

Contemporary Micro-IT Capabilities and Organizational Performance: The Role of Online Customer Engagement

Full Paper

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Abstract

We theorize that the development of two contemporary social commerce-IT capabilities (social media and e-business technology) help to online engage customers to improve organizational performance. We test this theory by employing a secondary dataset on a sample of 100 small U.S. firms. The empirical analysis suggests that social media capability and e-business technology capability positively affect organizational performance through social and conventional online customer engagement. Research and managerial implications are discussed.

Keywords:

IT capabilities, online customer engagement, organizational performance, business value of IT.

Introduction

Information technology (IT) is changing the way firms operate internally as well as improving the firm's relationship with its suppliers and customers. However, since some IT resources (e.g., outsourceable IT artifacts) have become ubiquitous, what is key in explaining IT-based performance variation is how the firm leverages IT resources (i.e., IT capabilities) instead of how much invests in IT resources (Pavlou & El Sawy 2006). Different types of IT capabilities can coexist in a firm (Chen et al. 2015). Drawn from prior classifications of firm capabilities (Luo et al. 2013), and the emerging popularity of social media usage in the corporate world, we differentiate two kinds of contemporary IT capabilities (social media capability and e-business technology capability). While social media capability is the firm's ability in using and leveraging social media platforms to execute business activities, e-business technology capability refers to the firm's ability in leveraging web technology.

Social media sites (e.g., Facebook, Twitter) are reaching tremendous importance in the corporate world. The way firms manage their social media sites can create customer responses toward or against the company. For example, Hero Baby, an international consumer food company specialized on products for babies, has been recently unable to manage the controversy around its product quality. When a journalist woman put into question the quality of Hero Baby products for containing palm oil on Twitter, the firm responded criticizing the woman, accusing her of being a bad mother. This inability in managing the situation has shocked the company with hundreds of users giving support to the journalist and showing their refusal to buy Hero Baby products. Then, social information sharing has assumed a crucial role in transactions, giving rise to the so-called social commerce phenomenon. Social commerce is a new concept characterized by the interplay of social media and e-business platforms allowing customers' participation and the subsequent effect on customers' decision-making behavior (e.g., buying a product/service) (Zhang

& Benyoucef 2016). We assume the IT capabilities of social media and e-business technology, when working together, as social commerce-IT capabilities as they enable individuals to execute participation actions that could end up in some customer's decision.

The increased openness of firms by using digital technologies can facilitate superior organizational performance by increasing the opportunity to interact with customers. Our research is positioned on the relationship between social commerce-IT capabilities and organizational performance in small firms. We explore the impact of social media and e-business technology on organizational performance as they are two contemporary technologies that seem to have become impactful in the corporate world while less understood in the IS community. Prior literature on IT and organizational performance has suggested IT to indirectly affect organizational performance. Social media and e-business technology are tools to connect and interact with customers. It is then supposed that online technologies may enable online customer engagement (i.e., degree of customers' involvement through online platforms). However, our understanding is in its initial stages. The role of social commerce-IT capabilities in shaping online customer engagement and the effect of online customer engagement on organizational performance are totally unclear, even less for small firms (Ray et al 2014; Xue et al 2013). User behavior theme has dominated social commerce research, but few studies have explored the effect of social commerce capabilities on firm performance (Zhang et al. 2014). We study social commerce capabilities beyond commercial ends since a firm's perspective. No prior literature has empirically tested the mechanism through which social media and e-business technology capabilities may lead to organizational performance in small firms. This study examines the role of contemporary social commerce-IT capabilities (social media and e-business technology capability) and online customer engagement on organizational performance. Our central thesis is that social media and e-business technology capabilities can improve organizational performance by online engaging customers. Figure 1 shows the proposed theory. The proposed theory is tested by performing a partial least squares (PLS) path modeling on a sample of 100 small U.S. firms.

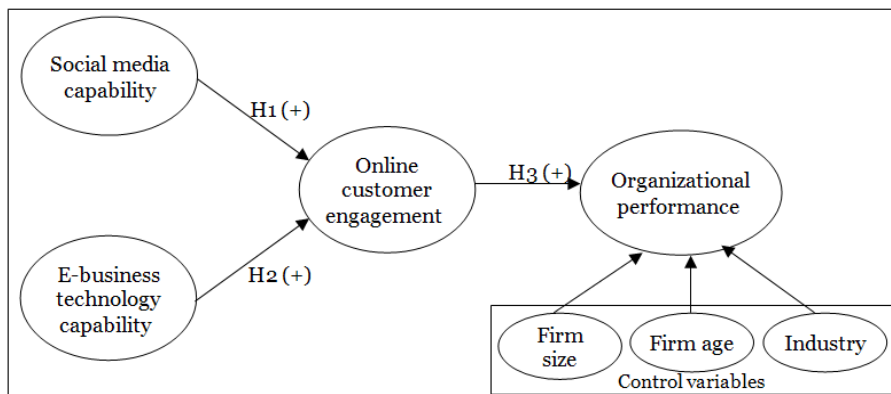


Figure 1. The Proposed Theory

Theory and Hypotheses

Social Commerce-IT Capabilities and Online Customer Engagement

Social Media Capability and Online Customer Engagement

Social media capability is the firm's proficiency in purposely using and leveraging Facebook, Twitter, and corporate blogs to execute business activities (Braojos et al. 2015). Online customer engagement refers to the degree of customer's virtual emotional commitment, involvement, and motivation to participate and contribute with the firm's online business activities (Ha et al. 2016; Ray et al. 2014). Prior IS research has classified IT-based media in social and conventional media (Luo et al. 2013; Yu et al. 2013). Drawn from this prior literature, we study two dimensions of online customer engagement: social online customer engagement (refers to the customer's experience interacting with the firm's social media platforms) and conventional online customer engagement (refers to the customer's experience interacting with the firm's web technology platform).

Social media capability can enable online engagement of customers. The customer's individual involvement in social media and the firm's web site requires a prior firm's involvement and proficiency in social media.

Social media are tools for mass collaboration between executives, employees, and customers (Kiron 2012; Ku et al. 2013). The firm's proficiency in sharing, co-creating, discussing, and modifying user-generated content facilitates information sharing, interaction and connection with customers (Goh et al. 2013), hence improving customer participation and interrelatedness. For example, customers engage in the firm's social media platforms and the firm's web site because they want to stay informed about the firm activities and about future launch of products (Ore & Sieber 2011), or because the collective intentions, social identity, and conception of group they perceive on the platform. Moreover, providing a useful and enjoyable environment in social media influences customers to interact with others and return to the social media platform and the firm's website (Seol et al. 2016). For example, SEUR (a leading express transport service in Spain) has developed social media as a support platform for promoting the electronic selling and solving the customer requests through the firm's web site (Foncillas & Gonzalez 2013).

Finally, an argument based on trust can be also added here. The development of a social media capability shows the firm's effort in cultivating trust with customers. Customers perceive the effort the firm makes in supporting the community so the risk to reveal personal information diminishes at the time the motivation to express reciprocity toward the trusted party may increase. This motivation can lead to cooperate in new product development and improve loyalty (Porter & Donthu 2008). Thus, the firm's effort to build a social media capability can increase the probability to online interact and engage with customers. We therefore hypothesize:

Hypothesis 1 (H1): There is a positive relationship between social media capability and online customer engagement.

E-Business Technology Capability and Online Customer Engagement

E-business technology capability is the firm's proficiency in using and leveraging web technology to exchange information within and outside the firm for buying and selling activities with suppliers and customers (Schoenherr & Swink 2015). Because this study is interested on the customer side of e-business technology and its effects on online customer engagement, we only focus on the web technology firm's usage to interact with customers (Xia & Zhang 2010).

We argue a positive relationship between e-business technology capability and online customer engagement. E-business technology platforms are specially characterized for giving information (Stafford et al. 2004), which is one of the factors that motivate customer engagement. Giving personalized shopping and in-depth information on products strongly engages online shoppers and persuades them to revisit the firm's web site for additional information (Eisingerich & Kretschmer 2008). It can be critical to provide information on product features, product promotions/discounts, customer reviews and information about contents related with the brand through the firm's web site (Gu et al. 2012). Firms can also leverage their web technology to improve the relationships with customers to achieve a higher corporate reputation and a better market responsiveness (Benitez & Ray 2012). Thus, we hypothesize:

Hypothesis 2 (H2): There is a positive relationship between e-business technology capability and online customer engagement.

Online Customer Engagement and Organizational Performance

We define organizational performance as a multidimensional construct composed by two elements (Mithas et al. 2011): (1) innovation performance, and (2) customer service performance. Innovation performance refers to the outcomes obtained in the process of changing existing products/processes and/or developing new ones (Benitez et al. 2016; Joshi et al 2010). Customer service performance refers to the extent a firm is able to handle customer needs and expectations obtaining better reliability and lower number of complaints (Ray et al. 2005; Xue et al. 2013). We focused on these two dimensions of performance as they are suggested to be directly influenced by customers' involvement. In addition, recent studies like Kane et al. (2014) show that small firms are increasingly using online technologies with the main objective to improve their product/service innovation and to better relate and support customers.

Online customer engagement can improve organizational performance. First, opinions expressed by influential and experiential reviewers are the best sources to provide a good strategy in creating/designing new products and serving customers. Online customer involvement and participation provide the firm with data and information about specific new products/processes ideas, concepts, and prototypes, which enable the firm to develop new products (Fang et al. 2008). Customers' opinions help the firm to better understand what the consumer wants the product to be (Yim et al. 2012). For example, in 2008 Starbucks opened MyStarbucksIdea, a social platform to collect ideas from customers. Users could make suggestions about a wide range of categories (i.e., products, experience and service) and vote for others' posts. Starbucks selects ideas most welcomed by users and implements innovation. Based on ideas provided by MyStarbucksIdea, the company introduced hundreds of new products and activities (e.g., new flavors of coffee, or the availability of Wi-Fi in Starbucks stores) (Dong & Wu 2015). Online customer involvement can also provide data and information on customer needs, preferences, and market trends which enable the firm to better serve customers (e.g., Ray et al. 2014). This information can help firms to agilely solve complaints (e.g., via social media or email platforms) (Kiron et al. 2013) thus improving customer service performance.

Second, online customer participation may improve the effectiveness of the new product development process. By one hand, constant information sharing and communication with customers can help the firm in learning how customer needs evolve during the new product development process (Fang et al. 2008). By other hand, improving communication can help customers and employees to work more cooperatively (Fang et al. 2008; Pavlou & El Sawy 2006) and firms can benefit from knowledge, skills, and resources of their customers during the innovation process (Mahr et al. 2014). Then, information sharing and critical information about the product idea achieved by the online customer engagement gives the firm the opportunity to prevent costly mistakes of developing products that do not fit customer needs, optimizing the innovation process (Fang et al. 2008). Therefore, we hypothesize:

Hypothesis 3 (H3): There is a positive relationship between online customer engagement and organizational performance.

Research Methodology

Sample

We test the proposed model with the 100 small firms included in the 2013 Forbes America's Best Small Companies ranking (in short, the Forbes database), which includes the best 100 U.S. publicly small firms with sales under one billion dollars. The firms came from 30 industries: consulting (18 firms), IT (16), food manufacturing (seven), semiconductor manufacturing (six), healthcare (five), chemical (five), and other industries (43). On average, the firms of the sample had about 2,335 employees and 488.120 million dollars of sales. Every firm in our sample had a web site. 74%, 71%, and 35% of the firms included in the sample were active on Facebook, Twitter, and corporate blogs respectively.

Data and Measures

We measure all our variables using a secondary dataset that comes from ten different sources/databases. We started collecting the information from the 2013 Forbes database and using the name of each firm, we gathered the information from the other databases.

Drawn from Braojos et al.'s (2015), we measure social media capability as a second-order construct determined by Facebook, Twitter, and blog capability with information collected from Facebook, Twitter, Twopcharts database (<http://www.twopcharts.com>) and firm's blog site in June 2014. We evaluate Facebook capability through the number of events, experience, and updated content by the firm. Twitter capability is measured in terms of firm's spent time writing tweets, experience, and updated content by the firm. We measure blog capability in a similar vein as per Facebook/Twitter firm's experience and updates.

We conducted a structured content analysis in June 2014 of the firm's web site to measure e-business technology capability through the accumulated total number of firm's web functionalities to interact with customers (Zhu & Kraemer 2002). We codified whether the firm's web site had 13 functionalities consisting on product information, actions that facilitated transactions online, interaction, and

customization using a binary variable. We measure e-business technology capability through the accumulated total number of firm's web functionalities.

Online customer engagement is a third-order construct determined by social online customer engagement (a second-order construct) and conventional online customer engagement (a first-order construct). Social online customer engagement is composed by Facebook, Twitter, and blog customer engagement, with information collected from the firm's Facebook, Twitter, and blog sites from June to August 2014 (Ha et al. 2016; Kiron et al. 2013). Facebook customer engagement is measured through fan evolution, number of user comments, likes, and shares per firm's post. We assess Twitter customer engagement in terms of firm's number of following, the evolution of followers, number of customer comments, favorites, and retweets per firm's tweet. Finally, blog customer engagement is measured as number of customer comments and shares per firm's post. Conventional online customer engagement is measured as the degree of customer's contribution to the firm's web site. We evaluated the relative traffic rank position of the firm's web site with data collected from Alexa database (<http://www.alexa.com/>) from June to August 2014 (Heath et al. 2013). We evaluated the Alexa ranking per industry and performed the relative traffic rank position by calculating the rate of sectoral excellence (RSE) in web customer engagement for June, July, and August 2014 as follows: $1 - (\text{Rank position of the firm's web site} / \text{Number of firms in the industry})$ (Benitez & Walczuch 2012). Conventional online customer engagement is measured as the average RSE in web customer engagement from June to August 2014.

Organizational performance is a second-order construct composed by two traditional dimensions of performance: innovation performance and customer service performance (Mithas et al. 2011). Innovation performance is calculated as the firm's patent quality collected from the U.S. Patent and Trademark Office database in the period 2007-2014 (Benitez et al. 2016). To evaluate patent quality, first we estimated a patent quality weighting ratio (PQWR) and then, we built a ranking by industry where the firms have a better position as greater the PQWR is to calculate the RSE in innovation (Benitez & Walczuch 2012). PQWR is measured weighting the number of patents in a year by the citations that these patents have obtained within a three-year window (Kleis et al. 2012). The final measure of innovation performance is composed by five indicators on RSE in innovation for 2007-2010, 2008-2011, 2009-2012, 2010-2013, and 2011-2014. Customer service performance is measured with information on the firm's reliability and honesty collected from the Better Business Bureau (BBB) database (<https://www.bbb.org/>) in October 2014 (Ma et al. 2012). BBB is a non-profit organization that provides business reviews based on firms' trust and honesty. We assess the quantity of solved complaints, and the presence or absence of accreditation for implementing the BBB Code of Business Practices in October 2014 as two indicator proxies to measure customer service performance. It is rational to expect that firms that effectively solve complaints and guided by a Code of Practices for honesty are more reliable for customers. These two indicators are thus objective and credible to measure customer serviced performance. We use the natural logarithm of the number of complaints that were solved by the firm in 2014. Presence or absence of accreditation is measured as a dummy giving the value 1 if the firm possesses the BBB accreditation and 0 in other case.

We control for firm size, firm age, and industry on organizational performance to account for differences in performance that may be attributed to organizational resources, experience or inter-industry differences (Mithas et al. 2011). Our constructs are specified as composite at first-, second-, and third-order level (Henseler et al. 2016).

Empirical Analysis

We test the proposed model by performing a PLS path modeling. We use the statistical software package Advanced Analysis for Composites (ADANCO) 2.0 Professional (<http://www.composite-modeling.com/>) (Henseler & Dijkstra 2015). This method of estimation is appropriate because: (1) PLS is a full-fledged structural equation modeling method of estimation that can conduct exact test of model fit (Benitez et al. 2017; Henseler et al. 2016); (2) PLS is an optimal method of estimation for composite models as the proposed model (Henseler et al. 2014; Rueda et al. 2016).

Measurement Model Evaluation

We assess the multi-collinearity, weights, and its level of significance, loadings, and its level of significance of the indicators and dimensions of our composite first-, second- and third-order constructs. There is no multi-collinearity problem if variance inflation factors (VIFs) of the indicators and dimensions are lower than 10 (Benitez & Ray 2012; Tanriverdi & Uysal 2015). VIF values are well below 10, except for one item of Facebook engagement (i.e., shares per firm's post), which was finally dropped. Then, multi-collinearity is not a problem in our data. A composite item/dimension should be retained if its weight and/or loading are significant. We perform a bootstrap analysis with 5,000 subsamples to obtain the significance level of indicator and dimension weights and loadings, and beta coefficients. All the indicator and dimension loadings and weights are significant at 0.05 level. Overall, this analysis shows good measurement properties for the proposed model. Before testing the structural model, we also check for the external validity of our composite constructs by performing a confirmatory composite analysis (Henseler et al. 2014). This analysis is useful to detect model misspecifications like wrong assignment of indicators to constructs or wrong number of constructs. This analysis shows that there is empirical support for the structure of our composite constructs.

Test of Hypotheses

All the hypotheses are supported for the empirical analysis. Social media and e-business technology capabilities contributes to the development of online customer engagement (0.001 level). Online customer engagement improves organizational performance (0.01 level). The relative effect of social media capability ($\beta = 0.530^{***}$, $f^2 = 0.429$) is about three times the effect of e-business technology capability on online customer engagement ($\beta = 0.297^{***}$, $f^2 = 0.135$). The values of the beta coefficients, their level of significance, the effect size (f^2) values and the R^2 values are individual measures of the explanatory power of the model. Beta coefficients around 0.200 are considered economically significant, and R^2 values higher than 0.200 indicate good explanatory power of the endogenous variables of the model (Benitez & Ray 2012). The beta coefficients of the hypothesized relationships range from 0.297** to 0.530***. Hypotheses 1 and 2 are supported by the data with 0.001 level of significance while the hypothesis 3 is significant at 0.01 level. The f^2 specifies the relative size of each incremental relationship included in the proposed model. The f^2 values of the key relationships of the model range from 0.120 to 0.429. The explanatory power of the variable online customer engagement is 0.542 while the R^2 value for organizational performance is 0.210. Overall, this analysis shows a good explanatory power for the proposed model.

We also evaluate the goodness of model fit for the structural model by examining the standardized root mean squared residual (SRMR), unweighted least square discrepancy (d_{ULS}), and geodesic discrepancy (d_G). These measures of goodness of fit evaluate the discrepancy between the empirical correlation matrix and the model-implied correlation matrix. The lower they are, the better the model fit (Benitez & Ray 2012; Henseler et al. 2014). SRMR has a value of 0.052, well below the threshold of 0.080 (Henseler & Dijkstra 2015). Every discrepancy values are below the 95%-quantile of the bootstrap discrepancies, which means that, with a probability of 5%, we can claim that the proposed model is a correct theory to explain how the IT and corporate worlds functions (Benitez et al. 2016; Henseler & Dijkstra 2015).

Mediation Analysis

We perform a post-hoc mediation analysis in two ways: (1) we add the direct effects between social media capability and organizational performance, and between e-business technology capability and organizational performance, which are not significant, and (2) estimating and analyzing the indirect effects involved in the proposed model (Table 1). All these indirect effects are significant at 0.10 level. These two analyses reinforce the results obtained in the test of hypotheses and suggest that social media and e-business technology capabilities positively affect organizational performance through online customer engagement (Zhao et al. 2010).

Test of Robustness

We check for the robustness of the proposed model by considering the dimensions of organizational performance separately, keeping every other relationship the same. Results obtained in the alternative model yield similar results to those obtained in the proposed model. This indicates that the

operationalization of the construct operational performance does not affect to the results of the study. As the proposed model does not have a significantly worse model fit and it is a more parsimonious theory, it is preferred to the alternative model included in the test of robustness (Benitez et al. 2016; Henseler et al. 2016). Table 1 shows the details of this test of robustness.

| Beta coefficient | Base model | Mediation model | Alternative Model |
|--|-------------------|------------------------|--------------------------|
| Social media capability → Online customer engagement (H1) | 0.530*** | 0.529*** | 0.529*** |
| E-business technology capability → Online customer engagement (H2) | 0.297*** | 0.297*** | 0.298*** |
| Online customer engagement → Organizational performance (H3) | 0.312** | 0.231* | |
| Online customer engagement → Innovation performance | | | 0.260** |
| Online customer engagement → Customer service performance | | | 0.221* |
| Social media capability → Organizational performance | | 0.085 | |
| E-business technology capability → Organizational performance | | 0.136 | |
| Firm size → Organizational performance (control variable) | 0.111 | | |
| Firm age → Organizational performance (control variable) | -0.289*** | | |
| Industry → Organizational performance (control variable) | 0.019 | | |
| Firm size → Innovation performance (control variable) | | | 0.048 |
| Firm size → Customer service performance (control variable) | | | 0.106 |
| Firm age → Innovation performance (control variable) | | | -0.148 [†] |
| Firm age → Customer service performance (control variable) | | | -0.263*** |
| Industry → Innovation performance (control variable) | | | -0.123 |
| Industry → Customer service performance (control variable) | | | 0.104 |
| R² | | | |
| Online customer engagement | 0.542 | 0.541 | 0.541 |
| Organizational performance | 0.210 | 0.156 | |
| Innovation performance | | | 0.102 |
| Customer service performance | | | 0.163 |
| SRMR value | 0.052 | 0.048 | 0.056 |
| SRMR HI₉₅ | 0.069 | 0.059 | 0.133 |
| d_{ULS} value | 0.178 | 0.082 | 0.427 |
| d_{ULS} HI₉₅ | 0.312 | 0.126 | 2.414 |
| d_G value | 0.097 | 0.063 | 0.233 |
| d_G HI₉₅ | 0.158 | 0.089 | 1.738 |
| Indirect effects | | | |
| Social media capability → Organizational performance | | 0.122* | |
| E-business technology capability → Organizational performance | | 0.069 [†] | |

Table 1. Results of the PLS Estimation

Discussion and Conclusion

This research examines the impact of contemporary social commerce-IT capabilities on organizational performance on a sample of 100 small U.S. firms. Since some IT resources have become ubiquitous, what is strategic in explaining firm's performance variation are IT capabilities (how to use and leverage IT resources) instead of how much the firm invests in IT resources. Our central proposition was that developing social media and e-business technology capabilities could create new ideas and customer value by serving as the foundation to online engage customers. Social media and e-business technology

capabilities facilitate online customer engagement to improve organizational performance. This theoretical proposition is supported by the empirical analysis.

How does IT influence organizational performance? This is our new and interesting way to answer this critical question: firms that better leverage its social media and e-business technology capabilities achieve fine-grained customer information and ideas by engaging customers virtually in social media and the firm's web site. Firm's social media and e-business technology capabilities enable to online engage customers in social media, and the firm's web site to interchange ideas and create a sense of brand identification, commitment, and loyalty. Online customer involvement provides the firm with critical information on customer needs and ideas for new product development and enhancing service, which the firm leverages to pursue organizational performance.

This research has three key contributions to the field of IS. First, this research put into the same equation social commerce-IT capabilities and customer engagement to explain organizational performance variation. The first key contribution of this paper is to show novel and interesting mechanisms (i.e., online customer engagement) through which IT affects organizational performance, as compared with prior research on this topic that has focused on other mechanisms like knowledge management or strategic flexibility (Joshi et al. 2010; Ray et al. 2005).

Second, a great number of IT capabilities have arisen in the contemporary firm (e.g., social media, e-business technology). This is the first study in classifying the IT capabilities of social media and e-business into social commerce-IT capabilities. Social commerce activities are characterized by the interplay of social media and e-business platforms. We assume the IT capabilities of social media and e-business, when working together, as social commerce-IT capabilities as they enable individuals to execute participation actions that could end up in some customer's decision.

The third key contribution of this paper is the suggested classification of online customer engagement and the exploration of online customer engagement in the context of IT capabilities and organizational performance. Luo et al. (2013) examine and compare the effects of social media (blogs and customer ratings) and conventional media (web traffic and Google search) on the stock market performance. Drawn from this work, we classify and focus on two types of online customer engagement: social online customer engagement and conventional online customer engagement. This is a novel classification of online customer engagement enabled by IT capabilities.

This study has three limitations. First, the findings of this study can be only generalized to the best small U.S. firms (included in the Forbes database). Although it may be useful because our findings can illustrate to other firms that may want to mimic the best small firms, future research should examine whether the results obtained in this study are kept in the context of other countries (e.g., European Union, Asia) and/or other type of firms (e.g., micro-firms, large firms). Second, our theory focuses on the role of IT capabilities on online customer engagement. Certainly, there may be other mechanisms that influence customer actions. Future research should pursue to explore these mechanisms to enhance our theoretical proposition. Third, social commerce IT-capabilities are measured with secondary data. We use objective measures of efforts and usage intensity as proxies to measure social commerce IT-capabilities.

Implications for IT Managers

This research also provides useful lessons for IT managers. Firms invest millions of Dollars in IT but not all these investments generate the expected results. First, this study shows that the development of social media and e-business technology i.e., two contemporary IT capabilities can indirectly help the firm to improve their organizational performance. Second, IT managers can also learn from this research that their firms can pursue two types of online customer engagement, namely, social and conventional online customer engagement. Then, we provide IT managers a simple, eloquent, and new explanation on whether, why and how IT affects organizational performance. Social media and e-business technology capabilities create innovation and customer value by serving as the foundation to develop social and conventional online engagement. Thus, investments in social media and e-business technology pay off.

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