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## Modelling CRM in a social media age

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## ABSTRACT

Customer relationship management is a continually evolving domain that has been particularly affected by social media, which have revolutionised the way businesses and consumers interact. This paper on social CRM builds on a previous model of CRM prior to the growth of social media (Jayachandran et al., 2005). We present a new model for social CRM, including a new construct of customer engagement initiatives and adaptations of other constructs to cater for the impact of social media. An online survey was used to collect data from a population of marketing practitioners and partial least squares analysis was used to test the model. Findings show the importance of an underlying customer relationship orientation; how it impacts on social media technology use and customer engagement initiatives, and also directly on customer relationship performance. A relationship is also shown between engagement and relational information processes, which is viewed as a performance outcome of social CRM. Thus, from a managerial perspective, one recommendation we make is that organisations should utilise the rich customer information that is created with every customer engagement through social media to drive future marketing decisions.

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## 1. Introduction

Customer relationship management (CRM) is a strategic approach to marketing underpinned by relationship marketing theory (Morgan and Hunt, 1994), which has been defined as “a comprehensive strategy and process that enables an organization to identify, acquire, retain and nurture profitable customers by building and maintaining long-term relationships with them” (Sin et al., 2005, p. 1266). Technology is a key CRM enabler and has been extensively studied (e.g. Boulding et al., 2005; Coltman, 2007; Gummesson, 2002). Most such research suggests relevant technologies can improve performance, but most conclude that the full potential of CRM technologies is rarely realised (Reinartz et al., 2004). For example, Chang et al. (2010) found only 30 per cent of organisations that implemented CRM experienced improved performance.

In recent years social media have been very disruptive to the marketer–customer interface and, thus, to CRM (Stephen and Toubia, 2010). This suggests previous strategic CRM models may now lack theoretical and practical applicability. Social media and the participative, personal and real time approaches they facilitate are critical enablers of CRM and relationship marketing principles. They allow marketers to engage with customers through appropriate marketing

communications. However, they go further, as they help co-create products, services and value and provide access to vast amounts of data and new insights about customers (Hoyer et al., 2010; Olbrich and Holsing, 2012; van Doorn et al., 2010). Organisations from all sectors are using social media in their marketing (e.g. Oreo, Pepsi, General Electric, The Iconic, Gap, Nissan, Monash University, Rio Tinto, Airbnb and Telstra).

Due to the now widespread use of social media in marketing and, specifically, in CRM, this study was undertaken to shed some light on the issues at play and to model strategic social CRM. Jayachandran et al.'s (2005) CRM model, which looked at relational information processes and technology, is comprehensive in its representation of strategic CRM and easily adapted to a social CRM context. Consequently, it provided the foundation for this study. We adapted and updated this model to develop a strategic social CRM model. No other model comprehensively models the practical use of social media within a CRM context. More than that, dynamic capabilities theory was used to suggest a combination of unique organisational capabilities (CRM) and raw technological resources (social media) that can be used to develop a competitive advantage strategy. The introduction of a customer engagement initiative construct is also noteworthy, especially as many have called for more empirical work in this area (e.g. Hennig-Thurau et al., 2010; Hollebeek, 2013).

The paper's structure follows a standard format in which prior research into CRM and social media is reviewed, followed by a presentation of a conceptual framework underpinned by dynamic capabilities theory. The survey research method, data analysis

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approach and findings are then reported, followed by a discussion of how these findings contribute to theory and practice.

## 2. Literature review

### 2.1. Social media technologies and CRM

The advancement of information technologies in recent years has enabled marketing practitioners to develop new ways to interact with customers. These 'CRM technologies' range from dedicated software package solutions provided by firms such as Oracle, Microsoft or Sage to websites, databases and email packages (Boulding et al., 2005; Harrigan et al., 2011). Indeed, technology has long been a key CRM enabler, facilitating two main processes (communication with customers and management of customer data and information) (Harrigan et al., 2011; Jayachandran et al., 2005). These two processes impact on marketing performance, as they increase market awareness, reduce marketing costs, increase customer loyalty, increase competitiveness and increase customer profitability (Harrigan et al., 2011).

However, social media may be different from previous CRM technologies. Social media are a 'group of Internet-based applications that build on the ideological and technological foundations of Web 2.0 and that allow the creation and exchange of User-Generated content' (Kaplan and Haenlein, 2010, p. 61). Most marketers (58 per cent) use social media for six or more hours each week and a third (34 per cent) invest eleven or more hours weekly (Stelzner, 2011), suggesting its importance. The significant use of social media is a response to consumers' pervasive use of social media in their daily lives. Facebook, Twitter, YouTube, Tumblr, Instagram, Pinterest, Snapchat are just some of the social media with millions of daily users. Beyond these social networks, other social media include sites, such as Amazon, TripAdvisor, Urbanspoon, Yelp, the entire Google network and the many other sites, allowing peer-to-peer interaction (Chau and Xu, 2012; Chen et al., 2012).

The latest trend in CRM is to try to take advantage of social media, whose relational properties and characteristics are particularly suited to customer interactions (Olbrich and Holsing, 2012; Zhao et al., 2012). The use of these technologies in CRM are very different from previous, dedicated or 'off-the-shelf' CRM software packages that sought to collect, process, and manipulate customer data to assist marketing decision-making (Jayachandran et al., 2005). Social media are not designed for organisational CRM purposes, but they can facilitate customer relationships. This study is based on a premise that CRM technologies are not limited to dedicated software packages and that they have expanded to include social media technologies, such as Facebook, Twitter, LinkedIn, YouTube and Google. In short, social media is a platform through which opinions,

perspectives, insights and media can be shared among consumers and is, therefore, an area marketing and CRM practitioners can ill-afford to ignore. This led Greenberg (2010, p. 34) to define social CRM as:

*A philosophy and a business strategy, supported by a technology platform, business rules, workflow, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment. It's the company's programmatic response to the customer's control of the conversation.*

This definition includes the central principle of customer engagement, which was missing in earlier CRM models.

### 2.2. Towards a social CRM model

As mentioned earlier, Jayachandran et al. (2005) developed a model to explain the roles customer relationship orientation, relational information processes and CRM technology use play in strategic CRM. Their model represented CRM in practice at a strategic level and fits well with the aim of this study, which was designed to model strategic social CRM. The model used here, which is shown in Fig. 1, required some adaptations to represent the role of social media in CRM. First, the CRM technology use construct was adapted to measure social media technology use. Second, a customer engagement initiative construct was developed to measure involvement and interaction levels between marketers and customers, which is something only social media technologies can facilitate. The relational information processes construct was also updated to measure the extent to which customer information from social media sources was being captured, integrated and accessed. The following sections discuss the development of this model and its interrelationships.

## 3. Research framework and hypotheses

Dynamic capabilities theory is an ideal lens through which to view the use of social media technologies (raw resources) in CRM (an organisational capability). Combined, this leads to social CRM. Dynamic capabilities theory is derived from a resource based view (RBV) of organisations, which argues an organisation's ability to leverage internal resources, such as infrastructure and skills, that are valuable, rare, non-imitable and non-substitutable, allows it to differentiate itself from competitors and perform better (Barney, 1991; Fang et al., 2007). Dynamic capabilities theory builds on this idea by introducing the importance of strategic and tactical competencies in using these resources. According to this perspective, an organisation must develop capabilities to acquire, configure and use its resources in order to achieve performance benefits (Doving and

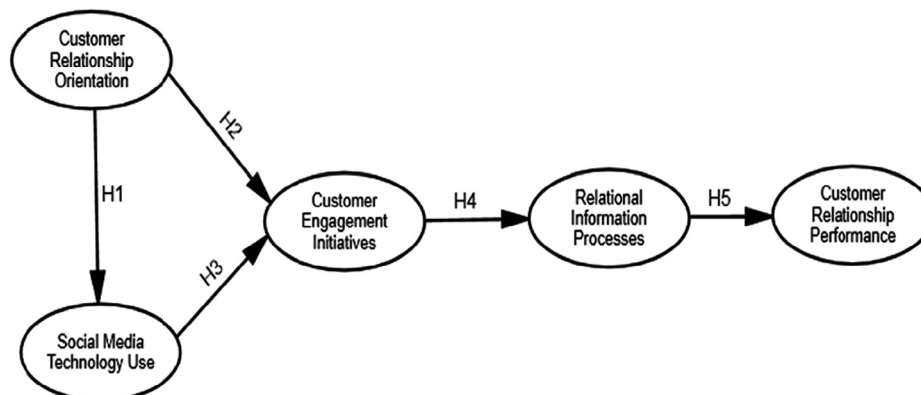


Fig. 1. The study's conceptual model.

Gooderham, 2008). Thus, resources are only raw materials from which higher order capabilities can be developed (Ravichandran and Lertwongsatien, 2005). Developing such capabilities requires an organisation to blend related resources (e.g. IT resources and skills) with strategic organisational processes (Tan et al., 2002). These capabilities are dynamic in the sense that organisations must continually reconfigure them to adapt to changing business contexts (Tan et al., 2002).

Previous information systems and marketing research has used a dynamic capabilities perspective to understand the ways in which information technologies are used and integrated into organisational processes (Harrigan et al., 2011; Peppard and Ward, 2004; Rai et al., 2006; Ryals, 2005). Technological resources have been viewed as mobile and imitable resources from an RBV perspective; enabling unique organisational routines that are often bundled with an organisation's commitment to specific business processes, such as customer relationship management, manufacturing management and supply chain management (Banker et al., 2006; Mithas et al., 2005; Rai et al., 2006). In this sense, technological resources do not contribute directly to performance, but provide the building blocks to form and renew organisational capabilities and an ability to maintain and enhance these capabilities so as to improve performance (Banker et al., 2006). For example, it is clear social media technologies are a readily available resource. They are useful, yet mobile and imitable, providing organisations with few opportunities for competitive advantage (Bharadwaj, 2000; Thrassou and Vrontis, 2008). However, dynamic capabilities theory suggests these technologies, when combined with unique organisational capabilities, can yield higher order capabilities and create a competitive advantage.

### 3.1. Customer relationship orientation

Prior to understanding customer relationship orientation, it is necessary to understand market orientation, which is the 'organization-wide generation of market intelligence on current and future customer needs, the dissemination of that intelligence across departments and the use of that intelligence across the organization' (Kohli and Jaworski, 1990, p. 6). A customer relationship orientation, in which organisations have an organisation-wide philosophy that emphasises customer retention, loyalty, and mutually beneficial relationships (Coltman, 2007; Kohli and Jaworski, 1990), comes from this suggestion. The focus on relationships with customers is based on the relationship marketing principle that competitive advantage is best achieved and maintained by satisfying customers' needs through the development of ongoing mutually beneficial exchange relationships (Coltman, 2007). Only a few studies (e.g. Woodcock et al., 2011) have examined the ways in which a customer relationship orientation might be facilitated through the use of social media technologies.

### 3.2. Social media technology use

Rather than focusing on traditional CRM technologies in the form of packages such as Sage CRM Cloud or Salesforce, the focus of this study is on social media, which have the potential to improve interactions and engagements with customers beyond those offered by traditional marketing communications (Cui et al., 2012; Hennig-Thurau et al., 2010; Pagani and Mirabello, 2012). The 'social' aspect of social media means it is all about relationships, mostly between peers, but also between organisations and customers, which means there is a potential for creating structural and social bonds with customers that is impossible to ignore (Berry, 1983; Li et al., 2012; Liang et al., 2012). While Web 1.0 enabled one-way online communication and information flow, Web 2.0 has empowered customers to 'serve as retailers themselves on eBay, media

producer-directors on YouTube, authors on Wikipedia, and critical reviewers on Amazon and TripAdvisor' (Hennig-Thurau et al., 2010, p. 311). Customers are more connected and have more power than ever before because of tools such as Facebook, Twitter, YouTube, Google, Tumblr, Instagram, Pinterest, Snapchat, user-generated blogs and review sites and applications such as TripAdvisor, Urbanspoon and Yelp (Hennig-Thurau et al., 2010). User-generated content is extremely powerful. Indeed, customer reviews and complaints are visible for all to see and have become a major driving force in consumer decision-making (Cui et al., 2012). For marketers, the ability to engage with customers on open platforms and to access previously unavailable customer information leads to many opportunities to improve customer relationships and CRM (Greenberg, 2010; Hennig-Thurau et al., 2010). To sum up, it seems likely the relational properties of social media technologies mean organisations with an underlying customer relationship orientation are more likely to adopt and use social media technologies to facilitate CRM.

**Hypothesis 1.** *As customer relationship orientation increases, social media technology use will increase.*

### 3.3. Customer engagement initiatives

The classic view is that customers are exogenous to the organisation and are passive recipients of marketing efforts (Deshpande, 1983; Grönroos, 1989). It follows that marketing communications efforts are a one-way persuasion approach (Van Waterschoot and Van Den Bulte, 1992). An alternative, and more contemporary, perspective is that customers are more than passive assets, as they co-create value and are "endogenous" to the firm (Payne and Frow, 2006; Vargo and Lusch, 2004; Verhoef et al., 2010). They are involved in marketing campaigns, product development and innovation (Bijmolt et al., 2010). Such engagement and co-creation can be a source of value for the organisation (Bijmolt et al., 2010; Prahalad and Ramaswamy, 2004). Not surprisingly therefore, there is an increasing interest in customer engagement and a recognition of a need for further empirical work.

In many relationships, success depends on two-way communication or engagement. Customer relationships are no different in this respect (Berry, 1983). As Parvatiyar and Sheth (2001, p. 4) noted, 'the core of all CRM and relationship marketing perspectives is its focus on a cooperative and collaborative relationship between the firm and its customers'. For such engagement with customers to take place, there must be an underlying customer relationship orientation in the organisation (Kohli and Jaworski, 1990; Reinartz et al., 2004), suggesting:

**Hypothesis 2.** *As customer relationship orientation increases, customer engagement initiatives will increase.*

Introducing social media is likely to increase engagement with customers. Huber (1990) suggested advanced technologies would allow managers to communicate with and stay informed about customers. Today, this is even truer of social media. There has been a shift in marketing thinking that recognises customers have become highly active and engaged partners in the value creation process (Baek et al., 2012; Hennig-Thurau et al., 2010; Pagani and Mirabello, 2012). Customers can write reviews on websites such as Amazon and TripAdvisor, test new 'beta' products, such as Gmail or Facebook Graph Search, or co-develop open source products, such as Open Office or Mozilla Firefox (Hoyer et al., 2010; Krishnamurthy, 2009). Apple has communities that actively encourage customer involvement from product design through to marketing campaigning. Panasonic recently ran an innovative marketing campaign in Australia inviting people to upload photographs taken with their Lumix camera, which became a viral marketing campaign. Other examples of customer engagement include Dell's 'Idea Storm',

Starbuck's 'My Starbuck's Idea', and Crayola's 'Kid's Comments'. Consumers participate in social networks on computers, tablets and smartphones, creating and sharing brand-related content every day (Brodie et al., 2013; Gordon, 2010; Libai et al., 2010).

As Hennig-Thurau et al. (2010, p. 312) reflected, 'anybody with an internet connection can blog, write reviews, report on news events both big and small, or share a song, video or even novel with the world'. Engaging with customers through social media to create value through personal relationships is an extension of communicating with customers (Bijmolt et al., 2010; Kumar et al., 2010). The growth in the importance of customer engagement has been recognised by the Advertising Research Foundation, the American Association of Advertising Agencies, and the Association of National Advertisers, who have called for metrics to measure it (Dwyer, 2007). Social media technologies are key enablers of customer engagement, suggesting:

**Hypothesis 3.** *As social media technology use increases, customer engagement initiatives will increase.*

### 3.4. Relational information processes

There are five relational information process dimensions (information reciprocity, information capture, information integration, information access, and information use). *Information reciprocity* is the process that enables customers to interact and share information with a firm and that enables the firm to respond to customers (Jayachandran et al., 2005). When marketers are engaging with customers through social media technologies there is a potential for significantly greater *information reciprocity*, through which user-generated content are created jointly by marketers and customers (Kaplan and Haenlein, 2010).

The notion of *information capture* comes from the market orientation literature (e.g., Kohli and Jaworski, 1990). Since marketers engage with customers through many touch points, including a range of social media, there are many opportunities to acquire information about customers. Social media technologies collect a large amount of valuable data (Hennig-Thurau et al., 2010; Konus et al., 2008) that can be used for market segmentation and understanding customer preferences, customer satisfaction, customer value, competitor data and the reach and impact of marketing messages (Bijmolt et al., 2010). As examples, JetBlue faced reactions to a family with a hard-to-control toddler being ejected from a flight, while United Airlines confronted the "United Breaks Guitars" viral online hit when a customer's guitar was broken by the airline's staff. More generally, the challenge for marketers is to filter usable information from the many online communities (Hennig-Thurau et al., 2010). The development of social media monitoring tools, such as Brand Watch, Hootsuite, Radian6, socialmention and Sprout Social, should assist marketers with this task.

Once customer information is gathered, the most important task is *information integration*, which requires the assimilation of information from all customer engagement initiatives to develop a detailed history of customer relationships (Jayachandran et al., 2005). Rather than customer information being spread in several parts of the organisation, it needs to be stored in one place. Advances in CRM technology prior to the social media revolution made it possible to facilitate such integration. However, integrating information from social media sources may be more challenging, as such information is not necessarily quantitative and rarely in a generalisable format (Bijmolt et al., 2010).

This leads to *information access*, which enables customer information to be provided in a usable and timely manner to customer-facing employees and strategic marketing decision-makers (Jayachandran et al., 2005). Depending on who owns the data and who owns the modelling tools, this may be a complex process. IT

departments generally run analytics on customer data, which has led to advantages, such as speed and more complex analyses, and disadvantages, such as a loss of customer focus, as well as a lack of access to the data (Bijmolt et al., 2010).

Lastly, and linked to information access, *information use* is the actual use marketers make of customer information. Such information should be used in a manner consistent with an organisation's underlying customer relationship orientation, which emphasises the need for the personalisation of product and service offerings and exchanges (Jayachandran et al., 2005). In short, customer information should be used to direct CRM activities, on a customer-by-customer basis. For example, many organisations seek to provide personalised online experiences for their customers to gain their loyalty and increase their switching costs (Choi et al., 2012). One way is through recommendations based on content-based or collaborative filtering. Content-based filtering recommends items based on a user's preference history, whereas collaborative filtering selects items based on the opinions of other users who have a similar preference history (Choi et al., 2012). Kumar et al. (2010) suggested some metrics that are relevant to identifying important customers on social media. First is customer lifetime value (CLV), which is an older measure of the present value of future profits generated from customers over their relationship with the organisation. Second is customer referral value (CRV), which is a measure of how much of each customer's value stems from his or her referrals of new customers. Third is customer influencer value (CIV), which emphasises the value of customers who share information, spread word-of-mouth (WOM) and assist other customers. Last is customer knowledge value (CKV), which centres on the value of customers who have expert knowledge about a brand or a product and/or service and who assist other customers and advise the organisation (Joshi and Sharma, 2004).

To summarise, Jayachandran et al. (2005) showed CRM technology is important in facilitating relational information processes. It seems new social media technologies enable customer engagement initiatives that impact on relational information processes, suggesting:

**Hypothesis 4.** *As customer engagement initiatives increase, relational information processes will expand.*

### 3.5. Customer relationship performance

Customer relationship performance is the outcome of implementing CRM successfully, bringing value and, ultimately, profits to an organisation and its customers (Azila and Noor, 2011). The benefits include increased market awareness, increased customer loyalty, more effective and efficient marketing, better customer service and support, increased competitiveness, reduced costs and increased profitability (Harrigan et al., 2011). In this study, performance was defined as the level of customer satisfaction and customer loyalty (Jayachandran et al., 2005).

The five elements of relational information processes (information reciprocity, information capture, information integration, information access and information use) have been described as the 'engine' that drives CRM (Payne and Frow, 2006). Making proper use of these processes has the potential to impact positively on CRM performance (i.e. customer satisfaction and loyalty) (Hoekstra and Verhoef, 2010; Reinartz et al., 2004). In the short term, monitoring customer information on social media enables quick responses to customer issues, giving marketers a feel for sentiment and an ability to influence WOM (Hoyer et al., 2010; Kumar et al., 2010). In the longer term, the analysis of social media and other customer information can lead to the better profiling and classification of customers, the better prediction of customer behaviour, better target

marketing and more cross and up-selling (Chen et al., 2012), suggesting:

**Hypothesis 5.** *As relational information processes improve, customer relationship performance will improve.*

#### 4. Method

The data needed to test the model shown in Fig. 1 were obtained through an online questionnaire that was sent by email to senior marketing managers, executives and directors. It was felt these were the people best placed to answer questions about their organisations' CRM activities. A list of 3000 email addresses of marketing professionals working in a major European financial centre was obtained from CorpData. A small number of these managers ( $n = 45$ ) were used to pre-test the questionnaire, before the final questionnaire was sent to the remaining managers.

##### 4.1. Questionnaire development

Customer relationship orientation, relational information processes and customer relationship performance were measured through items adapted from Jayachandran et al.'s (2005) study. Examples of these items can be seen in Table 1. The relational information processes construct was updated to take account of the ways through which social media technologies can provide customer data. Thus, while the scale drew on previously used items, it also included new items focusing on clickstream data, real-time data analysis, new types of analytics, the integration of social media data and how social media data can be used to engage with customers. The new social media technology use construct was developed based on prior social media marketing research and asked about the range of social media used and how these social media forms were used. The customer engagement initiatives construct was developed based on an extensive review of prior research. As was noted earlier, a pilot study was undertaken and the various items were reviewed by knowledgeable colleagues. Based on the pilot study's findings and the expert comments, some minor revisions were made. The full list of items is provided in the Appendix.

##### 4.2. Questionnaire administration and sampling

The survey was hosted on an online platform and email invitations were sent directly to the marketing practitioners on the obtained list. An introductory email was sent, followed by an email containing the link to the online survey. As an incentive to

**Table 1**  
The scales used to measure the model's constructs.

Construct	No. of items	Source of the measure	Example item
Customer relationship orientation	4	Jayachandran et al. (2005)	Our employees are encouraged to focus on customer relationships
Social media technology use	5	Developed within the present study	Social media enables our CRM system to customise our communication to customers
Customer engagement initiatives	17	Developed within the present study	Our online customer communities are central to our marketing
Relational information processes	8	Jayachandran et al. (2005)	Relevant employees find it easy to access required customer information.
Customer relationship performance	2	Jayachandran et al. (2005)	Performance relative to competitors in keeping current customers

**Table 2**  
Social media technology use.

Social media	Percentage of respondents
LinkedIn	65%
Twitter	55%
Company blog	50%
Facebook	44%
YouTube	41%
Mobile apps	24%
Employee blog	22%
Flickr	14%

participate, a prize of \$75 was offered to respondents who completed the survey. One follow-up email was sent to improve the response rate. Thus, a total of three contacts were made with potential respondents. Previous studies suggest multiple contacts with potential respondents raise the risk of a survey being viewed as spam (Deutskens et al., 2004; Solomon, 2001) and, in any case, a first follow-up seems to increase the response rate most (Heberlein and Baumgartner, 1978). In all, 159 usable surveys were returned, which represents a response rate of five per cent, which was similar to previous organisation-focused CRM research (e.g. Jayachandran et al., 2005).

#### 5. Data analysis and findings

It is useful to present some contextual background about the sample organisations. Most were small or medium enterprises, as 58% employed less than 50 people. Sixty four per cent traded internationally, while 33 per cent traded nationally (3 per cent did not answer). Fifty eight per cent marketed highly personalised products or services, whereas 20 per cent said their products or services were not highly personalised. Moreover, 40 per cent marketed complex products or services, while 34 per cent did not feel this was the case. Lastly, customers needed to be physically present for 22 per cent of the respondents.

##### 5.1. Social media technology use

This construct enabled the collection of descriptive data on this aspect of the respondents' social media activities. Respondents used a variety of social media to varying degrees, as can be seen in Table 2. In addition to the social media technologies included, some marketers also used Yammer, which is an intra-organisational social network tool, while others used salesforce.com, which is a more traditional CRM software package that has recently invested significant resources in adding a social CRM element (Radian6) to their offering. One respondent classified Groupon (a discount/voucher tool) as a social media technology. Other tools used included Xing (a discussion forum), Family Bhive (a discussion forum), Gist (contacts profiling), Second Life (a virtual environment), Vimeo (video-sharing) and Slideshare (presentation and knowledge sharing).

##### 5.2. Structural equation modelling

Structural equation modelling (SEM) can be used for testing relationships between variables in a model such as the one shown in Fig. 1 (Hair et al., 2010; Schumacker and Lomax, 2010). Partial least squares (PLS), which uses a variance-based approach for estimation, was used in this case. The PLS approach is very suitable for modelling latent variables and assessing measurement and structural models (Chin, 2001). Moreover, PLS is particularly suitable when there is a relatively small sample (Hair et al., 2010). Here the WARPPLS computer package (Kock, 2013) was used to examine the model.

**Table 3**  
The constructs' measurement properties.

Construct	Lowest loading	Composite reliability	AVE score
Customer relationship orientation (CRO)	0.75	0.90	0.68
Social media technology use (SMTU)	0.82	0.92	0.70
Customer engagement initiatives (CEI)		0.87	0.63
Communication with customers	0.77	0.88	0.65
Online customer communities	0.74	0.92	0.73
Management of online communities	0.78	0.92	0.66
Mobile technologies	0.85	0.90	0.77
Relational information processes (RIP)		0.86	0.66
Information capture	0.87	0.86	0.76
Information integration	0.88	0.92	0.80
Information access	0.82	0.89	0.73
Customer relationship performance (CRP)	0.89	0.88	0.79

Prior to estimating a structural equation model, it is necessary to ensure the constructs have acceptable measurement properties. There are a number of issues that need to be examined when considering a construct's measurement properties, including its unidimensionality, reliability and convergent and discriminant validity. As two of the constructs (Relational Information Processes and Customer Engagement Initiatives) were modelled as second order constructs, the ten constructs shown in Table 3 were examined in this phase of the analysis. WARPPLS provides the information needed to assess these measurement issues (Kock, 2013).

Unidimensionality was assessed by examining the loadings the various items had on their respective latent constructs. If items had loadings greater than 0.50, this was taken as an initial indicator of unidimensionality (Rivard et al., 1994). As can be seen in Table 3, the lowest loading was 0.74, suggesting unidimensionality could be assumed. Reliability was assessed through the composite reliability coefficient, which should exceed 0.70 (Fornell and Larcker, 1981). As can be seen in Table 3, all of these coefficients exceeded 0.86, suggesting all of the constructs were reliable. Convergent validity was assessed by computing an Average Variance Extracted (AVE) score for each construct, as an AVE score of 0.50 or better suggests a construct has convergent validity (Fornell and Larcker, 1981). As can be seen in Table 3, all of the AVE scores exceeded 0.65, suggesting convergent validity could be assumed.

Discriminant validity between two constructs can be assumed if the square roots of each of their AVE scores exceed the correlation between them (Fornell and Larcker, 1981). In this case, the lowest square root of any AVE score was 0.81, while the largest correlation between any two constructs was 0.77, suggesting while there were some strong relationships between the constructs, discriminant validity could be assumed. Consequently, all of the constructs had good measurement properties and were used in the subsequent analysis.

There were two second order constructs in the suggested model (Customer Engagement Initiatives and Relational Information Processes), which were included in the model using the approach suggested by Kock (2011), in which latent variable scores are computed for each of the first order constructs, which were then used as indicators of the relevant second order factor. As can be seen in Table 3, the two second order factors also had acceptable measurement properties, suggesting they could be included in the subsequent estimation of the structural model.

The Relational Information Processes construct, which was previously used by Jayachandran et al. (2005), included five components (information reciprocity, information capture, information integration, information access, and information use). In this study, the composite reliability coefficients for two of these components (information reciprocity and information use) did not exceed 0.70, leading to these components being excluded from the subsequent analysis. This may be explained by the focus of this study being on

social media or a different sample. Information reciprocity is a concept very much like customer engagement, so perhaps this is best measured by the CEI construct. The exclusion of information use may be due to something similar, as respondents were asked about social media technology use in the SMTU construct, so information use may be best measured here. A discussion of the exclusion of these components is included in the limitations section.

### 5.2.1. The structural model

As the suggested model may not have been identified if a covariance based approach had been used (Hess, 2001), as it had only one exogenous construct but two paths to the customer engagement initiatives construct, the model was estimated using a partial least squares approach (WARPPLS in this case), in which a bootstrapping approach was used to estimate the parameters' standard errors, enabling an examination of the various hypotheses without resorting to parametric tests (Chin, 2001). Model fit in PLS is assessed through a Goodness of Fit (GOF) index (Tenenhaus and Esposito Vinzi, 2005). Wetzels et al. (2009) suggested guidelines for this index were 0.10 (small effect sizes), 0.25 (medium effect sizes) and 0.36 (large effect sizes). In this case, the GOF index was 0.41, suggesting large effect sizes were present and that it was worth examining the model further. The model's path coefficients, often termed the inner model in PLS, and their significances are shown in Table 4. As can be seen from the Table, all of the coefficients were significant and positive, providing support for the five hypotheses. However, while the model explained 60% of the variation in the CEI construct and 29% of the variation in the RIP construct, it only explained 8% of the variation in customer relationship performance, suggesting the constructs included in the present study were good predictors of some of the endogenous constructs, but not of the performance measure that was of particular interest.

### 5.2.2. Modifications to the structural model

Most SEM research is a combination of confirmatory and exploratory approaches, in which a model is first estimated and, if it is found to be deficient, an alternative model in which some revisions are estimated. Prior research suggested a positive relationship between an organisation's CRO and its CRP (e.g. Coltman, 2007; Payne and Frow, 2006), although this relationship was expected to be fully mediated in the suggested model. Consequently, it was decided to add a path from CRO to CRP. The path was positive, significantly well beyond the 0.01 level and relatively large (0.50), suggesting this relationship was not fully mediated within the model and that this path should be included, especially as its inclusion increased the explained variation in CRP to 29 per cent. However, the inclusion of this path led to the path from RIP to CRP becoming insignificant and suggesting CRO's impact on CRP was not mediated in this case (Baron and Kenny, 1986). Consequently, the path from RIP to CRP was removed and a revised model, which is shown in Fig. 2, was estimated. As can be seen in Fig. 2, all of the path coefficients were positive and significant, providing support for four of the five hypotheses, but not for hypothesis 5, as the relationship between relational information processes and customer relationship performance, although positive, was not significant. Further, the revised model explained 28 per cent of the variation in CRP, suggesting it

**Table 4**  
Path coefficients and their significance.

Path	Coefficient	Significance
CRO to SMTU	0.22	<0.01
CRO to CEI	0.22	<0.01
SMTU to CEI	0.71	<0.01
CEI to RIP	0.53	<0.01
RIP to CRP	0.29	<0.05

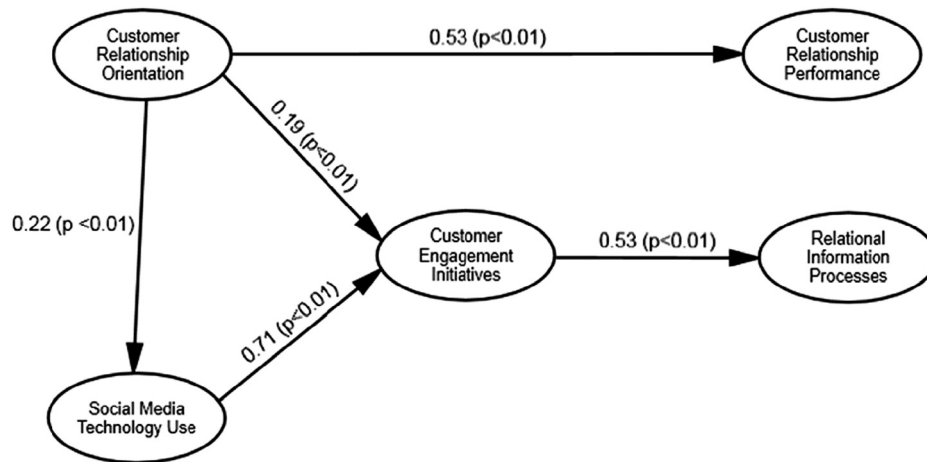


Fig. 2. The revised model.

provided better information than had been the case in the originally estimated model.

## 6. Discussion and implications

CRM continues to be a critical issue (Kumar et al., 2006) to which the exponential growth of social media technologies has added an additional complex and multi-faceted dimension (Greenberg, 2010; Verhoef et al., 2010). This study sought to build on a previous CRM model (Jayachandran et al., 2005) to recognise the role now played by social CRM. To achieve this, new constructs and new measures were added to the constructs in Jayachandran et al.'s (2005) model. In particular, a *customer engagement initiatives* construct was added to recognise the important role social media plays in allowing interactive engagement with customers on a large scale. The *CRM technology use* construct was expanded to become a *Social media technology use* construct in recognition of the importance of new social media technologies to CRM. Finally, the *relational information processes* construct was adapted to take account of the new types of data found in social media. The results of our hypotheses testing are shown in Table 5.

The study supported the introduction of social media into the CRM model, as an organisation's customer relationship orientation impacted on its social media technology use, supporting H1. This supports previous research that suggested customer orientation, rather than technology, drives CRM (e.g. Coltman, 2007; Payne and Frow, 2006). Thus, no matter how disruptive social media technologies might be, an underlying customer orientation remains imperative if they are to fit within the new social CRM environment (Hennig-Thurau et al., 2010).

**Table 5**  
Results of hypotheses testing.

Hypothesis	Results
H1 As customer relationship orientation increases, social media technology use will increase.	Supported
H2 As customer relationship orientation increases, customer engagement initiatives will increase.	Supported
H3 As social media technology use increases, customer engagement initiatives will increase.	Supported
H4 As customer engagement initiatives increase, relational information processes will expand.	Supported
H5 As relational information processes improve, customer relationship performance will improve.	Not supported

Further, an organisation's customer relationship orientation and social media technology use impacted on its customer engagement initiatives, supporting H2 and H3. Being focused on customer relationships makes an organisation more prone to engage with customers, which makes theoretical and practical sense. This supports previous research into CRM and co-creation (e.g. Payne and Frow, 2006; Vargo and Lusch, 2004). It is important to note a non-hypothesised relationship (a direct relationship between customer relationship orientation and customer relationship performance) was also found, suggesting an organisation's customer relationship orientation is crucially important. It seems fostering customer involvement has the potential to impact on customer satisfaction and loyalty without taking social media technologies and their effects into account.

Social media technologies also facilitated customer engagement, supporting H3. This makes it clear social media technologies are CRM technologies and that they are valuable relationship building and maintaining tools, supporting prior research that outlined their relational properties (e.g. Hennig-Thurau et al., 2010; Kumar et al., 2010; Olbrich and Holsing, 2012). It seems the suggestion that social media technologies have eradicated power imbalances and distances between many brands, marketers and their customers (Baek et al., 2012; Libai et al., 2010; van Doorn et al., 2010) is correct. Customers are engaging with brand and marketers through online forums and co-creating value in many forms (Gordon, 2010; Hennig-Thurau et al., 2010; Hoyer et al., 2010). This is a paradigm shift in marketing philosophy with which many organisations need to come to terms. Those relatively few marketers who have run engaging, interactive and viral campaigns through social media can testify to their relationship benefits.

Customer engagement initiatives impacted positively on relational information processes, supporting H4. As a reminder, customer engagement initiatives focused on the management of online communities. Thus, participating, monitoring, managing and involving online communities is a vital means of acquiring information from customers, which can then be used for CRM purposes. Previous research emphasised the importance of viewing social media as a source of customer data (Kumar et al., 2010; Li et al., 2012; Van Bruggen et al., 2010) and this view is supported by the present study, as, when marketers engage with customers, data are created and relational information processes become more effective.

The model proposed a link between relational information processes and customer relationship performance (H5). However, this was not supported. This is an important and, at first, confusing

finding. Customer relationship performance was measured by asking marketers about their perspectives on customer satisfaction and customer loyalty. Perhaps these were the wrong measures to use for a social CRM study, as marketers are not yet able to make the extra link from performance benefits in relational information processes to more general performance benefits. This is a key area for future research, which needs to identify appropriate performance measures for social CRM.

In the current study we found improved relational information processes can be viewed as a social CRM performance outcome. After all, this underlines the notion of data-driven marketing (e.g. Payne and Frow, 2006; Reinartz et al., 2004). The fact that customer data from customer engagements on social media is driving relational information processes, such as information capture, integration, access and use, is an important finding, and serves to emphasise the relevance and fit of social media in CRM. At such a relatively early stage in social CRM development this is a promising finding.

### 6.1. Managerial implications

First, if organisations have a propensity to develop long-term relationships with customers with a view to building loyalty and retention, CRM should underpin their activities. Moreover, social media are relevant and have the potential to be enablers of a more effective CRM by improving interactions with customers and allowing access to real, live customer data. Second, for those organisations that are experimenting with social media, but are uncertain of their purpose or value, viewing them from a CRM perspective should give a clearer strategic picture.

Providing more detail on these recommendations, marketers should identify the social media that their customers are using and try to immerse themselves in those communities, listening and getting involved where necessary to identify market trends, gauge customer sentiment and solve customer problems. For example, many organisations start with offering customer service on Twitter, answering questions. Going beyond this, LinkedIn provides access to communities in which industry-specific conversations happen. This is vital resource for market research, or to portray a position as a thought leader in an industry.

At the very least, marketers should be contactable through social media. Consumers expect this, and expect quick replies. This comes back to choosing the most appropriate social media to use, as there are simply too many to manage a wide range. For many business-to-business organisations, LinkedIn's discussion groups are an ideal place to start engaging with key stakeholders. For other organisations, it may be Facebook, Twitter or Instagram. Or there may be social media specifically for your sector like Urbanspoon, CNET or [Checkatrade.com](http://Checkatrade.com).

With regard to the information management side of social CRM, there are many social media monitoring tools available that provide insight on the reach of all posts, the most popular posts, information on customers who saw the posts, and who the most engaged customers are. Some examples are Buffer or Hootsuite as common scheduling tools, while Simplify360, Social Mention, Twitonomy are useful analytics tools. Analytics tools such as these are a necessity

for an organisation seeking to implement CRM, with both customer engagement and information management aspects.

### 6.2. Research implications

This study built on previous research in CRM by Jayachandran et al. (2005), applying their strategic CRM model in a social media context and, thus, provided a strategic social CRM model. Underpinned in dynamic capabilities and relationship marketing and CRM theory, it is hoped this study lays the foundations for future research into the strategic use and integration of social media. Much prior research in social media has examined its granular aspects where, for many organisations, the integration of social media is a holistic and strategic initiative.

We developed a customer engagement initiatives construct that had previously only been discussed conceptually and updated the CRM technology use construct (renamed social media technology use) to take account of new social media technologies. The relational information processes construct has also been updated to reflect that one of the key strengths of social media technologies, besides enabling customer engagement, is enabling access to vast amounts of rich customer information. Ultimately, we were able to conclude that social media technologies, as imitable resources, are not enough on their own to lead to performance outcomes. Rather, it is only when they are combined with organisational capabilities that they lead to improvements in customer engagement initiatives and relational information processes. This is an important validation of dynamic capabilities theory.

### 6.3. Limitations and future research

To protect the privacy of the organisations and marketers, we did not gather detailed demographic information (e.g. industry sector, age of organisation, or information about the marketers themselves). Future research needs to introduce such variables to see whether they have an impact. Further, the relational information processes constructs did not perform as expected and two components (information reciprocity and information use) had to be omitted. This requires further investigation into this construct, which was developed and used by Jayachandran et al. (2005) to see how it performs in other samples and when the focus is on social CRM. Previous research has suggested customer satisfaction and customer loyalty are indicators of customer relationship performance (Jayachandran et al., 2005; Reinartz et al., 2004). Here, these measures did not appear appropriate for the study's social CRM focus, as no link was found between relational information processes and performance. More thought is needed to develop more comprehensive social CRM performance measures. Perhaps the most promising area for future research is the potential to break the relational information processes construct into its component parts and test the suggested relationships with each of them. More research is also needed to develop more comprehensive social CRM performance measures, as this is likely to improve the model's diagnostic value to researchers and managers.



**Appendix: Measurement items constituting the questionnaire for the study**

Code Applied	Construct and Items	Source(s) of Survey Item and/or Theory	Cronbach's Alpha
<b>CRO</b>	<b>CUSTOMER RELATIONSHIP ORIENTATION</b>		<b>0.85</b>
CRO1	Our employees are encouraged to focus on customer relationships.	Jayachandran et al. (2005)	
CRO2	In our organisation, customer relationships are considered to be a valuable asset.	Jayachandran et al. (2005)	
CRO3	Our senior management emphasises the importance of customer relationships.	Jayachandran et al. (2005)	
CRO4	We work to customise our offerings to individual customers.	Sin et al. (2005)	
<b>CRM_TECH</b>	<b>SOCIAL MEDIA TECHNOLOGY USE</b>		<b>0.95</b>
CTU	<i>Do you consider the following social media technologies to be part of CRM in your organisation?</i>	Hennig-Thurau et al. (2010)	0.85
CTU0a	Twitter	Hennig-Thurau et al. (2010)	
CTU0b	YouTube	Hennig-Thurau et al. (2010)	
CTU0c	Flickr	Hennig-Thurau et al. (2010)	
CTU0d	LinkedIn	Hennig-Thurau et al. (2010)	
CTU0e	Company blogs	Hennig-Thurau et al. (2010)	
CTU0f	Employee blogs	Hennig-Thurau et al. (2010)	
CTU0g	Mobile 'apps'	Hennig-Thurau et al. (2010)	
CTU0h	Other social media (please specify)	Hennig-Thurau et al. (2010)	
SM_USE	<i>Social media enables our CRM system to...</i>	Jayachandran et al. (2005)	0.90
CTU1a	Support sales force in the field with customer information	Jayachandran et al. (2005)	
CTU1b	Provide sales force with leads for cross sell/up sell opportunities	Jayachandran et al. (2005)	
CTU1c	Support marketing planning and budgeting	Jayachandran et al. (2005)	
CTU1d	Customise our communication to customers	Jayachandran et al. (2005)	
CTU1e	Provide customers with access to a knowledge base of solutions to commonly occurring problems (e.g. frequently asked questions)	Jayachandran et al. (2005)	
<b>CUS_ENG_INI</b>	<b>CUSTOMER ENGAGEMENT INITIATIVES</b>		<b>0.94</b>
CWC	<i>Communication with customers</i>	Jayachandran et al. (2005)	0.80
CEI1a	We enable our customers to have interactive communications with us.	Jayachandran et al. (2005)	
CEI1b	We provide our customers with multiple ways to contact the organisation.	Jayachandran et al. (2005)	
CEI1d	We maintain regular contact with our customers.	Jayachandran et al. (2005)	
CEI1d	We share and exchange, in a two-way manner, information with our customers.	Jayachandran et al. (2005)	
OCC	<i>Online customer communities</i>		0.88
CEI2a	We participate in relevant customer-owned communities.	Hennig-Thurau et al. (2010)	
CEI2b	The range of social media is actually a positive thing for us.	Van Bruggen et al. (2010)	
CEI2c	Online communities are a way of engaging with customers.	Konus et al. (2008)	
CEI2d	Online communities can create loyal customers.	Konus et al. (2008)	
MOCC	<i>Management of online customer communities</i>		0.92
CEI3a	We proactively manage interactions in these communities.	Nambisan and Baron (2007)	
CEI3b	We use these communities to promote ourselves to customers.	Bijmolt et al. (2010); Hoyer et al. (2010)	
CEI3c	We use these communities to have conversations with our customers.	Bijmolt et al. (2010); Hoyer et al. (2010)	
CEI3d	These communities allow us to involve customers in product/service development.	Bijmolt et al. (2010); Hoyer et al. (2010)	
CEI3e	Customers use these communities mainly to make positive comments and reviews.	Gregoire et al. (2009)	
CEI3f	We do track customers across media/channels.	Van Bruggen et al. (2010)	
MT	<i>Mobile technologies</i>		0.60
CEI4a	Mobile Internet use has revolutionised how we communicate with customers.	Hennig-Thurau et al. (2010)	
CEI4b	We are utilising the extra potential they add to online communities.	Hennig-Thurau et al. (2010)	
CEI4c	We engage with customers through mobile social 'apps'.	Hennig-Thurau et al. (2010)	
<b>REL_INF_PRO</b>	<b>RELATIONAL INFORMATION PROCESSES</b>		<b>0.90</b>
IC	<i>Information Capture</i>		0.76
RIP1a	We collect customer information on an on-going basis.	Jayachandran et al. (2005)	
RIP1b	We capture customer information from internal sources within the organisation.	Jayachandran et al. (2005)	
II	<i>Information Integration</i>		0.78
RIP2a	We integrate customer information from the various functions that interact with customers (such as marketing, sales, and customer service).	Jayachandran et al. (2005)	
RIP2b	We integrate internal customer information with customer information from external sources.	Jayachandran et al. (2005)	
RIP2c	We integrate customer information from different communication channels (telephone, mail, e-mail, the Internet, fax, personal contact).	Jayachandran et al. (2005)	
IA	<i>Information Access</i>		0.60
RIP3a	Relevant employees find it easy to access required customer information	Jayachandran et al. (2005)	
RIP3b	Relevant employees can access required customer information even when other departments/functional areas have collected it.	Jayachandran et al. (2005)	
RIP3c	Relevant employees are provided the information required to manage customer relationships.	Jayachandran et al. (2005)	
CRM_Per	<b>CRM RELATIONSHIP PERFORMANCE</b>		<b>0.77</b>
CUS_Sat	<i>In the most recent year, relative to your competitors, has your business unit performed well with respect to:</i>		0.73
CRP2a	Achieving customer satisfaction	Jayachandran et al. (2005)	
CRP2b	Keeping current customers	Jayachandran et al. (2005)	

Note: The Cronbach's Alpha scores in bold are those for the variables and those not in bold are for the sub-variables.

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