



Can Social Media Marketing Improve Customer Relationship Capabilities and Firm Performance? Dynamic Capability Perspective

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Abstract

Social media usage has become ubiquitous, and organizations need to manage this tool to meet their strategic goals. Companies are finding it necessary to modify their approach to customer relationship management (CRM) and develop new marketing capabilities that facilitate customer satisfaction. The purpose of this study is to examine how social media usage can help firms build new CRM capabilities and thus improve marketing adoption strategies and business performance. We suggest that social CRM capability is critical when companies merge social media into their marketing strategies to improve customer engagement and firm performance. We empirically analyze data from 232 companies using Facebook, COMPUSTAT North America, and Global Fundamentals annual databases for the period 2004–2014. This study contributes to extant literature by confirming a new form of CRM capabilities – social CRM – using the resource-based view and dynamic capabilities theory frameworks, and by demonstrating that social media usage plays a moderating role by amplifying the positive impact of social CRM capabilities on firm performance.

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Keywords: Social media marketing; Dynamic capabilities; Social customer relationship management (social CRM); Marketing capabilities; Customer engagement

Introduction

As social media networking has emerged and expanded rapidly in the past decade, interest in social media marketing among marketing scholars and organizations has also grown sharply worldwide. As managers become more comfortable with and active in including social networks as part of their integrated marketing communications, they have naturally turned their attention to questions regarding the return on investment of social media: Can social media marketing activities improve firm performance? (Hoffman and Fodor 2010).

Researchers have identified several benefits from social media marketing activities. They define “social media” as a

series of both hardware and software technological innovations (Web 2.0) that facilitate creative online users’ inexpensive content creation, interaction, and interoperability (Berthon et al. 2012). The fundamental nature of social media as a platform for consumers to interact with and influence one another has a more direct impact on brand communities, and it produces higher response rates and greater customer engagement than traditional marketing methodologies that focus only on firm–consumer relationship (Trusov, Bucklin, and Pauwels 2009).

Social media applications are also transforming the role of online users from passive consumers of information to active participants in creating and sharing information with one another. Nearly 30% of online users participate in some form of self-created content sharing (e.g., videos, stories, photos), and even more post comments on websites (Lenhart et al. 2010). In addition to facilitating interpersonal communications, social media applications have enabled customers to interact with business organizations and have empowered them to take an

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active role in co-creating their experiences (Pralhad and Ramaswamy 2004). Currently, managers are charged with integrating social media applications into existing customer relationship management (CRM) systems to develop new capabilities that improve customer experiences and satisfaction (Trainor et al. 2014). This merger of existing CRM systems with social media has extended the concept of CRM to incorporate a more collaborative, interactive, and network-focused approach to managing customer relationships (Trainor et al. 2014). The recently coined term “social customer relationship management” defines and describes this new way of developing and managing customer relationships (Greenberg 2010). Marketing scholars define social CRM as “the integration of customer-facing activities, including processes, systems, and technologies, with emergent social media applications to engage customers in collaborative conversations and enhance customer relationships” (Trainor 2012, p. 319). Organizations have recognized the potential of social CRM and have made considerable investments in it in the past two years (Trainor et al. 2014). Although current research focuses on social media applications, the effectiveness of social CRM systems remains largely unknown and underexplored (Trainor et al. 2014). Researchers have shown that CRM technologies alone rarely add value directly to firms and are most effective in doing so when combined with other firm resources (Chang, Park, and Chaib 2010; Jayachandran et al. 2005; Srinivasan and Moorman 2005; Trainor et al. 2014). However, to date, scant research examines how social media technologies interact with CRM systems and marketing strategies to enhance firm value.

Consequently, the purpose of this study is to examine how social media usage can help firms build new CRM capabilities and thus improve marketing adoption strategies and business performance. We developed our conceptual framework using the resource-based view (RBV) and dynamic capabilities theory by arguing that investments in social media can be considered resource inputs to developing new marketing-related capabilities. The results suggest that social CRM capability is critical when companies merge social media into their marketing strategies to improve customer engagement and firm performance. This study also finds that social media usage plays an important moderating role between social CRM capabilities and firm performance. These findings provide several contributions to the CRM literature as well as managerial insight into the efficacy of social media technology use. This study also contributes to existing social CRM literature by answering the call to expand the generalizability of the relationship between firms’ social CRM capabilities and performance with cross-industry panel data sets (Luo, Zhang, and Duan 2013).

We begin by presenting the conceptual background of our study. We then describe our research method and data set, which consists of data from 232 companies drawn from Facebook, COMPUSTAT North America, and Global Fundamentals annual databases for the period 2004–2014. Next, we present our analyses and results. We conclude with our findings with respect to theory and practice and share potential areas for future research.

Literature Review and Research Framework

Theory: The RBV and Dynamic Capabilities Extensions

The RBV and the dynamic capabilities perspective serve as the theoretical foundations of the current research. Both perspectives suggest that performance is determined by a firm’s resource endowment and its effectiveness at converting these resources into capabilities (Barney 1991; Day 1994). The RBV proposes that competitive advantages arise from developing and deploying unique, valuable, inimitable, and non-substitutable resources (Barney 1991; Lahiri, Kedia, and Mukherjee 2012); several studies that empirically test RBV show consistent results (Borch, Huse, and Senneseth 1999; Schroeder, Bates, and Junttila 2002). Dynamic capabilities theory proposes that marketplaces are dynamic and that firms, rather than being heterogeneous in their resource endowments, exhibit differences in the capabilities by which they acquire and deploy resources. These differences explain inter-firm performance variance over time (Eisenhardt and Martin 2000; Makadok 2001; Teece, Pisano, and Shuen 1997). Capabilities are also dynamic, such that they can help firms implement new strategies to reflect changing market conditions by combining and transforming available resources in new and different ways (Morgan, Vorhies, and Mason 2009; Teece, Pisano, and Shuen 1997).

These findings suggest that investments in hardware and software to support CRM systems will not necessarily improve business performance; rather, improved business performance occurs when specific marketing capabilities are created by deploying CRM technological resources in combination with other complementary resources (Trainor et al. 2014). Thus, building from this logic, we propose that social media marketing technologies must be integrated with CRM systems to form a specific firm-level capability that influences business performance (Trainor et al. 2014). Furthermore, the extent to which these social media marketing technologies are integrated throughout the organization will facilitate marketing capability development, improve customer relationships, and increase customer satisfaction.

Traditional CRM

In a traditional CRM framework, the organization possesses substantial customer information and uses this information to manage its customer relationships (Payne and Frow 2005; Verhoef et al. 2010). Reinartz, Krafft, and Hoyer (2004, p. 295) define CRM as a procedure that “entails the systematic and proactive management of relationships as they move from beginning (initiation) to end (termination), with execution across the various customer-facing contact channels.” Boulding et al. (2005) identify several key elements:

CRM relates to strategy, the management of the dual creation of value, the intelligent use of data and technology, the acquisition of customer knowledge and the diffusion of this knowledge to the appropriate stakeholders, the

development of appropriate (long-term) relationships with specific customers and/or customer groups, and the integration of processes across the many areas of the firm and across the network of firms that collaborate to generate customer value.

This idea recognizes CRM as both a strategy and a method for implementing information technology to support marketing activities that create customer value (Trainor 2012). Jayachandran et al. (2005) find that the outcomes of CRM technology are dependent not only on the development of critical information processes that result from a firm's technology implementation but also on its strategic orientation. In line with the RBV, Rapp, Trainor, and Agnihotri (2010) view CRM technology capability as the integration of technology, human, and business resources. They suggest that a multidimensional CRM capability construct consists of both static and operational dimensions along with a strategic dimension (e.g., customer orientation). A stream of research suggests that technology resources alone are not sufficient to gain significantly greater performance and that strategic and tactical resources have an interactive effect on the development and maintenance of customer relationships (Bharadwaj 2000; Chang, Park, and Chaiy 2010; Coltman 2007). That is, an organization will not necessarily realize performance improvements simply by investing more in hardware and software to support CRM initiatives. Rather, CRM technology should be integrated with customer orientation strategies and human skills to develop a new advantage-generating capability (Coltman 2007; Trainor 2012).

CRM and Social Media

The traditional definition of CRM is still generally valid, but the rapid and widespread popularity of social media networking in both consumer and business markets indicates a need to reconsider the traditional view of CRM (Trainor 2012). Customers have begun using social media networking to connect with other individuals and firms and through user-generated information and interactivity within the network. Consumers have become actively involved in the co-creation of their experiences with firms (Berthon et al. 2012; Hanna, Rohm, and Crittenden 2011; Reimann, Schilke, and Thomas 2010; Trainor et al. 2014). This change in customer behavior is enabling companies to facilitate more customer–firm interactions by deploying new technologies and developing new capabilities (Trainor 2012; Trainor et al. 2014). The emergence of a “social customer” or “creative consumer” who produces much of the value-added content in social media is also challenging practitioners and researchers to reconsider what it means to manage customer relationships (Berthon et al. 2012; Greenberg 2010). Thus, the concept of CRM has extended to recognize new capabilities enabled by the technological and social shifts brought by social media networking. Although social CRM is a relatively new domain in marketing, studies have begun focusing on the boundary between CRM and social media (Malthouse et al. 2013).

Social CRM

Recognizing the important role of social media in CRM systems, this study adopts the following definition of social CRM: “the integration of traditional customer-facing activities, including processes, systems, and technologies with emergent social media applications to engage customers in collaborative conversations and enhance customer relationships” (Trainor 2012, p. 321). Social CRM is not a replacement for traditional CRM but instead is an extension that incorporates the social functions, processes, and capabilities that address firm–customer interaction as well as customer–customer interaction (Greenberg 2010). Although few researchers have specifically examined how social media CRM capabilities influence business performance, several RBV studies show how investments in marketing and information technology are integrated to form new capabilities that ultimately enhance firm performance (Malthouse et al. 2013; Mithas, Ramasubbu, and Sambamurthy 2011; Nath, Nachiappan, and Ramanathan 2010; Rapp, Trainor, and Agnihotri 2010). Previous studies have demonstrated that “marketing capabilities” (Morgan, Vorhies, and Mason 2009), “e-marketing capabilities” (Trainor et al. 2011), and “CRM capabilities” (Srinivasan and Moorman 2005) positively influence both customer relationship and organization performance.

Social CRM Capabilities

Taking these findings into account, Trainor et al. (2014) propose “social CRM capabilities” as a unique combination of emerging technological resources and customer-centric management systems that can lead to customer satisfaction, loyalty, and retention. In addition, they demonstrate that social CRM capabilities are positively associated with customer relationship performance (Trainor et al. 2014). The current study adopts the following definition for social CRM capability: “a firm's competency in generating, integrating, and responding to information obtained from customer interactions that are facilitated by social media technologies” (Trainor et al. 2014, p. 271).

Conceptual Model and Hypotheses

To explain how using social media technology can benefit both customer relationships and financial performance, we develop a conceptual model that integrates market adaptation strategies and market capability development. The model first establishes the relationship between social CRM capabilities and customer engagement and then considers how social CRM capabilities influence firm performance directly. Next, the model delineates relationships between customer engagement and firm performance. Finally, it identifies the moderating effects of social media usage on the relationships between social CRM capabilities and firm performance. Fig. 1 depicts this conceptual model.

Effects of Social CRM Capabilities

Social CRM capabilities emphasize a firm's ability to engage customers in collaborative conversations and enhance

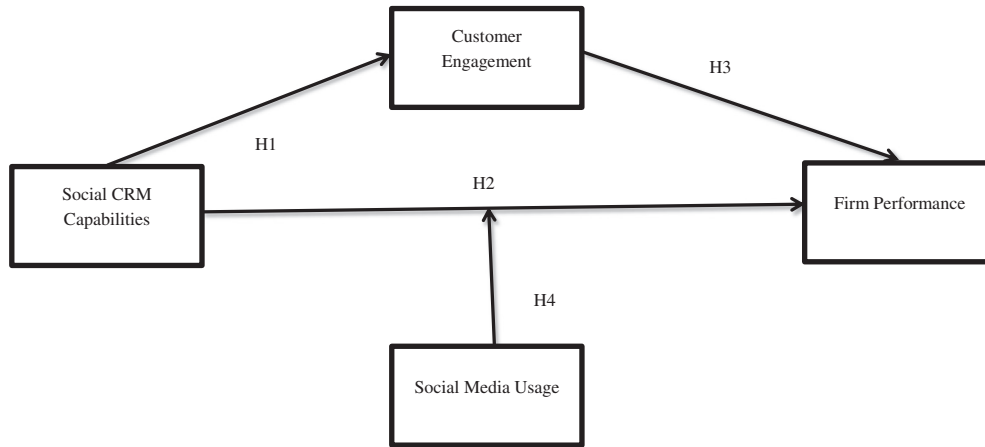


Fig. 1. Conceptual model.

customer relationships (Trainor et al. 2014). Interactive marketing technologies can not only enable more intense and higher-quality interactions with stakeholders but also increase the quantity and quality of information provided to customers (Wu, Mahajan, and Balasubramanian 2003). Recent literature shows that marketing capabilities, including social CRM capabilities, lead to the development of strong customer relationships that positively influence customer satisfaction and loyalty (Hooley et al. 2005; Rapp, Trainor, and Agnihotri 2010; Trainor et al. 2014). From a technology-based perspective, the literature suggests that marketing technologies have enabled firms to interact more effectively and efficiently with customers (Coviello, Milley, and Marcolin 2001), to capture and use customer information developing for more effective customer responses (Jayachandran et al. 2005). The purpose of a social media brand page is to encourage consumers to react or interact (e.g., liking, commenting, sharing); therefore, when companies or brands show intention to interact and co-create value with customers, customers' engagement level should increase because they can receive better information and feel they are valued. In line with our position that social CRM capabilities emphasize the integration and accessibility of customer information to engage customers in collaborative conversations and enhance customer relationships, we argue that firms possessing such capabilities will be more effective in engaging customers and leveraging this information to better serve their customers. Thus, we propose the following:

H1. A firm's social CRM capabilities are positively associated with its level of customer engagement.

In line with the RBV and dynamic capabilities theory, previous studies suggest that developing distinctive capabilities can be a source of superior organizational performance (Day 1994; Menguc and Auh 2006). Firms adept at converting existing resources and capabilities into new value-adding processes and capabilities are more likely to improve performance. Many studies have proved that marketing capabilities are positively associated with firm performance for both large firms in industrialized countries and small firms (Fahy et al. 2000; Morgan, Vorhies, and Mason 2009; Shin

2013). Social CRM capabilities increase efficiency related to customer communications and internal administration. Therefore, firms that have more social CRM capabilities should realize better organization performance overall. Thus, we propose the following:

H2. A firm's social CRM capabilities are positively associated with its business performance.

Effects of Customer Engagement

Companies report customer engagement as the most important among several specific benefits they expect from their presence on social media (Sashi 2012). Increasing interest in customer engagement has paralleled both the continued evolution of the Internet and the emergence of new digital technologies and tools dubbed Web 2.0, especially social media networks such as wikis and blogs; microblogging sites such as Twitter; video sites such as YouTube; and social networking sites such as Facebook, MySpace, and LinkedIn (Sashi 2012; Wirtz, Schilke, and Ullrich 2010). The emergence of the customer engagement concept recognizes the opportunities offered by the interactive aspects of Web 2.0 technologies and tools to transform the relationship between customers and sellers (Tsimonis and Dimitriadis 2014). Practitioners and researchers view the interactivity of social media, along with its ability to establish conversations among individuals and firms in communities of sellers and customers and involve customers in content generation and value creation, as providing the means to better serve customers and satisfy their needs. Practitioners thus have attempted to use social media marketing to build enduring relational exchanges with strong emotional bonds to improve business performance (Mitic and Kapoulas 2012; Sashi 2012; Tsimonis and Dimitriadis 2014).

Focusing on customer involvement on social media brand/company pages, we adopt the following definition of customer engagement from the online brand perspective as "behaviors [that] go beyond transactions, and may be specifically defined as a customer's behavioral manifestations that have a brand or firm focus, beyond purchase, resulting from motivational

drivers” (Van Doorn et al. 2010, p. 254). Customer engagement occurs on social media when delighted or loyal customers share their positive feelings in interactions with others in their social networks and become advocates for a product, brand, or company (Gummerus et al. 2012; Sashi 2012). As these engaged customers develop new connections, they become advocates for the seller in interactions with other customers and even non-customers on their social media networks. Customer engagement turns customers into fans who remain wedded through ups and downs in intimate, enduring relationships and even proselytize for the product, brand, or company (Tsimonis and Dimitriadis 2014). Consumers who become fans of these brand pages tend to be more loyal and committed to the company and are more open to receiving information about the brand (Bagozzi and Dholakia 2006). Increasing numbers of people are spending increasing amounts of time on social media; thus, it is meaningful to analyze consumers’ engagement in this context (de Chernatony et al. 2008; Kaplan and Haenlein 2010). Research shows that customer engagement is directly and positively related to customer relationship outcomes such as satisfaction, affective commitment, and customer loyalty (Brodie et al. 2011). Social media operate like a large word-of-mouth platform that catalyzes and accelerates the distribution and exchange of information among individuals and organizations (Chan and Ngai 2011; Dellarocas 2003; Godes and Mayzlin 2004; Jalilvand and Samiei 2012).

Social media brand pages can help companies achieve three strategic goals: building brand awareness, increasing loyalty, and boosting sales (Castronovo and Huang 2012). Research shows that customer engagement is directly and positively related to relationship outcomes such as satisfaction, trust, affective commitment, and loyalty (Brodie et al. 2013). Customer engagement expands the role of customers by including them in the value-adding process as co-creators of value. Companies may also want to encourage and reward consumers for becoming more active on the site to receive maximal relationship benefits (Gummerus et al. 2012). Previous customer engagement studies also show that engaged and satisfied customers may create and disseminate brand/firm information that other constituents can use to create reputation (Fombrun and Shanley 1990) and positive brand image (Coulter et al. 2012). With high levels of customer engagement on social media, companies can better employ the interactive features of social media to create a better company image, better customer experiences, and more future purchase behaviors. Thus, customer engagement is also a key factor that influences customer loyalty and, ultimately, firm performance. We hypothesize the following:

H3. A firm’s customer engagement level on social media is positively associated with its business performance.

Moderating Effects of Social Media Technology

Social media technologies influence an organization’s social CRM capability by providing the environment to engage

customers in collaborative conversations and enhance customer relationships. Social media usage can be viewed as an index of how much an organization uses social media technologies. Firms that actively use social media can increase consumers’ awareness of their brand and themselves and also highlight their intentions to engage in interactive dialogue, thus augmenting the impact of social CRM capabilities. Advertising can also amplify the impact of social CRM capabilities on performance by attracting consumers’ attention. The existence of an active, official social media account implies that firms are eager to build relationships with consumers, and consumers become more willing to participate in acquiring or processing information about these firms. Firms can thus leverage the positive impact of social media activities to highlight and differentiate themselves from other competitors, enhancing consumers’ future purchase likelihood.

In addition, organizations adapt to rapidly changing market environments through the introduction of technical innovations, which lead to greater performance (Han, Kim, and Srivastava 1998). In this sense, social CRM capability can be viewed as a form of innovation based on the definition we adopted (Trainor et al. 2014). Organizations with a high level of social media usage are more likely to adapt to the social media environment and achieve an advantage by acquiring customer information and trust earlier than competitors. In line with the premise that market-related capabilities allow firms to accurately anticipate changes in markets and develop appropriate responses, we expect this relationship to be even stronger for firms that use social media technology extensively, thus having a higher impact on firm performance. We hypothesize the following:

H4. A firm’s social media usage positively moderates the relationship between its social CRM capability and firm performance; that is, the positive relationship will be stronger when the level of social media usage is higher.

Methodology

Data and Sample

Social Media Data

Because we aim to examine and compare social media usage, we collected our primary social media data from one of the earliest social media websites: Facebook. Because some of the companies from which we collected data had multiple Facebook accounts acting on their behalf, we chose for analysis the accounts that appear on each company’s official website, including both the company’s and its main brands’ Facebook accounts, to best reflect any organizational policy or practice on the use of social media. We downloaded all postings from these Facebook accounts from the day these companies began using Facebook until December 31, 2014.

COMPUSTAT

To test firm performance and control our data sets, we collected financial statement data from COMPUSTAT North America and Global Fundamentals annual databases. We

initially drew the data for a 34-year period (1980–2014), but then we used the time span of the firms’ social media activities. We calculated return on assets as a measure of firm performance from the data, and we collected other control variables, such as number of employees.

Because only 379 brands/companies have available an American Customer Satisfaction Index (ACSI), we used this list to identify our sample companies by combining those brands under the same company. After we matched ACSI list and COMPUSTAT data, we were left with 340 firms. We continued to match ACSI and COMPUSTAT to social media data and to exclude companies that did not have Facebook accounts. The final sample consisted of 232 companies.

Measures

Social Media Usage

As a platform for consumers to interact with and influence one other, social media has a more direct impact on brand communities, and it produces higher response rates and customer engagement levels than traditional marketing methodologies that focus only on the firm–consumer relationship (Trusov, Bucklin, and Pauwels 2009). Thus, we measured social media usage with data collected from companies’ Facebook account each year: the number of posts of the sample company each year. More posts mean that the sample company used Facebook more often.

Customer Engagement

Social media has also enabled customers to interact with business organizations and has empowered them to take an active role in co-creating their experiences (Pralhad and Ramaswamy 2004). When companies establish social media pages, they are expecting consumers to visit the page, become fans, and share the content with their own friends. However, research suggests that “likes” of brand social media pages may be too weak a signal of future engagement behavior for the brand because it takes mere seconds of attention (John et al. 2016). In contrast, when consumers decide to share the company’s post, they have the intention of sharing this post with their own social network. Thus, we measured customer engagement by the number of posts customers shared to help companies deliver the information in their own social network.

Social CRM Capabilities

An important goal of social CRM capabilities at the firm level is to enhance both the perceived value of the firm’s products and customer relationship with the firm’s current and potential customers. This goal is partly reflected in growing sales, through a better understanding of customer needs and distinctive targeting of appropriate customers. Thus, we developed the social CRM capability measure using information from corporate disclosures with an input–output stochastic frontier model (Battese and Coelli 1992; Dutta, Narasimhan, and Rajiv 1999; Xiong and Bharadwaj 2013), an effective model for predicting efficiencies of individual firms in an industry (Battese and Coelli 1992; Dutta, Narasimhan, and

Rajiv 1999). The RBV defines a firm’s capability as its ability to deploy the resources (inputs) to achieve the desired objectives (the output). The input–output conceptualization of the firm’s capabilities makes the stochastic frontier estimation (SFE) methodology well suited because SFE provides the appropriate econometric technique to empirically estimate firms’ level of efficiency (Dutta, Narasimhan, and Rajiv 2005, 1999). The input–output SFE approach models a firm’s functional activities as an efficient frontier relating the productive resources/inputs a firm uses to the optimal attainment of its functional objectives/outputs, if the firm deploys these resources most efficiently (Dutta, Narasimhan, and Rajiv 2005, 1999). The SFE involves two random components, one associated with the presence of inefficiency and a traditional random error (Battese and Coelli 1992). The lower the functional inefficiency, the higher is the functional capability of the firm. Therefore, previous studies have used the inverse of a firm’s functional inefficiency as the measure of its functional capability (Dutta, Narasimhan, and Rajiv 2005, 1999; Narasimhan, Rajiv, and Dutta 2006; Xiong and Bharadwaj 2013).

Following Xiong and Bharadwaj (2013), we used this equation:

$$Sales_{it} = f(X_{it} : Resource_{it}, \alpha) \times \exp(\varepsilon_{it}) \times \exp(-\eta_{it}), \quad (1)$$

where $Sales_{it}$ represents the sales (the output) for the i th firm at the t th period of observation; $f(X_{it} : Resource_{it}, \alpha)$ is a suitable function of a vector, x_{it} , of factor inputs (and firm-specific variables), associated with the sales of the i th firm in the t th period of observation, and a vector, α , of unknown parameters; ε_{it} captures random errors beyond the firm’s control; and η_{it} captures the firm’s inefficiency of converting resources (inputs) into sales (the output). Resources include the firm’s technology base; sales, general, and administrative expenses; and receivables (Xiong and Bharadwaj 2013). In addition to the traditional resource inputs, we add social media resource inputs (SMR) (i.e., HasTag, HasLink, HasVideo, IsReply, and HasImage) to emphasize the social CRM capabilities using

Table 1
List of items used for SFE of social CRM capabilities.

Item	Description
1 Social media resource inputs (SMR): HasTag, HasLink, HasVideo, IsReply HasImage	HasTag — the number of posts that contain tags HasLink — the number of posts that contain superlinks HasVideo — the number of posts that contain videos IsReply — the number of posts that are replies to others HasImage — the number of posts that contain images
2 Sales, general, and administrative stock (SGAS)	Sales, general and administrative expense
3 Receivable stock (RCS)	Account receivables
4 industry and market conditions (MC)	Dummy variables based on the four-digit SIC code of firm i
5 Sales output	Total sales

social media. Social CRM assumes that customers are actively engaging with the firm; therefore, these inputs show how they do so (Malthouse et al. 2013). Table 1 summarizes all the items we employed in the SFE of social CRM capabilities.

Because resources from previous years can influence current revenue, we use a Koyck lag function with higher weights on more recent years to derive measures of sales, general, and administrative stock; receivable stock; and advertising expense stock (Dutta, Narasimhan, and Rajiv 1999). For example, we define ADSTOCK for period t as $ADSTOCK_t = \sum_{k=1}^{k=t} \gamma^{t-k} \times ADExpense_k$, where γ represents the weight attached to the past value of advertising expenses. Following previous literature (Dutta, Narasimhan, and Rajiv 2005), we used a weight of .5; the results were robust to different weights. Using the same formula, we calculated SGASTOCK for period t as $SGASTOCK_t = \sum_{k=1}^{k=t} \varphi^{t-k} \times SGAexpense_k$. Although sales, general, and administrative stock also includes items that are not strictly within the domain of marketing, it is a good proxy for the amount the firm spends on its market research, sales effort, trade expenses, and other related activities. Other stock variables are also calculated by the same method.

To control for industry and market conditions that might differ across the sample, we divided our sample of firms on the basis of their four-digit Standard Industrial Classification (SIC) code. For estimation purposes, we code the variables as dummy variables based on the four-digit SIC code of firm $_i$.

Then, we used the stock variables as inputs (X_{it} : Resource $_{it}$) in Eq. (2). We derived the maximum likelihood estimate of the inefficiency term η_{it} , then rescaled the estimate η_{it} to be between 0 and 100, and used $100 - \eta_{it}$ as the marketing capability measure (Xiong and Bharadwaj 2013). Appendix 1 describes the statistics of the inefficiency term η_{it} and the efficiency index $100 - \eta_{it}$.

$$\ln(\text{Sales}_{it}) = \alpha_0 + \alpha_1 \ln(\text{SGAS}_{it}) + \alpha_2 \ln(\text{RCS}_{it}) + \alpha_3 \ln(\text{SMR}_{it}) + \alpha_4 \text{MC}_i + \varepsilon_{it} - \eta_{it}. \quad (2)$$

Firm Performance

We used Tobin’s q as the dependent variable in our study. We measured it by summing the market value of equity and the book value of debt, divided by the book value of the total assets for the period in which the individual firm is involved. We gathered financial data from COMPUSTAT.

Control Variables

We collected customer satisfaction data from the ACSI, a customer-based measurement system for evaluating and enhancing firm performance. The ACSI is designed to be representative of the economy as a whole and covers more than 300 firms from over 40 industries in the seven major consumer sectors of the economy, whose 1994 sales are in excess of \$2.7 trillion (Fornell et al. 1996). An individual firm’s ACSI represents its served market’s (i.e., its customers’) overall evaluation of total purchase and consumption experience (Anderson, Fornell, and Lehmann 1994; Anderson, Fornell, and Mazvancheryl 2004; Fornell et al. 1996). The ACSI contains 20 years of records beginning from its baseline year, 1994, according to firms’ marketing activities. We used the indexes of the matching company each year from 2004 to 2014 as the customer satisfaction measurement.

To control for firm heterogeneity and industry, we also used the control variables firm size, leverage, industries categories, and total sales every year, and year fixed effects. To do so, we used the average total number of employees as an indicator variable for firm size and nine industry categories with dummy variables. Appendix 2 summarizes the measurement and the units of variables used in our empirical analysis.

Analysis and Results

We used STATA 14.0 to generate descriptive and inferential statistics and to conduct panel regressions to test the hypothesized relationships. Table 2 presents the correlation matrix descriptive statistics (means, standard deviations, and correlations) for all variables. The range of social media usage variable and the time length using social media is large, which means our sample companies have a wide range of strategies. The results of the correlation matrix indicate that social CRM capability is positively related to Tobin’s q ($r = .05$) and customer engagement is positively related to Tobin’s q ($r = .03$).

Hypotheses Test

Table 3 presents fixed-effect panel regression results testing H1–H4. Model 1 represents H1, H2, and H3; the mediating effect; and full model. Model 2 represents the moderating effect of social media usage between social CRM capability and firm performance (H4). In H1, we predicted a positive relationship

Table 2
Correlation matrix and descriptive statistics.

No.	Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9
1	Firm performance (Tobin’s q)	4.11	8.06	1.00								
2	Year	2009	3.16	.06	1.00							
3	Social CRM capability	88.04	1.90	.05	.01	1.00						
4	Social media usage	11.37	17.87	.01	.38	-.17	1.00					
5	Customer engagement	6.01	12.28	.08	.56	-.16	.85	1.00				
6	Sales	9.30	2.47	-.10	-.02	-.92	.11	.12	1.00			
7	Employee	3.64	1.84	-.18	-.03	-.65	.03	.07	.80	1.00		
8	Leverage	.22	1.37	-.15	-.01	-.25	-.02	-.03	.27	.15	1.00	
9	Customer satisfaction	76.55	5.71	-.11	.07	.06	.05	.05	-.04	.01	.27	1.00

Table 3
Results of fixed-effect (within) panel regressions.

Models	1						2		
	H1	H2	H3	Mediating effect		Full model	H2	H4 (Full model)	
Dependent variable	Customer engagement	Tobin's q	Tobin's q	Tobin's q	Customer engagement	Tobin's q	Tobin's q	Tobin's q	
Constant	-1,170.318 (343.982)**	-429.921 (131.726)**	-45.427 (13.170)**	-429.921 (131.726)**	-1,170.318 (343.982)**	-45.427 (13.170)**	-436.990 (133.425)**	-429.921 (131.726)**	-526.561 (137.439)***
Social CRM capability	13.310 (3.506)***	4.085 (1.380)**		4.085 (1.380)**	13.310 (3.506)***		4.164 (1.399)**	4.085 (1.380)**	5.044 (1.432)**
Social media usage									-0.226 (.023)
Customer engagement			-0.293 (.020)			-0.293 (.020)	-0.006 (.018)		
Social media usage × Social CRM capability									.812 (.367)*
Sales	3.113 (6.230)	8.244 (2.023)***	-5.316 (.937)***	8.244 (2.023)***	3.113 (6.230)	-5.316 (.937)***	8.273 (2.027)***	8.244 (2.023)***	8.800 (2.024)***
Employee	7.441 (3.808)*	-2.954 (1.216)*	-0.835 (.849)	-2.954 (1.216)*	7.441 (3.808)*	-0.835 (.849)	-2.906 (1.224)*	-2.954 (1.216)*	-2.798 (1.210)*
Leverage	-1.499 (21.967)	-8.948 (7.142)	-12.740 (5.063)*	-8.948 (7.142)	-1.499 (21.967)	-12.740 (5.063)*	-8.902 (7.155)	-8.948 (7.142)	-6.653 (7.174)
Customer satisfaction	-0.335 (.232)	.075 (.072)	.072 (.064)	.075 (.072)	-0.335 (.232)	.072 (.064)	.072 (.073)	.075 (.072)	.751 (.723)
Industry fixed	Included	Included	Included	Included	Included	Included	Included	Included	Included
Year fixed	Included	Included	Included	Included	Included	Included	Included	Included	Included
Observations	232	232	232	232	232	232	232	232	232
R2	.7	.12	.12	.12	.7	.12	.12	.12	.14

* $p < .10$.
** $p < .01$.
*** $p < .001$.

between social CRM capability and customer engagement. The coefficient estimate for the social CRM capability variable is significantly positive ($p < .001$), providing support for H1. As we predicted in H2, social CRM capability had a positive and statistically significant effect ($p < .01$) on firm performance. However, contrary to H3, customer engagement had negative but insignificant impact on firm performance. Finally, the statistically significant and positive coefficient estimate of social media usage × social CRM capability ($p < .1$) in H4 confirms that social media usage positively moderates the relationship between social CRM capability and firm performance.

Mediation Effects Test

In the hypotheses, we suggested one mediation effect of customer engagement on the relationship between social CRM capability and firm performance. We tested four conditions that should be met to verify the mediating effect:

1. Social CRM capability is significantly related to firm performance.
2. Social CRM capability is significantly related to customer engagement.
3. Customer engagement is significantly related to firm performance.

4. After controlling for customer engagement, the relationship between social CRM capability and firm performance is no longer significant.

For the mediation effect of customer engagement, the first criterion is satisfied. Social CRM capability is positively and significantly related to firm performance ($p < .01$). The second criterion is also satisfied. The social CRM capability has a positive impact on the mediator, customer engagement ($p < .001$). The third and fourth criteria, however, are not satisfied. Customer engagement has negative insignificant impact on firm performance, and after controlling for customer engagement, the relationship between social CRM capability and firm performance is still significant. Thus, the results fail to show clear statistical evidence to verify that customer engagement plays a mediating role in the relationship between social CRM capability and firm performance.

Accounting for Endogeneity and Firm-specific Unobserved Heterogeneity

We applied Arellano and Bond's (1991) generalized method of moments (GMM) approach to address the problem of both endogeneity and firm-specific unobserved heterogeneity. This dynamic panel-data method is useful because valid instruments including first differencing allow analysts to control for unobserved factors and the endogeneity of the lagged

dependent variable in panel data settings (Clark, Doraszelski, and Draganska 2009). The Arellano–Bond GMM uses first differences and transforms our panel regression model into the following model:

$$\Delta y_{it} = \Delta y_{it-1} + \Delta x'_{it} \beta + \Delta v_{it}, \tag{3}$$

where $\Delta v_{it} = \Delta u_i + \Delta e_{it} = (u_i - u_i) + \Delta e_{it} = \Delta e_{it}$. This transformation removes the firm-specific unobserved heterogeneity. After the transformation, the lagged dependent variable Δy_{it-1} (id est., Δ Tobin's $q_{it-1} = \text{Tobin's } q_{it-1} - \text{Tobin's } q_{it-2}$) is correlated with Δe_{it} , because Δe_{it} contains e_{it-1} , and e_{it-1} is a component of Tobin's q_{it-1} . To resolve the endogeneity problem, we use two or more periods' lagged Tobin's q for instruments of the first differences; that is, we use Tobin's q_{it} and further lags as valid instruments for Δ Tobin's q_{it-1} when $E[e_{it-1}, e_{it-2}] = 0$ (Arellano and Honoré 2001). In other words, if the error terms are serially uncorrelated, the lagged Tobin's q and other lagged endogenous variables are considered valid instruments (Arellano and Bond 1991; Xiong and Bharadwaj 2013). The valid instruments imply that Tobin's q_{it-2} is correlated with Δ Tobin's q_{it-1} due to Δ Tobin's $q_{it-1} = \text{Tobin's } q_{it-1} - \text{Tobin's } q_{it-2}$. In addition, Tobin's q_{it-2} is not correlated with Δe_{it} because Δe_{it} does not contain e_{it-2} . Based on the preceding estimation strategy, the AR(2) test results suggest that the second-order differenced error terms for both social CRM capability ($p = .316$) and customer engagement ($p = .258$) to firm performance are serially uncorrelated, holding the assumption that $E[e_{it-1}, e_{it-2}] = 0$ (Arellano and Bond 1991). Furthermore, the Hansen J tests of overidentifying restrictions failed to reject the null for both hypotheses ($p = .717$

and .149). Therefore, the instruments are valid. Table 4 reports the p -values of AR(2) and Hansen J tests.

Discussion and Contributions

This study uses an unbalanced panel dataset and examines the effects of social CRM capabilities on customer engagement and firm performance, as well as the moderating effect of social media usage on those direct effects and the mediation effect of customer engagement. The results suggest that social CRM capability is critical when companies merge social media into their marketing strategies to improve customer engagement and firm performance. This study also finds that social media usage plays an important moderating role between social media social CRM capabilities and firm performance. These findings provide several contributions to the CRM literature and offer managerial insight into the efficacy of social media technology use.

Theoretical Implications

In line with previous studies (Trainor et al. 2014), the findings confirm the existence of social CRM capabilities, which represents a new form of CRM capabilities on social media. Furthermore, the study validates the role of social CRM capabilities as a leading factor in business performance. Firms should not treat social media investments as net costs; rather, social media is a significant resource to build a new form of CRM capabilities for organizational transformation and firm value.

Furthermore, this study adds novel insights by demonstrating that social media usage plays a moderating role by amplifying the positive impact of social CRM capabilities on firm performance. To improve social CRM capabilities, companies must have the appropriate level of social media activities to attain benefits. Moreover, we theoretically propose and empirically test the possible pathways to explain this process. The moderating role of social media usage results from its effect of attracting consumers' attention and firms' quicker innovative response to the news marketing environment. In such cases, firms that are highly involved in social media marketing are likely to use the interactive features. With Tobin's q as the outcome variable, our results indicate that with a high level of social media usage, firms are more likely to improve firm performance with higher social CRM capabilities.

This study also contributes to existing social CRM literature by answering the call to expand the generalizability of the relationship between firms' social CRM capabilities and performance with cross-industry panel datasets (Luo, Zhang, and Duan 2013). Although recent studies have explored the relationship between social CRM/social media marketing/social media technology and firm performance/value, few have used data from multiple industries. Our results extend the previous studies and suggest that social CRM capabilities improve performance in multiple industries.

Table 4
Results of dynamic panel data model for unobserved heterogeneity and endogeneity.

Variable	H2	H3
Dependent variable	Tobin's q_{it}	Tobin's q_{it}
Lagged Tobin's q (Tobin's q_{it-1})	.637 (.082)***	.725 (.024)***
Social CRM capability	4.872 (2.280)*	
Customer engagement		.018 (.018)**
Sales	6.693 (3.111)*	-1.725 (1.195)
Employee	.184 (.745)	-1.584 (.928)*
Leverage	-1.171 (4.327)	-18.653 (11.248)*
Customer satisfaction	-.102 (.696)	.018 (.040)
Industry fixed	Included	Included
Year fixed	Included	Included
Sample size	232	232
p -Value of AR(2) test	.316	.258
p -Value of Hansen J test	.717	.149

* $p < .10$.

** $p < .01$.

*** $p < .001$.

Managerial Implications

Our results can also help practitioners adjust future marketing and advertising strategies using social media. This study provides evidence that investment in social media technology can grant firms substantial relationship management benefits. International business marketers should focus on developing marketing strategies that emphasizes customer relationship building on social media, which allows more customer involvement and more interactions between customer and business.

Moreover, this study suggests that managers considering using social media technology should focus on how these technologies integrate with existing systems to support their firms’ capabilities. Building social CRM capabilities can not only drive customer engagement but also boost firms’ value in the long run. Our results indicate that firms that are more active on social media can improve their value even more. Such activity can help marketing managers better communicate the financial benefits of marketing spending to financial managers and justify marketing budgets as investments instead of costs or expenses.

Limitations and Further Research

We acknowledge the limitations of the study, which highlight opportunities for further research. First, the sample covers only one social media website (Facebook); thus, the results lack generalizability for all social media usage. In the future, research should be extended to other leading social media websites to provide more support. In addition, researchers should identify differences among social media (e.g., Facebook, Twitter, YouTube). Such analysis could shed light on the difference in social media usage when companies operate multiple accounts across different social media. Second, this paper applied a strict and simple measure of social media usage. Additional research should apply more sophisticated measures to allow a more complete evaluation of how companies use social media as a marketing tool. A third potential limitation of this study lies in the selection of sample firms. The firms examined in this study constitute a population of large, publicly traded corporations, which may not be representative of private corporations or small firms. We selected our sample firms because comparable data for corporations not publicly traded and small firms are not available. We acknowledge, however, that the results may differ for smaller companies. If data permit, it could be fruitful to examine whether social media technology and social CRM capabilities play important roles for smaller and private companies.

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Appendix 1. Descriptive Statistics for Inefficiency and Efficiency Index Derived by SFE for Social CRM Capabilities

Term	Sample size	Mean	S.D.	Min	Max	Firm
Inefficiency index (η_{it})	232	11.96	1.90	7.39	16.19	Walmart
Efficiency index ($100-\eta_{it}$)	232	88.04	1.90	83.80	92.60	Papa John’s

Appendix 2. Summary of Measures and Units of Variables

Variables	Measures and units
DV: Firm performance (Tobin’s q)	(Total market value of the firm + liabilities) / (Total asset value of the firm + liabilities) (Source: COMPUSTAT)
Year	2004–2014
Social CRM capability	The efficiency index derived from the stochastic frontier model (Battese and Coelli 1992; Dutta, Narasimhan, and Rajiv 1999; Xiong and Bharadwaj 2013)
Social media usage	The number of posts of the sample companies each year (Source: Facebook API)
Customer engagement	The number of posts which are shared by customers, (Source: Facebook API)
Sales	Log of total sales (Source: COMPUSTAT)
Employee	Log of the number of employees of the sample companies each year, (Source: COMPUSTAT)
Leverage	Total Debt/Total equity (Source: COMPUSTAT)
Customer satisfaction	American Customer Satisfaction Index (Source: ACSI database)

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