and financial performance discusses different ways in which marketing measures can affect a company's financial performance, in particular (1) by affecting the efficiency and effectiveness of value creation, (2) by building customer relationships, and (3) by increasing or decreasing risk [Beckers et al. 2018].

Efficiency and effectiveness of value co-creation

Value co-creation is a concept that explains the interaction between customers and firms to create value and is also an important source for firms to form new strategic competitive advantages. In social media, value creation is an effective way to improve the stickiness and activity of users and an important means to improve the performance of firms. In the process of value creation in social media, the firm plays the role of a transmitter by transferring firm value to consumers, providing value theme for consumers, and as the provider and guide of value[Martínez-Navarro & Bigné 2017]. Firms generate all kinds of content in social media, and then consumers can make relevant decisions or comments after reviewing these contents. These actions or reviews combine with users' original impressions of the firm to form a new value for the firm. The process mentioned above of corporate value co-creation will not only form and influence the relationship between firms and users, but also have a significant impact on corporate performance.

Building customer relationships

With the rise of social media, customers no longer play a passive role in customer relationship management; they access product or service information and express or distribute their opinions to a large audience. In this environment, it is more and more difficult for firms to manage the information and feedback received by customers about their products/services. Malthouse et al. [2013] describe the above relationship between firm and customer in social media as "Social CRM." In social media, firms can attract customers and cultivate and maintain customer relationships by generating different kinds of content. Firms provide favorable marketing activities, relevant content, and information through social media, which will affect customer brand loyalty and positively influence the relationship between brand equity and consumer response [Godey et al. 2016]. Developing firm-generated content enables firms to focus on marketing capabilities to effectively utilize customer attitudes towards interaction, relationships, and various online platforms. Prior research also validated that the social customer relationship has significant impact on firm performance [Zhan & Kim 2017].

Increasing or Decreasing Risk

Social media broadens the scope of reputation risk and enhances risk dynamics [Dwivedi et al. 2015]. In social media, users usually get unauthenticated information (whether true or false) and put forward organizational ideas that are very different from the information shared by organizations and the public. Social media also inspires new expectations or beliefs about the organization, and the organization should respond to them. Corporate behavior in social media may deviate from consumer expectations, resulting in loss of corporate reputation or image. In addition, marketing tools or content in the social media environment may bring risks to firms. Company response to user complaints on social media will affect stakeholders' attitude and decision-making, thus affecting company performance [Hennig-Thurau et al. 2013].

To sum up, firm-generated content has a significant impact on corporate performance. Previous studies have also proved the impact of different types of generated content on firm performance. Goh et al. [2013] proved that product sales would be affected by the embedded information and persuasion content; Wan and Ren [2017] proposed three types of firm-generated content, information, persuasion, and promotion, and proved their significant positive impact on product sales. Marketers embed their positive statements in firm-generated content to create a favorable product reputation to influence sales. Therefore, we propose the following hypotheses.

Hypothesis 1a (*H1a*)*: Informative firm-generated content positively influences firm performance.*

Hypothesis 1b (*H1b*)*: Persuasive firm-generated content positively influences firm performance.*

Firm-generated content affects firm's market values, as the informative and persuasive content disseminated can affect firm performance by providing signals about the marketing strategy, customer service quality, and growth potential of the firm to potential or current investors[Chung et al. 2014b]. If the firm-generated content contains more information, it will be more helpful for potential or current investors to evaluate the firm [Aspara & Chakravarti 2015]. On the other hand, informative content and persuasive content are complementary. By generating more informative content, the persuasive content will have a more significant impact on firm performance, because informative content can enhance the confidence of potential or current investors [Kelton & Pennington 2012]. Similarly, Enterprises can also enhance the impact of informative content on firm performance by generating more persuasive content, because persuasive content can better show the brand image, so as to attract more investors [Aspara & Chakravarti 2015]. Therefore, we propose the following hypotheses.

Hypothesis 1c (*H1c*)*: Interaction term of informative and persuasive firm-generated content positively influences firm performance.*

4.2 Effect of Firm-generated Content on Consumer Engagement

As mentioned above, firm-generated content can assist in enhancing the relationship between customers and firms. However, there is information asymmetry between them. Users need to obtain information through social media to influence their purchase decisions. The desire to seek information directly from brands is a motivating factor for consumers to use social media [Rindova et al. 2005; Whiting & Williams 2013]. Factors such as the ability to learn something new, the possibility of receiving exclusive content, and the ability to gain acknowledgement and support from other consumers have a far greater impact on consumers' motivation to engage and contribute to virtual communities [Füller 2006]. Therefore, the information content related to firm products or services published by firms on social media can meet users' information needs about brands or firms. In this case, it will trigger their desire to participate and receive more compliments, forwards, or comments.

Hypothesis 2a (*H2a*)*: Informative firm-generated content positively impacts consumer engagement.*

The impact of persuasive content can be discerned from the literature on persuasive advertising[Russo & Chaxel 2010]. Persuasive advertising involves messages that highlight the positivity of products to enhance evaluations and instill good feelings in consumers to tempt them to purchase[Wu et al. 2009]. Cvijikj and Michahelles [2013] also presented that persuasive content was a significant factor in increasing the number of likes, comments, and shares made on social media content; Lee et al. [2018] proved that inclusion of more brand personality–related content has a positive and statistically significant effect on consumer engagement. Therefore, we assume that:

Hypothesis 2b (*H2b*)*: Persuasive firm-generated content positively impacts consumer engagement.*

Firms can attract consumer' attention, and promote consumer engagement by generating different types of contents [Chung et al. 2014b]. The informative and persuasive content are complementary, which has a positive impact on consumer engagement. Compared with informative content, persuasive content can make the relationship between firms and consumers closer, so as to increase consumer engagement [Goh et al. 2013]. Therefore, persuasive content enhances the impact of informative content on consumer engagement. On the other hand, by generating informative content, firms can also enhance the positive impact of persuasive content on consumer engagement, because informative content can enhance consumers' confidence in firm products or services [Abernethy & Franke 1996], and enhance their trust and feedback on persuasive content. Therefore, we propose the following hypothesis:

Hypothesis 2c (*H2c*): *Interaction term of informative and persuasive firm-generated content positively impacts consumer engagement.*

4.3 Effect of Consumer Engagement on Firm Performance

Consumer engagement describes the consumer's interaction experience [Brodie et al. 2013], which reflects concern or interest in a brand, firm, or product [Abdul-Ghani et al. 2011], and can extend to the user's cognitive and emotional expression [Mollen & Wilson 2010]. Consumer engagement is usually characterized by users' forwarding, comments, and likes. It argues that consumers are becoming pivotal authors of brand stories due to new dynamic networks of consumers and brands formed through social media and the easy sharing of brand experiences in such networks [Gensler et al. 2013]. Users' comments and forwarding in social media are considered to be similar to users' online word-of-mouth [Vries et al. 2012]. Research on eWOM shows that online reviews affect firm performance (i.e., sales, cash flow, stock prices, and abnormal returns) in both the short- and long-term [Berger et al. 2009].

Consumer engagement in brand communities leads to a variety of beneficial outcomes for the brand, including stronger loyalty and positive influence on brand equity, attitude, and purchase intentions [Algesheimer et al. 2010]. Customers engaged with firms will purchase from them, which directly contributes to firm revenue [V. Kumar et al. 2010]. They will also provide referrals to the firm, which would impact firm profitability. Customer conversations on social media about the brand may create a ripple effect to a wide group of customers [Hogan et al. 2003], inducing a larger firm audience. Customer feedback and suggestions can also indirectly contribute to firm profits. The resulting improved products/services are expected to appeal to more customers, thereby increasing profit. Consumer engagement contributes to a firm's profitability.

Based on the above discussion, we propose the following hypothesis:

Hypothesis 3 (*H3): Customer engagement level positively influences firm performance.*

Based on the above discussion and research hypotheses, we propose a conceptual model for this study, as shown in Figure1.

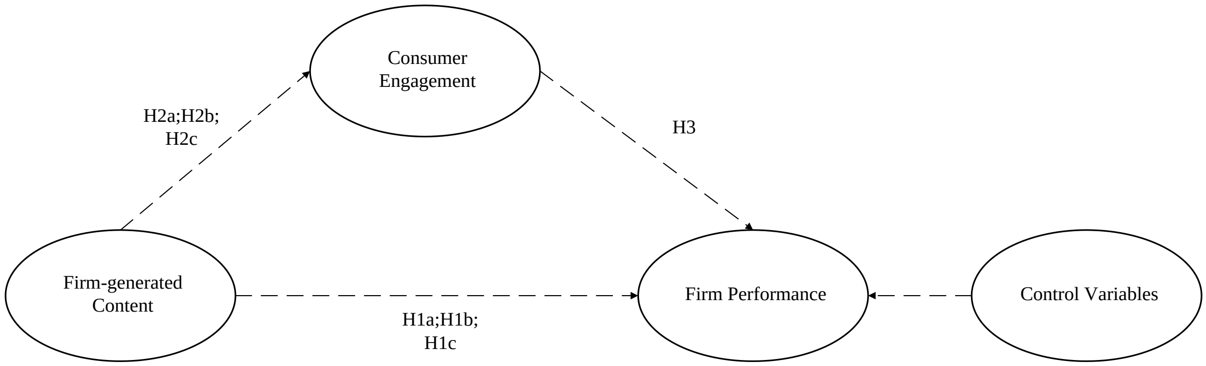

Figure 1: Conceptual Model

5. Data and Methods

In this study, we analyze the impact mechanisms of firm-generated content disseminated through social media on corporate performance.

5.1 Data Collection and Sample

The research data come from two sources: Sina Microblog and CSMAR database. Sina Microblog (www.sina.com) is the most widely used social media platform in China, with the largest number of registered firms and users. By 2016, the number of firms in Sina Microblog reached 1.3 million, covering more than 60 industries, including internet, outdoor, trade, and so on. These firms released 114 million posts, with 1.185 billion comments, 1.208 billion forwards, 416 million comments on these forwards, and 142 million collections. There were 297 million monthly users and 132 million daily users. According to the number of registered users and firms mentioned above, Sina Microblog has credibility or enjoyment for users, so the marketing content generated by firms on this platform has a value on consumer behavior and firm economic performance[Martínez-Navarro & Bigné 2017]. The CSMAR database is the largest and most accurate financial and economic database in China. It consists of eight series of stock, fund, bond, financial derivatives, listed companies, economy, industry, high-frequency data, and personalized data services.

From Sina Microblog, we obtained the social media marketing data of firms, including releasing information, time, number of followers, etc., and consumer engagement behavior, such as consumers' comments, forwarding, and retweets. Then, financial data was obtained from the CSMAR database.

In this study, we selected the TOP200 firms in China ranked by Fortune Magazineas our research object. After excluding those that did not build accounts in social media, those that did not publish information during the research period, and those that did not list on the mainland of China, we had 38 firms. Our final sample consists of detailed information on all activities (e.g., posts, comments, and likes) from these 38 firms' official Sina pages and their financial performance from January 2014 to December 2016. Our sample firms operate in diverse industries (as shown in Table 1) and have, on average, 462,306 fans who follow their social media pages.

Table 1: Sample Distribution by Industry

Industry	Number of firms	Average Number of firm-generated posts	Average Number of fans
Mining	3	315	2839
Production and supply of electricity, water and gas	2	67	5788
Realty	3	331	40109
Construction	4	110	10133
Transportation, logistics and warehousing	5	2538	568628
Finance	6	1564	845683
Wholesale and retail	2	382	17537
Information transmission, computer service and software	1	124	14817
Manufacturing	13	1939	633703
Total	38	1417	462306

Notes. The industry classification is performed using Classification of National Economic Industries (GB/T4754) codes to identify 9 different industries. The average number of firm-generated posts is the average number of information posts released by firms from 2014 to 2016. The average number of fans is calculated by the number of fans in each firm.

Finally, we obtained 53,840 firm-generated posts from Sina Microblog. We summarized the trend of the amount of firm-generated content from 2014 to 2016. As shown in Figure 2, firms are increasingly relying on social media as an important channel for marketing their products or brands.

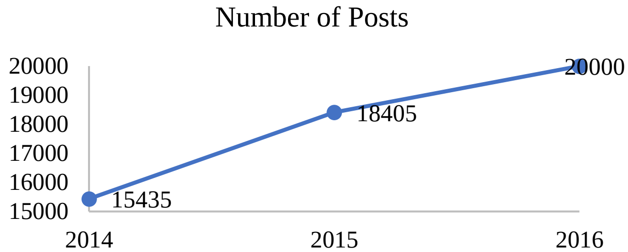

Figure 2: Firm-generated Posts in 2014-2016

5.2 Variables

(1) Independent Variable

We measured consumer engagement through the number of retweets, comments, and likes using principal component analysis (PCA). The results show that one principal component can be extracted from consumers' retweets, comments, and likes. The cumulative extraction load is 76.977%. We calculate the principal component of these three indicators as the measurement of consumer engagement.

There are many kinds of classification metrics for firm-generated content. Here, we follow the approach and classification criteria proposed by Lee et al.[2013; 2018], who classified the content into informative and persuasive content. Based on the marketing content generated by firms in Sina Microblog, we put forward the classification criteria that are more in line with the social media marketing activities of Chinese firms. Informative content mainly addresses the performance and attributes of products such as product details, usability, prices, and any product-related advertising content that is useful for consumer decision-making. That is, informative content is mainly product-oriented, whereas persuasive content aims to achieve emotional or spiritual resonance with consumers to influence user decision-making [Lee et al. 2013; Wright 2016], such as engaging in philanthropy to obtain user recognition of the corporate image and thereby promote consumer behavior supporting products or services. By focusing on and describing remarkable facts, firms share their concerns and engage in emotional interaction with consumers. We consider persuasive advertising content to be brand personality-related content. There are some differences on classification metrics between our study and Lee et al. [2013; 2018]. First, we propose a new type, defined as friendly reminder. Then, we unified the types of humor and short talk defined by Lee as interaction. Second, we omitted the price-related content. Chinese firms did not mention price-related content in the process of social media marketing, as seen from the marketing content we obtained. The description of classification metrics is shown in Table 2.

Table 2: Classification Criteria of Firm-generated Content

Variable	Description
Persuasive	
Remark fact	Remarkable fact mentioned
Emotion	Consistent with the corporate image and unrelated to the product or service (most often delivered daily on a specific topic)
Emoticon	Contains emoticon or net slang
Holiday mention	Mentions US/Chinese Holidays
Philanthropic	Philanthropic or activist message
Interaction	Interactive Q & A with users
Friendly Reminder	Warm reminder to users
Informative	
Product mention	Mentions a specific product name including product characteristics
Deal	Contains deals: any type of discounts or freebies
Target	Message is targeted toward an audience segment
Product location	Contains information on where to obtain product (e.g. Link or physical location)
Brand mention	Mentions a specific brand or organization name
Sponsorship	Including sponsorship information for a firm product or a series of products

We analyzed more than 50,000 posts, then organized them into 2 categories (informative and persuasive) and 13 subcategories (remark fact, emotion, emoticon, holiday mention, philanthropic, interaction, friendly reminder, product mention, deal, target, product location, brand mention, sponsorship). The results show that product, brand, and target are the top three informative content used by firms. That is, marketing in social media pays more attention to introducing and describing product performance, characteristics, and other attributes. For the persuasive type, the top three subcategories are emotion, friendly reminder, and sponsorship. Emotion is a way for firms to reach consumers on the spiritual or emotional level. Different firms interact with consumers according to their culture or characteristics. Friendly reminder exhibits a type of humanistic concern for consumers, offering a type of reminder and expressing warm companionship. Sponsorship expresses the degree of a firm's enthusiasm for business or social activities; choosing the appropriate sponsorship behavior can obtain consumers' approval and thereby promote their purchasing behavior. Figure 3 shows the distribution of different types of firm-generated content.

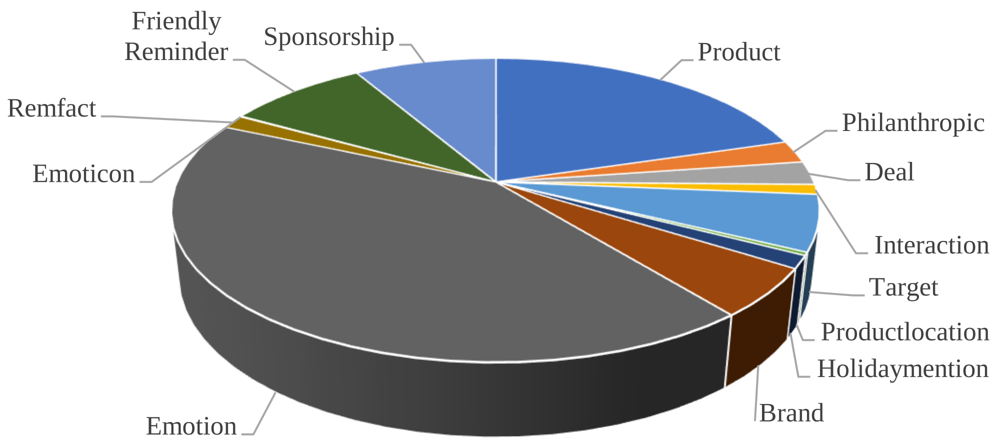

Figure 3: Distribution of Different Types of Firm-generated Content

(2) Dependent Variables

As our main dependent variable, we use abnormal returns and Tobin's q to capture a firm's market performance. To estimate abnormal returns, we used the extended Fama-French model [Fama & French 1993, 1996]. The Fama-French model has been recognized as a good proxy for stock market performance that considers market risk and firm size, as well as multiple value factors [Luo & Jie 2013; Tirunillai & Tellis 2011]. Specifically, we employed the following extended Fama-French model:

$$R_{it} - R_{ft} = \beta_0 + \beta_1(R_{mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_t$$

where R_{it} is the firm return; R_{ft} is the risk-free rate; R_{mt} is the average market return; SMB_t is the small-minus-big capitalization factor; and HML_t is the high-minus-low book-to-market equity factor. Data for the Fama-French factors are obtained from the CSMAR database. We estimated the above equation for a rolling window of 250 trading days prior to the target day.

Besides, we also collected the value of Tobin's q from the CSMAR database.

(3) Control Variables

To mitigate the omitted variable bias and the resulting endogeneity concern, we include an extensive set of control variables that may be associated with firm performance, including a firm's activities in social media and a firm's financial variables.

First, we measure the network size of a firm's social media page by the total number of fans of a focal firm in week t. Because Sina Microblog does not provide the weekly trend of fan size, we used the unique number of customers who have posted or commented on a certain post/comment on a firm-initiated social media page until week t as a proxy for the network base size for each firm in week t.

Second, we measure the length of firm-generated content to control for the amount of information.

Third, we control for Search Intensity, which captures the intensity of the Internet searches related to a firm [Zhi et al. 2011]. To measure Search Intensity, we obtained Internet search data from Baidu Trend and calculated the mean of the "firm key words," full name and abbreviation of a firm, and searching frequencies at baidu.com in week t.

Table 3: Descriptive Statistic of Variables

Category		Variables	Definitions	obs	Mean	SD	Min	Max	Source
Dependent Variables		Abnormal Returns	The difference between the observed returns and the expected returns from the Fama-French model (1996) in week *t*	5967	-0.0020	0.0158	-0.0486	0.0943	CSMAR database
		Tobin's q	Tobin's *q* measure as in Bharadwaj et al. (1999) in quarter *t*	457	1.6071	1.6074	0	23.1502	
Independent Variables	Informative content	Informative content	Total number of the all informative content	5967	3.6338	8.5914	0	215	Sina Microblog
		Product mention	Mentions a specific product name including product characteristics	2377	1.2254	5.9743	0	81	
		Deal	Contains deals: any type of discounts or freebies	431	2.9722	5.1103	0	50	
		Target	Message is targeted toward an audience segment	1133	2.6717	2.6960	0	28	
		Prodlocation	Contains information on where to obtain product (e.g., link or physical location)	20	0.85	0.3663	0	1.000	
		Brand mention	Mentions a specific brand or organization name	1239	2.1445	1.9190	1	24	
		Sponsorship	Including sponsorship information for an firm product or a series of products	637	6.7724	17.2001	0	195	
	Persuasive Content	Persuasive content	Total number of the all persuasive content	5967	4.8029	7.9615	0	81	
		Remfact	Remarkable fact mentioned	407	1.8305	1.8855	0	21	
		Emotion	Consistent with the corporate image and unrelated to the product or service (most often delivered daily on a specific topic)	2733	7.9305	8.0434	0	78	
		Emoticon	Contains emoticon or net slang	49	1.8305	1.8855	0	21	
		Holiday mention	Mentions US/Chinese Holidays	461	1.4902	1.0521	0	1	
		Philanthropic	Philanthropic or activist message	637	2.0537	2.4123	1	35	
		Interaction	Interactive Q & A with users	290	1.8621	1.7554	0	15	
		Friendly Reminder	Warm reminder to users	1187	3.6024	3.8264	0	29	
	Consumer Engagement	Volume of consumer engagement	(ln)A number of customers' posts and comments in week *t*	5967	4.1623	2.7097	-1.8708	13.6809	
Control Variables	Subscriber size		The unique number of customers who have commented on a firm's Facebook page until week *t*	5967	674.29	956.88	1	1039	
	Post length		(ln)post length of firm-generated message	5809	4.3244	3.2458	0	9.8262	
	Consumer's Attention	Searching intensity	(ln)The searching frequencies of the "firm key words" at baidu.com in week *t*	5967	7.9641	1.6092	2.8332	12.8444	Baidu Index
	Financial Variables	Firm size	(ln) Total assets in quarter t	5967	25.3353	2.0549	19.751	30.794	CSMAR database
		R&D intensity	Ratio of a firm's R&D expenses to sales in quarter *t*	5967	0.6815	0.1762	0.1199	0.9453	
		Liquity	Ration of current liability to current assets in quarter t	5967	1.1072	0.8234	0.000	6.1491	
		Operating margin	Ration of net income to sales in quarter t	5967	0.0934	0.1579	-0.1216	0.7261	
		HHI	The Hirschmann-Herfindahl index	5967	0.2481	0.1922	0.0260	1.0000	

Finally, we control a number of financial variables that can affect firm performance. To control for growth opportunities available to a firm, we include R&D Intensity, computed as the total R&D expenditures in a given quarter, divided by total sales. In addition, we control for Total Assets (to control for firm size), Operating Margin (ratio of net income to total sales), Leverage (the ratio of long-term debt to total sales), and Liquidity (the ratio of current liability to current assets). At the industry level, we control for Industry Concentration by including the Herfindahl-Hirschman Index (HHI) [Han & Mithas 2013]. Time and industry dummies were included in our model to control for time and industry-specific common shocks.

Table 4: Correlation Analysis of Key Variables

Variables	1	2	3	4	5
1. Informative content	1.0000				
2. Persuasive Content	0.2157*** (0.000)	1.0000			
3. Consumer Engagement	0.4361*** (0.000)	0.4773* (0.000)	1.0000		
4. Searching Intensity	0.1722*** (0.000)	0.2482* (0.000)	0.4532* (0.000)	1.0000	
5. Firm performance	0.0011* (0.0391)	0.0209* (0.0454)	0.0206* (0.0111)	0.0185 (0.1536)	1.00000

Note. The table presents pair-wise correlation coefficients among the key variables used in our empirical analysis. Significance levels (*p*-value) are displayed in parentheses.

5.3 Model Specifications and Procedure

First of all, we use a difference-in-differences (DID) specification to assess the relation between firm social media engagement and firm performance, based on the equations proposed by Beck et.al[2010].

$$Y_{st} = \alpha + \beta D_{st} + \delta X_{st} + A_s + B_s + \varepsilon_{st} \tag{1}$$

Y_{st} is a measure of firm performance in firm s in year t, A_s and B_s are vectors of firm and year dummy variables that account for firm and year fixed-effects, X_{st} is a set of time-varying, firm-level control variables. D_{st} is a dummy variables that equals one in the years after firm s engage Sina Microblog and equals zero otherwise. The coefficient β indicates the impact of firm engagement on Sina Microblog on firm performance.

Then, we construct the following equations to examine the research hypotheses. Equation (2) studies the impact of firm-generated content on consumer engagement; Equation (3) presents the influence of firm-generated content and consumer engagement on firm performance. We also consider the impact of time and industry, and generate dummy variables in this study. The specific formulas are as follows:

$$\begin{aligned} &\textit{Consumer Engagement}_{ijt} = \alpha_1 \sum \textit{Firm-generated Content}_{j,t-1} + \alpha_2 \textit{Subsribe size}_{j,t} \\ &+ \alpha_3 \textit{Time Dummies} + \alpha_4 \textit{Industry Dummies} + \textit{cluster(firm)} + \varepsilon_{i,t} \end{aligned} \tag{2}$$

$$\begin{aligned} &\textit{Firm Performance}_{j,t} = \beta_1 \sum \textit{Firm-generated Content}_{j,t} + \beta_2 \sum \textit{Consumer Engagement}_{ijt} \\ &+ \beta_3 \textit{searching Intensity}_{j,t} + \beta_4 \textit{Length of posts}_{j,t} + \beta_5 \sum \textit{Financial Control Variables}_{j,t} \\ &+ \beta_6 \textit{Time Dummies} + \beta_7 \textit{Industry Dummies} + \textit{cluster(firm)} + \varphi_{i,t} \end{aligned} \tag{3}$$

where the subscript represents consumer i at firm j in week t. Given that our focal social media variables capture firms' communication actions during a given week and the abnormal returns are computed based on the closing stock price on Friday, firms' social media actions precede stock market reaction, and therefore, we use contemporaneous values (t) for both independent and dependent variables.

In order to account for firm-level unobserved heterogeneity in our data, we consider 3SLS models.

6. Results

First, we assess the impact of firm engage Sina Microblog on firm performance using Equations (1). Because Sina Microblog was launched in 2009, we validate the process of DID with the data of top 200 firms from 2008 to 2016. As shown in Table 5. The result indicate that firm engage Sina Microblog dummy variables positively and significantly at 5% level.

Table 5: DID Result

	Tobin's Q
Panel A: No Control	
Firm Engage Sina Microblog	0.1193** (1.99)
R^2	0.3286
Observation	1052
Panel B: With Control	
Firm Engage Sina Microblog	0.1079** (2.85)
Total Asset	0.0248 (0.83)
R&D	0.0179 (1.23)
HHI	0.1205*** (3.48)
Ln (Number of Employees)	0.215* (2.08)
Liquidity	0.1061*** (6.34)
Operating Margin	0.1478*** (2.85)
R^2	0.3852
Observation	913

Note. Significance: ***p < 0.01; **p < 0.05; *p < 0.10. Models are reported using 3SLS estimation.

Then, we validate the impact of different types of firm-generated content on corporate performance in the context of social media marketing. The panel simultaneous equations of Equations (2) and (3) are validated by 3SLS regression models.

To verify the direct impact of informative and persuasive content on consumer engagement and corporate performance, we first analyze the direct impact, as shown in columns 1 and 2 of Table 6. Then we consider the interaction term of the two types of contents, as shown in columns 3 and 4 of Table 6. Among them, the calculation of the interaction term is obtained by the centralization of two main variables. For consumer engagement variables, we find that both informative and persuasive content have a significant positive association with consumer engagement ($\alpha 1 = 0.06922$, $p1 < 0.01$, and $\alpha 2 = 0.1050$, $p2 < 0.01$, respectively), whereas the coefficients for interaction item of informative and persuasive content are significantly negative ($\alpha 3 = -0.0036$, $p3 < 0.01$). Note that different types of firm-generated content will attract users' attention and have a significant positive impact on consumer engagement behavior. However, from the interaction item coefficient, we can see that the impact of informative content on consumer engagement decrease with the increase of persuasive content.

These results show that the content of social media marketing will have a significant impact on consumer engagement behavior, that is, through the release of different types of marketing content in the social media, firms can guide and manage consumer engagement behavior. However, this kind of management does not mean that releasing more different types of marketing content is better. Based on the results of interaction term, it can be seen that the marginal effect of different types of marketing content on consumer engagement has a downward trend with the increase of the number of other types, which indicates that consumer engagement behavior in social media is an information overload problem. When a firm releases a large amount of content, it will have a negative impact on consumer engagement behavior. Thus, these results provide support to H2a and H2b, but not to H2c.

We find that consumer engagement has a significant positive impact on firm performance ($\beta_2=0.0172$, $p_2<0.01$ and$\beta_2=0.0205$, $p_2<0.01$, respectively). The results suggest that consumer engagement in social media has a significant positive impact on corporate performance. Consumer engagement behavior indicates that consumers pay attention to a firm, which will affect the purchase decisions of consumers and intention of potential consumers. The results provide support to H3.

The informative and persuasive content have a significant negative impact on firm performance ($\beta 1=-0.0029$ $p1<0.05$ and $\beta 1=-0.0001$ $p1<0.1$ respectively). The coefficients of the interaction term of informative and persuasive content on firm performance are significantly positive ($\beta 1=0.0019$ $p1<0.01$). Note that different types of firm-generated content have a significant negative impact on firm performance. However, from the interaction term coefficients, we see that the impact of informative content on firm performance will increase with the increase of persuasion content.

These results indicate that corporate marketing in social media can significantly affect corporate performance. However, the direct impact of informative or persuasive content on corporate performance is negative. This is because the information contained in these contents is limited, especially when it comes to firm value co-creation or crisis response. The significant positive impact of the interaction term also proves that the interaction between different types of content will provide more information to the stakeholders and will be more conducive to improving firm performance level. Thus, these results provide support to H1c, but not to H1a and H1b.

Table 6: 3SLS Estimates Results

Dependent Variable	Consumer Engagement	Firm Performance	Consumer Engagement	Firm Performance
Firm-Generated Content				
Informative	0.0692*** (19.56)	-0.0029** (-2.40)	0.0787*** (21.09)	-0.0037*** (-2.94)
Persuasive	0.1050*** (24.27)	-0.0001* (-1.63)	0.1209*** (25.25)	-0.0002* (-1.95)
Interaction item of Informative and Persuasive			-0.0036*** (-7.43)	0.0019* (1.94)
Consumer Behavior				
Consumer Engagement		0.172** (2.49)		0.205* (1.68)
Control Variables				
Searching Intensity		0.03001* (1.24)		0.0217* (1.18)
Subscribe Size	0.7606*** (27.73)		0.7204*** (26.00)	
Ln (Post Length)		0.0012 (1.03)		0.0014 (1.19)
Firm Size		-0.0014* (-1.37)		-0.0014* (-1.36)
R&D Intensity		0.0096 (0.397)		0.0097 (0.86)
Operating Margin		0.0013 (0.68)		0.0076 (0.67)
Liquidity		0.0014 (0.68)		0.0012 (0.64)
HHI		0.2401* (1.35)		0.2380* (1.28)
Dummies	Week/Industry	Week/Industry	Week/Industry	Week/Industry
Cluster(firm)	Yes	Yes	Yes	Yes
Number of Firms	38	38	38	38
Observations	5958	5958	5958	5958
Model Fit	0.4469	0.3218	0.4676	0.3466

Note. Significance: ***p < 0.01; **p < 0.05; *p < 0.10. Models are reported using 3SLS estimation.

6.1 Robustness Checks

We test the robustness of our results by employing alternative specifications and considering various econometric concerns. First, we re-estimated our model with several alternative specifications. We examined our model via GMM as reported in Table 7. The coefficient estimates from these specifications are qualitatively similar to our main results in Table 6, indicating the robustness of our results. As shown in Table 7, informative and persuasive have a significant positive impact on consumer engagement and have a negative impact on firm performance, while the interaction term has an opposite impact on consumer engagement and firm performance. Moreover, consumer engagement also has a significant impact on firm performance.

Table 7: System GMM Estimate Results

Dependent Variable	Consumer Engagement	Firm Performance	Consumer Engagement	Firm Performance
Firm's Generated Content				
Informative	0.0498*** (10.79)	-0.0052** (-2.11)	0.0501*** (2.07)	-0.0027* (-1.58)
Persuasive	0.0134*** (14.34)	-0.0058*** (-3.12)	0.0189** (1.96)	-0.0009* (-1.45)
Interaction item of Informative and Persuasive			-0.0109** (-2.07)	0.0134** (2.12)
Consumer Behavior				
Consumer Engagement		0.0183** (2.54)		0.0201* (1.73)
Control Variables				
Searching Intensity		0.4195** (2.43)		0.3795*** (6.94)
Subscribe Size	0.4469*** (8.48)		0.4797*** (7.65)	
Ln (Post Length)		-0.2096* (-1.86)		0.2312 (1.59)
Firm Size		-0.5143*** (-3.04)		-0.5148*** (-7.01)
R&D Intensity		0.7624 (0.84)		0.8298 (0.90)
Operating Margin		2.3094** (2.52)		2.8511*** (4.51)
Liquidity		-0.1215 (-0.74)		0.1319 (0.90)
HHI				0.8590* (1.70)
Dummies	Week/Industry	Week/Industry	Week/Industry	Week/Industry
Cluster(firm)	Yes	Yes	Yes	Yes
Number of Firms	38	38	38	38
Observations	5958	5958	5958	5958
Model Fit	0.5706	0.2840	0.5840	0.3376

Note. Significance: ***$p < 0.01$; **$p < 0.05$; *$p < 0.10$. Models are reported using GMM estimation.

In addition, we re-estimated our model with Tobin's *q* as an alternative measure of firm performance. Overall, the results corroborate our main findings based on weekly abnormal returns. Because Tobin's *q* has the advantage of capturing both short-term performance and long-term prospects based on the market value, it has been widely used in prior literature. We calculated Tobin's *q* for our sample firms on a quarterly basis during our sample period. We chose a quarterly interval because it is the smallest interval available from firms' financial statements. We calculated the quarterly average of all our independent variables and included firm-specific financial control variables from the firms' quarterly financial statements, resulting in 456 firm-quarter observations in total. As shown in Table 8, the results are qualitatively similar to the results based on contemporaneous values.

Table 8: Tobin's Q Analysis

Dependent Variable	Consumer Engagement	Firm Performance	Consumer Engagement	Firm Performance
Firm-Generated Content				
Informative	0.0099*** (10.84)	-0.0061*** (-4.69)	0.0099*** (11.23)	-0.0072*** (-5.01)
Persuasive	0.0134*** (14.40)	-0.0081*** (-5.76)	0.0164*** (15.64)	-0.0114*** (-6.10)
Interaction item of Informative and Persuasive			-0.0007*** (-5.56)	0.0004*** (3.13)
Consumer Behavior				
Consumer Engagement		0.4369*** (2.60)		0.5409*** (2.92)
Control Variables				
Searching Intensity	0.4469*** (8.52)		0.3667*** (6.95)	
Subscribe Size		0.2359 (0.96)		0.1986 (1.00)
Ln (Post Length)		0.0749 (0.85)		0.0833 (0.91)
Firm Size		-0.4489*** (-7.22)		-0.4478*** (-7.16)
R&D Intensity		0.1388 (0.20)		0.1205 (0.17)
Operating Margin		2.4406*** (4.30)		2.4297*** (4.27)
Liquidity		0.0636 (0.49)		0.0628 (0.48)
HHI		0.5023* (1.92)		0.4825* (1.64)
Dummies	Quarterly /Industry	Quarterly /Industry	Quarterly /Industry	Quarterly /Industry
Cluster(firm)	Yes	Yes	Yes	Yes
Number of Firms	38	38	38	38
Observations	456	456	456	456
Model Fit	0.5906	0.3213	0.6166	0.3420

Note. Significance: ***$p < 0.01$; **$p < 0.05$; *$p < 0.10$. Models are reported using 3SLS estimation.

Due to the endogenous character of corporate social media marketing, we test for sample selection bias in the process of robustness testing. We use the Heckman two-step selection model to examine the relationship between corporate social media marketing and financial performance. To test for the selection bias in the firm samples, we test the two-stage selection model using Equation (4) and test Equation (3) for firm performance. Then, in the estimation of the Probit model in the first stage, we check whether firm engagement in media marketing activities is mainly related to the exogenous variables of the firm, as shown in Equation (4).

$$\text{Marketing}_i=\delta_1\text{Total Asset}_i+\delta_2\text{R\&D}_i+\delta_3\text{Operating Margin}_i+\delta_4\text{Liquidity}_i+\pi_i \tag{4}$$

$$\text{Marketing}_i=1 \text{ if } \text{Marketing}_i>0 \text{ or Marketing}_i=0$$

$$\text{prob}\left(\text{Marketing}_i=1\middle|Z_i\right)=F(Z_i\delta)\ \text{prob}\left(\text{Marketing}_i=0\middle|Z_i\right)=1-F(Z_i\delta)$$

where Z_i is the value obtained from the first stage of the Heckman selection model.

The results of the Heckman selection model are shown in Table 9. The results show that the sample selection bias is not significant in our study.

Table 9: Heckman Selection Model Results

Dependent Variable	Consumer Engagement	Firm Performance
Firm-Generated Content		
Informative	0.0099*** (5.97)	-0.0022* (-1.89)
Persuasive	0.0163*** (8.24)	-0.0026* (-1.75)
Interaction item of Informative and Persuasive	-0.0075*** (4.51)	0.0064*** (2.64)
Consumer Behavior		
Consumer Engagement		0.1498*** (2.78)
Interactions Terms		
Lambda	-3.7131 (-2.09)	2.2865 (2.06)
Number of Firms	38	38
Observations	5958	5958

Note. Significance: ***$p < 0.01$; **$p < 0.05$; *$p < 0.10$. Models are reported using Heckman Selection Model.

6.2 Discussion of Findings

(1) Impact of Firm-generated Content on Consumer Engagement

Informative and persuasive firm-generated content have significant positive effects on consumer engagement. Informative firm-generated content is all about product-related contents such as products, deals, and product location. Firms can introduce and interpret product-related information for users by publishing informative content, thus satisfying consumers' information needs for their products or services and increasing their confidence and desire to buy. Persuasive firm-generated content includes the brand personality content like friendly reminder, remark fact, holiday mention, and emotion. Firms want to gain a certain sense of existence and identity from consumers via persuasive firm-generated content. That is to say, consumers can not only understand the relevant information of products or services, but also grasp the situation of newly developed products or services in time through the marketing content of corporate social media, which can improve the understanding of firms or brands through introducing corporate social responsibility and maintaining customer relations. Lee et al. [2018] proposed that firms can increase consumer engagement in social media by empathizing with consumers through firm-generated content.

The interaction term for informative and persuasive content has a significant negative effect on consumer engagement. Interaction term represents the role of informative or persuasive content in consumer engagement under the relevant influence of the other types of content. In social media, informative and persuasive content have a positive impact on consumer engagement, but the marginal effect of informative content on consumer engagement decreases with the increase of persuasive content. The marginal effect of persuasive content on consumer engagement behavior is the same. This is due to the over-information phenomenon in the influence of firm-generated content on consumer engagement behavior in the social media[Wei et al. 2015]. Too much published content will not increase consumer engagement, but will give users an impression of too much information, resulting in the reduction of consumers' willingness to engage with the firm.

(2) Impact of Firm-generated content on Firm Performance

Based on dynamic capability theory, firms can combine and transform traditional and modern resources in new and diversified ways to meet the dynamic needs of the market and consumers. Social media marketing is a means of customer relationship management and brand marketing adopted by firms in the context of social media. The impact of corporate social media marketing on firm performance is mainly determined by its effectiveness at converting resources into capabilities to achieve a competitive advantage[Paniagua & Sapena 2014]. That is, through marketing and maintenance of products, brands or brand-related content, or knowledge in social media, firms can transform these resources into the capability to influence its value creation, customer relationship management, and corporate reputation management so as to bring competitive advantages, thereby affecting corporate performance. Moreover, the release of different types of content can provide a variety of information for co-creating firm value, solve or respond to a crisis faced by firms, affect the attitude or behavior of users towards firms or brands, and then affect the performance level of firms[Chung et al. 2014b].The results of DID estimation also validate the significant and positive impact of firm social media marketing on firm performance.

The impact of Firm-generated content on corporate performance includes the direct impact on firm performance and the indirect impact through consumer engagement. This conclusion is consistent with Gensler et.al [2013] that corporate performance in social media is co-created by firms and users. The impact of Firm-generated content on firm performance is significant and positive. We consider there are some reasons for this result: first, the involvement of firm products or services is significant, Wan et.al [2017] also validate that the impact of marketer-generated content on sales is subject to product categories. Second, among the Top200 Chinese enterprises, the state-owned enterprises that publish less enterprise generated content tend to perform better.

In addition, firm-generated content indirectly affects firm performance by influencing consumer engagement. That is to say, user evaluations are an important means to evaluate the effectiveness of social media marketing[Hoffman & Fodor 2012]. Firms generate or transmit information related to firm management or brand image to users with firm-generated content, so as to attract potential or target customers, and users' engagement. The impact of consumer engagement on firm performance has proved to be significantly positive. Consumers express their concerns and opinions through likes, forwarding, and commenting, which are similar to consumers' online word-of-mouth. These behaviors will affect users' attitudes and opinions towards a firm, as well as users' purchase decision-making process.

Therefore, it can be considered that corporate social media marketing can influence firm performance in direct way and indirect way.

7. Contributions and Limitations

7.1 Theoretical Contribution

Our study makes several important contributions to the literature. First, by accentuating the role of firm-generated content and consumer engagement and its impact, we underscore the importance of firms and consumers in social media marketing. The predominant emphasis of prior corporate social marketing research on the relationship between corporate marketing behavior and consumer behavior or firm market performance ignored the dynamic relationship between consumers and firms in social media. Firms not only can achieve higher firm performance through social media marketing strategies, but can also achieve higher economic value by improving consumers' engagement through appropriate social media marketing strategies.

Second, by juxtaposing the role of firm-generated content and consumer engagement, we unravel the interaction between the two, thereby complementing and enriching past works. Our results show that corporate social media marketing and consumer engagement have a significant impact on firm performance. Moreover, consumers' self-identity and information acquired from marketing content directly affect firm performance. These behaviors will also have a significant impact on corporate performance.

Third, this paper analyzes the influence of different types of firm marketing content on firm performance at the firm level. From the distribution of firm content types, it can be seen that, at this stage, firm marketing content is still focused on products, promotional information, or emotional expression. Our results show that these contents will have a negative impact on corporate performance to a large extent, and the comprehensive application of different types of information and persuasion is an effective way to achieve higher corporate performance.

7.2 Practical Implications

The findings of this study have practical implications for managing social media marketing and achieving higher firm performance.

First, the results prove the necessity of corporate social media marketing. During 2014-2016, more than 50,000 pieces of information were generated, and more than 13 million users participated in the process. More importantly, the amount of firm-generated content is showing an annual upward trend. As an important marketing channel, it is necessary to include social media in product marketing, brand promotion, and customer relationship management.

Second, the empirical results provide a reference for firms to develop and manage their social media marketing strategy. In this study, we analyze the impact of different types of firm-generated content on consumer engagement and firm performance in detail. The conclusions provide guidelines for the corporate management of existing social media marketing strategies and the formulation of new marketing strategies more in line with business objectives.

7.3 Limitations and Implications for Future Research

Our study has several limitations and offers directions for further research.

First, because of the data limitations, we didn't analyze the impact of different types of firm-generated content. We should analyze all 13 types of firm-generated content by increasing the sample number in the follow-up study. This would allow a more comprehensive analysis of the effect of different types of FGC in social media on consumer engagement and firm performance and provide a more comprehensive reference for firms to develop their marketing strategies.

Second, we do not consider the types or attributes of firms in this study. In the follow-up study, we should study the types of firms, considering firm size, industry attributes, and product types.

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REFERENCES

Abdul-Ghani, E., Hyde, K. F., & Marshall, R. Emic and etic interpretations of engagement with a consumer-to-consumer online auction site. *Journal of Business Research,* Vol.64,No.10:1060-1066,2011.

Abernethy, A. M., & Franke, G. R. The Information Content of Advertising: A Meta-Analysis. Journal of Advertising,Vol.25,No.2:1-17,1996.

Algesheimer, R., Borle, S., Dholakia, U. M., & Singh, S. S. The Impact of Customer Community Participation on Customer Behaviors: An Empirical Investigation. Marketing Science,Vol.29,No.4:756-769,2010.

Ashley, C., & Tuten, T. Creative Strategies in Social Media Marketing: An Exploratory Study of Branded Social Content and Consumer Engagement. Psychology & Marketing,Vol.32,No.1:15-27,2015.

Aspara, J., & Chakravarti, A. Investors’ reactions to company advertisements: the persuasive effect of product-featuring ads. European Journal of Marketing,Vol.49,No.5/6:943-967,2015.

Augier, M., & Teece, D. J. Dynamic capabilities and multinational enterprise: Penrosean insights and omissions. Management International Review,Vol.47,No.2:175-192,2007.

Balakrishnan, B. K. P. D., Dahnil, M. I., & Yi, W. J. The Impact of Social Media Marketing Medium toward Purchase Intention and Brand Loyalty among Generation Y. Procedia - Social and Behavioral Sciences,Vol.148,No.25:177-185,2014.

Beck, T., Levine, R., & Levkov, A. Big Bad Banks? The Winners and Losers from Bank Deregulation in the United States. Journal of Finance,Vol.65,No.5:1637-1667,2010.

Beckers, S. F. M., Doorn, J. V., & Verhoef, P. C. Good, better, engaged? The effect of company-initiated customer engagement behavior on shareholder value. Journal of the Academy of Marketing Science,Vol.46,No.3:366-383,2018.

Berger, J. A., Sorensen, A. T., & Rasmussen, S. J. Positive Effects of Negative Publicity: When Negative Reviews Increase Sales. Social Science Electronic Publishing,Vol.29,No.5:815-827,2009.

Bianchi, C., & Andrews, L. Investigating marketing managers' perspectives on social media in Chile. Journal of Business Research,Vol.68,No.12:2552-2559,2015.

Bingham, C. B., Eisenhardt, K. M., & Furr, N. R. What makes a process a capability? Heuristics, strategy, and effective capture of opportunities. Strategic Entrepreneurship Journal,Vol.1,No.1-2:27-47,2010.

Brodie, R. J., Ilic, A., Juric, B., & Hollebeek, L. Consumer engagement in a virtual brand community: An exploratory analysis. Journal of Business Research,Vol.66,No.1:105-114,2013.

Cai, H. Participative marketing: extending social media marketing through the identification and interaction capabilities from the Internet of things. Personal & Ubiquitous Computing,Vol.18,No.4:997-1011,2014.

Chen, H., De, P., & Yu, J. H. IT-Enabled Broadcasting in Social Media: An Empirical Study of Artists’ Activities and Music Sales.Vol.26,No.3:513-531,2015.

Chung, S., Animesh, A., Han, K., & Pinsonneault, A. Financial Returns to Firms’ Communication Actions on Firm-Initiated Social Media: Evidence from Facebook Business Pages. Social Science Electronic Publishing,Vol.16,No.3:233-246,2014a.

Chung, S., Animesh, A., Han, K., & Pinsonneault, A. (2014b). Firm’s social media efforts, consumer behavior, and firm performance. Paper presented at the International Conference on Information Systems, Auckland, New Zealand.

Cvijikj, I. P., & Michahelles, F. Online engagement factors on Facebook brand pages. Social Network Analysis & Mining,Vol.3,No.4:843-861,2013.

Dwivedi, Y. K., Kapoor, K. K., & Chen, H. Social media marketing and advertising. Marketing Review,Vol.15,No.3:289-309,2015.

Füller, J. Why consumers engage in virtual new product developments initiated by producers. Advances in Consumer research,Vol.33,No.639-646,2006.

Fama, E. F., & French, K. R. Common risk factors in the returns on stocks and bonds. Journal of Financial Economics,Vol.33,No.1:3-56,1993.

Fama, E. F., & French, K. R. Multifactor Explanations of Asset Pricing Anomalies. Journal of Finance,Vol.51,No.1:55-

84,1996.
Felix, R., Rauschnabel, P. A., & Hinsch, C. Elements of strategic social media marketing: A holistic framework. Journal of Business Research,Vol.70,No.118-126,2017.
Gensler, S., Völckner, F., Liu-Thompkins, Y., & Wiertz, C. Managing Brands in the Social Media Environment. Journal of Interactive Marketing,Vol.27,No.4:242-256,2013.
Godey, B., Manthiou, A., Pederzoli, D., Rokka, J., Aiello, G., Donvito, R., & Singh, R. Social media marketing efforts of luxury brands: Influence on brand equity and consumer behavior. Journal of Business Research,Vol.69,No.12:5833-5841,2016.
Goh, K. Y., Heng, C. S., & Lin, Z. Social Media Brand Community and Consumer Behavior: Quantifying the Relative Impact of User- and Marketer-Generated Content. Information Systems Research,Vol.24,No.1:88-107,2013.
Han, K., & Mithas, S. Information technology outsourcing and non-IT operating costs: an empirical investigation. Mis Quarterly,Vol.37,No.1:315-331,2013.
Hennig-Thurau, T., Hofacker, C. F., & Bloching, B. Marketing the Pinball Way: Understanding How Social Media Change the Generation of Value for Consumers and Companies. Journal of Interactive Marketing,Vol.27,No.4:237-241,2013.
Hoffman, D. L., & Fodor, M. Can You Measure the ROI of Your Social Media Marketing? Sale&Marketing,Vol.52,No.1:41-52,2012.
Hogan, J. E., Lemon, K. N., & Libai, B. What is the True Value of a Lost Customer? Social Science Electronic Publishing,Vol.5,No.3:196-208,2003.
Ismail, A. R. The influence of perceived social media marketing activities on brand loyalty: the mediation effect of brand and value consciousness. Asia Pacific Journal of Marketing & Logistics,Vol.29,No.1:1-17,2017.
Kelton, A. S., & Pennington, R. R. Internet financial reporting: The effects of information presentation format and content differences on investor decision making. Computers in Human Behavior,Vol.28,No.4:1178-1185,2012.
Kim, A. J., & Ko, E. Impacts of Luxury Fashion Brand’s Social Media Marketing on Customer Relationship and Purchase Intention. Journal of Global Fashion Marketing,Vol.1,No.3:164-171,2010.
Kim, S., Koh, Y., Cha, J., & Lee, S. Effects of social media on firm value for U.S. restaurant companies. International Journal of Hospitality Management,Vol.49,No.40-46,2015.
Kumar, A., Bezawada, R., Ramkumar, R., Janakiraman, R., & Kannan, P. K. From Social to Sale: The Effects of Firm Generated Content in Social Media on Customer Behavior. Journal of Marketing,Vol.80,No.1:7-25,2016.
Kumar, V., Aksoy, L., Donkers, B., Venkatesan, R., Wiesel, T., & Tillmanns, S. Undervalued or Overvalued Customers: Capturing Total Customer Engagement Value. Journal of Service Research,Vol.13,No.3:297-310,2010.
Laksamana, P. Impact of Social Media Marketing on Purchase Intention and Brand Loyalty: Evidence from Indonesia’s Banking Industry. International Review of Management & Marketing,Vol.8,No.53-72,2018.
Lee, D., & Hosanagar, K. The Effect of Social Media Marketing Content on Consumer Engagement: Evidence from Facebook. Harikesh Nair1-51,2014.
Lee, D., Hosanagar, K., & Nair, H. Advertising Content and Consumer Engagement on Social Media: Evidence from Facebook. Management Science,Vol.64,No.11:5101-5131,2013.
Lee, D., Hosanagar, K., & Nair, H. S. Advertising Content and Consumer Engagement on Social Media: Evidence from Facebook. Management Science,Vol.64,No.11:5101-5131,2018.
Luo, X., & Jie, Z. How Do Consumer Buzz and Traffic in Social Media Marketing Predict the Value of the Firm? Journal of Management Information Systems,Vol.30,No.2:213-238,2013.
Malthouse, E. C., Haenlein, M., Skiera, B., Wege, E., & Zhang, M. Managing Customer Relationships in the Social Media Era: Introducing the Social CRM House. Journal of Interactive Marketing,Vol.27,No.4:270-280,2013.
Manthiou, A., Rokka, J., Godey, B., & Liang, T. (2016). How Social Media Marketing Efforts Influence Brand Equity Creation and Its Consequences: The Case of Luxury Brands. Paper presented at the Proceedings of the 2014 Academy of Marketing Science (AMS) Annual Conference, Cham.
Martínez-Navarro, J., & Bigné, E. The Value of Marketer-Generated Content on Social Network Sites: Media Antecedents and Behavioral Responses. Journal of Electronic Commerce Research,Vol.18,No.1:52-72,2017.
Miller, A. R., & Tucker, C. E. Active Social Media Management: The Case of Health Care. Information Systems Research,Vol.24,No.1:52-70,2013.
Mohammadpour, A., Arbatani, T. R., Gholipour, T. H., Farzianpour, F., & Hosseini, S. A Survey of the Effect of Social Media Marketing on Online Shopping of Customers by Mediating Variables. Journal of Service Science & Management,Vol.7,No.7:368-376,2014.
Mollen, A., & Wilson, H. Engagement, telepresence and interactivity in online consumer experience: Reconciling scholastic and managerial perspectives. Journal of Business Research,Vol.63,No.9:919-925,2010.
Morgan, N. A., Vorhies, D. W., & Mason, C. H. Market orientation, marketing capabilities, and firm performance.

Strategic Management Journal,Vol.30,No.8:909-920,2009.
Paniagua, J., & Sapena, J. Business performance and social media: Love or hate? Business Horizons,Vol.57,No.6:719-728,2014.
Pentina, I., & Koh, A. Exploring Social Media Marketing Strategies in SMEs. International Journal of Internet Marketing & Advertising,Vol.7,No.4:292-310,2012.
Rindova, V. P., Williamson, I. O., Petkova, A. P., & Sever, J. M. Being good or being known: An empirical examination of the dimensions, antecedents, and consequences of organizational reputation. The Academy of Management Journal,Vol.48,No.6:1033-1049,2005.
Russo, J. E., & Chaxel, A. S. How persuasive messages can influence behavior without awareness. Journal of Consumer Psychology,Vol.20,No.3:338-342,2010.
Schultz, D. E., & James, P. Social media's slippery slope: challenges, opportunities and future research directions. Journal of Research in Interactive Marketing,Vol.7,No.2:86-99,2013.
Schweidel, D. A., & Moe, W. W. Listening in on social media: : a joint model of sentiment and venue format choice. Journal of Marketing Research,Vol.51,No.4:387-402,2014.
Seo, E. J., & Park, J. W. A study on the effects of social media marketing activities on brand equity and customer response in the airline industry. Journal of Air Transport Management,Vol.66,No.36-41,2018.
Tirunillai, S., & Tellis, G. J. Does Online Chatter Really Matter? Dynamics of User-Generated Content and Stock Performance. Marketing Science,Vol.31,No.2:198-215,2011.
Vries, L. D., Gensler, S., & Leeflang, P. S. H. Popularity of Brand Posts on Brand Fan Pages: An Investigation of the Effects of Social Media Marketing. Journal of Interactive Marketing,Vol.26,No.2:83-91,2012.
Wan, F., & Ren, F. The effect of firm marketing content on product sales: Evidence from a mobile social media platform. Journal of Electronic Commerce Research,Vol.18,No.4:288-302,2017.
Wei, J., Xu, J., & Zhao, D. Public engagement with firms on social media in China. Journal of Information Science,Vol.41,No.5:624-639,2015.
Whiting, A., & Williams, D. Why people use social media: a uses and gratifications approach. Qualitative Market Research,Vol.16,No.4:362-369,2013.
Wright, M. J. Predicting what? The strengths and limitations of a test of persuasive advertising principles. European Journal of Marketing,Vol.50,No.1/2:312-316,2016.
Wu, C. C., Chen, Y. J., & Wang, C. J. Is Persuasive Advertising Always Combative in a Distribution Channel? Marketing Science,Vol.28,No.6:1157-1163,2009.
Xie, K., & Lee, Y. J. Social Media and Brand Purchase: Quantifying the Effects of Exposures to Earned and Owned Social Media Activities in a Two-Stage Decision Making Model. Journal of Management Information Systems,Vol.32,No.2:204-238,2015.
Yang, S., Lin, S., Carlson, J. R., & Jr, W. T. R. Brand engagement on social media: will firms' social media efforts influence search engine advertising effectiveness? Journal of Marketing Management,Vol.32,No.5-6:526-557,2016.
Zhan, W., & Kim, H. G. Can Social Media Marketing Improve Customer Relationship Capabilities and Firm Performance? Dynamic Capability Perspective. Journal of Interactive Marketing,Vol.39,No.15-26,2017.
Zhi, D. A., Engelberg, J., & Gao, P. In Search of Attention. Journal of Finance,Vol.66,No.5:1461-1499,2011.