IT Capability and Firm Performance: The Mediating Roles of Interaction Praxis

Completed Research

Chao Feng
Xi'an Jiaotong University
chaofeng6-c@my.cityu.edu.hk

Nannan Xi
University of Turku
nannan.xi@utu.fi

Guijun Zhuang
Xi'an Jiaotong University
zhgj@mail.xjtu.edu.cn

Juho Hamari
Tampere University
juho.hamari@tuni.fi

Abstract

We investigate how IT-capability leads to more interaction business practices, both through inter-organizational systems (IOS) and social media (SM), and how they further lead to marketing effectiveness and firm success. After analyzing the data collected from manufacturers (N=504), we find that (1) IT capability has a significant positive effect on both IOS-enabled and SM-enabled interaction practices; (2) IOS-enabled interaction practice has significant positive effects on both marketing performance and financial performance, while SM-enabled interaction practice only has a significant positive effect on the market performance; (3) both IOS-enabled interaction practice and SM-enabled interaction practice partly mediate the positive influence of IT capability on marketing performance and financial performance; (4) marketing performance partly mediates the positive impact of IOS-enabled interaction practice and fully mediates the positive impact of SM-enabled interaction practice on financial performance.

Keywords

Social media, IT capability, inter-organizational, firm performance, B2B

Introduction

Since the advent of social media channels such as WhatsApp, WeChat, Skype and LinkedIn, firms have been increasingly adopting and looking for ways to capitalize on them as means of inter-organizational communication (Wang et al. 2016) in addition to the existing legacy systems such as ERP, CRM, SRM, SCM, bulletin board, Workflow Software and Groupware. Compared with the legacy inter-organizational, social media (SM) is believed to build relationships and trust in a more modern, flexible and casual manner as well as provide novel business information and data (Wang et al. 2016). According to the estimate of B2B Marketing (2014), one-third of B2B marketers are generating product demand by using social media. In reality, if a firm already has IT-base innovative infrastructure, it is more likely to evolve from traditional information systems to advocaters of newer IT technologies (Nwankpa & Datta 2017). In this way, increasing IT capability can positively influence performance by exploring the systematic mechanism and assimilating new social media (i.e. WhatsApp) (Tajudeen et al. 2018).

Overall, during this relatively long research continuum on IT capability and performance, it has been well documented that there is a clear link between IT capability and firm performance (Nwankpa & Datta 2017). However, the "IT capability-performance" link has still remained hazy especially related to the mediating role of the IT-based communication and networking overall but especially related to the use of social media (Liu et al. 2013). As such, scholars have called for more empirical studies on the influential mechanisms of IT capability especially in the B2B context (Wu et al. 2015). While inter-organizational systems (IOS) has been abundantly incorporated in the existing research (Chen et al. 2014; Liu et al. 2013;

Dong et al. 2009), it is rarely mentioned in literature how firms bridge relationships in B2B communications by using social media (Tajudeen et al. 2018).

The objects of this study are to answer two following research questions: (1) how the IT capability is first transformed into increased the interaction praxis between the firm and its vendors and (2) how these praxis then further increase firm performance. By drawing from the extant literature, this study investigates the relationships between IT capability, the two interaction business praxis (IOS-enabled interaction practice and SM-enabled interaction practice) and firm performance. IOS-enabled interaction practice utilize the *inter-organizational systems* invested by firms such as ERP, CRM, SRM, SCM, bulletin board, Workflow Software and Groupware (Robey et al. 2008), while SM-enabled interaction praxis utilizes the *social media* existing in people's daily life such as Facebook, LinkedIn, WhatsApp and WeChat (Vouri 2012; Aral et al. 2013).

Background

IT capability

IT capability is the ability of a firm to mobilize and deploy IT-based resources in combination with other resources and capabilities (Bharadwaj 2000), which could lead to cost reduction, profit increasing and other performance enhancement, then further help firms outperform their rivals (Jacks et al. 2011). In most studies, IT capability and IT resources are usually considered as a similar concept (Bhatt & Grover 2005). There are many relevant research related to the underlying mechanism of how IT capability contributes to excellent performance (Dong et al. 2009; Klein & Rai 2009; Chakravarty et al. 2013; Liu et al. 2013; Chen et al. 2014; Iyengar et al. 2015; Wu et al. 2015; Chen et al. 2015; Nwankpa & Datta 2017). It is evident that most studies focus on the competitive advantage linked to specific IT capabilities such as IT management (see Rai & Tang 2010; Fink 2011). However, this might be too narrow a focus to reveal the scope of the business value of IT.

Furthermore, such a view risks overlooking the commonality shared by and the correlation among, these specific IT capabilities (Lu & Ramamurthy 2011). Therefore, in this study, we adopt a more holistic perspective of IT capability, which reflects the commonalities and potential synergies between firms' various IT assets and resources (e.g. Ross et al. 1996; Bharadwaj 2000; Bhatt & Grover 2005; Lu & Ramamurthy 2011). IT capability can be divided into two different dimensions: IT infrastructure and IT human resource, respectively. To be more specific, IT infrastructure resource refers to the extent to which a firm's IT equipment is the latest designed (or manufactured) and the application (software) systems are the latest developed (or released). IT human resource reflects the extent to which IT employees' expertise contributes to an organization's information management process (Ross et al. 1996; Zhang et al. 2008).

Second, it can be seen that there are many different underlying mechanisms in the relationship between IT capability and firm performance. Mediating variables such as knowledge sharing/process coupling (Iyengar et al. 2015), corporate entrepreneurship (Chen et al. 2015), organizational agility (Chakravarty et al. 2013), etc., are intangible behavioral or high-order capabilities, however, far from the tangible information technology per se (Orlikowsk & Iacono 2001; Roberts & Grover 2012). Social media, as one of the most important online interactive tools, which can further greatly affect company performance only has received little attention in previous studies (Lamberton & Stephen 2016; Jussila et al. 2014). However, in the current literature, few empirical studies have examined the possible relationships between IT capability, internet interactive capability, and firm performance. Linking IT to specific business process capabilities is important for developing a more complete understanding of the role of IT capability on firm performance (Chen et al. 2014). Further, it can also provide the actionable guidelines for making decisions about IT development, acquisition, and implementation for practitioners (Chen et al. 2014).

Internet interaction practices (IIP)

Internet interaction practices mainly refer to the ways for firm's managers and employees to communicate and interact with different stakeholders through internet interaction tools, which are manifested in their interaction media, the degree of interaction, the scope of interaction, interactive interface, and interactive process control and other aspects (Shankar & Balasubramanian 2009). There are mainly two types of internet interaction practice: IOS-enabled interaction practice and SM-enabled interaction practice. IOS-

enabled interaction practice refers to the practice that the firm communicates and interact with partners through the inter-organizational system (Robey et al. 2008), such as EDI, Lotus Notes, ERP, CRM, SRM, SCM, bulletin board, Work-flow Software and Groupware. In terms of SM-enabled interaction practice, the firm can communicate and with partners through social media platforms (Vouri 2012; Aral et al. 2013) (e.g. WeChat, Facebook, LinkedIn, QQ and E-mail). Specifically, IOS-enabled interaction practice has the features of person/machine interactive interface, a great advantage in quick response, limited inter-firm interaction, and a high degree of control over the interaction process. Instead, SM-enabled interaction practice has the features of multiple person/machine interfaces, highly personalized messages, more flexible interaction scope, and lower interaction process control (Dholakia et al. 2009).

Research Hypotheses

IT capability and internet interaction practices

Generally speaking, firms with high IT capacity tend to explore the utility of their IT resources which can bring more business opportunities (Lu & Ramamurthy 2011; Mithas et al. 2011). Hence, IT capability can increase a firm's investment to introduce more advanced and friendly IOSs, which further automatically generate a large amount of cooperation information such as transaction time, quantity requirement, product type, product price, and problems during the period. Additionally, the stronger infrastructure facilitates can increase the efficiency of communication and information exchange within and out of firm boundaries (Shang & Seddon 2002), which helps other partners to update their own IOSs in order to achieve system alignment.

Further, the excellent IT staffs rely on their professional knowledge to help companies purchase and manage IOSs, as well as provide guidance for employees in the IOS, so that improve the efficiency and effectiveness of the use of IOS (Sun et al. 2012). The improvements in IT capabilities can help employees to interact with other partners through IOS-enabled interaction practice. Hence, the hypothesis can be put forward:

H1: A firm's IT capability facilitates its employees' adoption of IOS-enabled interaction practice.

In term of IT capability, firms with IT-based innovative knowledge and skills are more likely to evolve from traditional information systems applications and utilization and scale themselves to the newer IT technologies such as social media, mobile, and big data analytics (Nwankpa & Datta 2017). In this way, increasing IT capability can positively influence absorptive capacity (Cohen & Levinthal 1990) by exploring a systematic mechanism and assimilating advanced internet interactive tools increasing IT capability by applying some advanced internet interact tools (i.e. WeChat, WhatsApp, LinkedIn, and QQ) have a positive effect on the firm's absorptive capacity (Cohen & Levinthal 1990). Second, a firm with a solid infrastructure can create an atmosphere for employees to use IT technologies (Nwankpa & Datta 2017). For instance, some firms introduce the latest office automation system and urge all employees to carry out the "paperless" office. Under this atmosphere, employees could implement IT devices and applications regularly, which will reduce their strangeness, anxiety, and fear of adopting various internet interactive tools. Once new social media appear in daily life, the employees will not exclude them and will be more willing, capable of understanding and using them. We thus hypothesize as follows:

H2: A firm's IT capability facilitates its employees' adoption of SM-enabled interaction practice.

Internet interaction practices and firm performance

In the present study, we propose that internet interaction practice plays a mediating role in the relationship between IT capability and firm performance. There are mainly two kinds of firm performance: marketing performance and financial performance (Wu et al. 2006). Following the understanding of Venkatraman & Ramanujam (1986), marketing performance is defined in terms of market research, product advertising, market promotion and solutions to customer complaints. Financial performance mainly includes profitability, ROI, and revenue growth rate.

IOS-enabled interaction practice can positively impact marketing performance. During the transaction process between the firm and its partner, IOS can generate a large amount of marketing related information, including sales forecast, price fluctuation and various data from the point of sale (POS).

When the target of inter-firm communication is to obtain this information, IOS-enabled interaction practice is crucial for both partners to facilitate marketing performance. In addition, partners can respond better to customers' needs through the integrated systems (Bowersox et al. 1999). Further, IOS-enabled interaction practice can also help firms get cost advantage, which further positively influences financial performance. Corporate information provided by IOS could save information costs. Additionally, the information sharing by IOS between partners may reduce the uncertainty of demand (Frohlich 2002) as well as improve the coordination between partners (Lin et al. 2002). Thus, we propose the following hypothesis:

H3: IOS-enabled interaction practice can positively affect (a) marketing performance and (b) financial performance.

We posit that SM-enabled interaction practice could increase marketing performance. Social media could help solve marketing-related problems (e.g. understanding customer demand, improving sales, advertising and promotion practices) through the exchange of customized information. Therefore, adopting SM-enabled interaction practice could help firms and their partners to solve problems and improve marketing performance. On the other hand, SM-enabled interaction practice can also potentially improve financial performance by saving communication and coordination costs. SM-enabled interaction practice does not require relevant people to be online at the same time (Li et al. 2017). This allows relevant people to make reasonable use of SM to share information, which in turn save the coordination cost substantially. Hence, Thus,we can put forward the following hypothesis:

H4: SM-enabled interaction practice affects (a) marketing performance and (b) financial performance positively.

The mediating roles of internet interaction practices

According to relevant assumptions that were presented above (H1-H4), we can easily infer that internet interaction practices mediated the relationship between IT capacity and firm performance (Wu et al. 2006). The internet interaction practices depend on a firm's ability to implement and leverage IT technology. High levels of a firm's IT capability could facilitate its employees' adoption of internet interaction practices in a manner that explores new IT resources, inspires integrated IOS connection, creates an atmosphere, and provides guidance. Improved internet interaction practices could lead to the possibility of high marketing and financial performance. Thus, internet interaction practices are expected to be the mediator in the relationship between IT capability and firm performance. Accordingly, we can hypothesize:

H5: IOS-enabled interaction practice mediates the relationship between IT capability and (a) marketing performance and (b) financial performance.

H6: SM-enabled interaction practice mediates the relationship between IT capability and (a) marketing performance and (b) financial performance.

The mediating role of marketing performance

The resource-based view (RBV) theory argues that the firm's competitive advantage could lead to better performance (Kozlenkova & Samaha 2014). On the other hand, one of the most important objectives of business activities (including marketing performance) is to make the profit. Thus, we posit that marketing performance could facilitate financial performance. Thus, the following hypothesis can be put forward:

H7: A firm's marketing performance positively impact financial performance.

Further, combining H3 and H4, it can be deducted that internet marketing performance act as an intermediary in the relationship between internet interaction practice and financial performance. We thus hypothesize:

H8: Marketing performance mediates the relationship between IOS-enabled interaction practice (a) and SM-enabled interaction practice (b) and financial performance.

Method

Sample and data collection

For the large-scale survey, we randomly selected a sample of 600 firms from a list of Chinese manufacturing firms located in different cities in China. These firms spanned diverse industries (e.g., mechanics, apparel, materials, electronics, food). To collect data, we collaborated with a professional research company and trained interviewers to administer the survey during on-site personal meetings, which is the method of choice to obtain reliable and valid information in emerging economies (Li et al. 2008). Our interviewers first called managers to solicit their cooperation. Managers from 575 different firms agreed to participate, of whom 514 were interviewed on-site. After setting up appointments, our interviewers visited the managers in their offices at the scheduled time, presented the survey, clarified any questions, and collected the survey after completion. To motivate the managers' participation, the managers were informed of the academic nature of the study and the confidentiality of their responses and were offered an incentive in the form of a summary report. Informants were asked to select one of their firms' major distributors and answered the survey questions involving that distributor. After deleting the missing data, we got 504 valid questionnaires.

Measurement

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) IT infrastructure (ITI)	**.786**								
(2) IT human resource (ITH)	.657***	**0.759**							
(3) IOS-enabled practice (IOS)	.495***	.386***	**.854**						
(4) SM-enabled practice (SM)	.428***	.374***	.519***	**.758**					
(5) Marketing performance (MP)	.498***	.385***	.369***	.389***	**.740**				
(6) Financial performance (FP)	.210**	.278**	.197**	.120**	.342***	**.849**			
(7) Relationship length	.069	.095	.153**	.136**	.182**	-.154**	-		
(8) Sales scale	-.116**	-.206**	.017	-.240**	-.137**	.053	-.134**	-	
(9) State-owned	.043	.002	-.008	.015	.013	.085	.114*	.173**	-
Mean	5.217	5.324	4.277	5.164	5.268	5.010	6.210	3.393	.091
SD	1.038	0.974	1.512	0.962	0.891	1.147	4.376	1.791	.288
CR	0.866	0.845	0.915	0.871	0.857	0.886	n.a.	n.a.	n.a.
α	0.914	0.871	0.860	0.845	0.848	0.884	n.a.	n.a.	n.a.
AVE	0.618	0.576	0.729	0.575	0.548	0.721	n.a.	n.a.	n.a.

Note: Diagonal elements are the square roots of average variance extracted; Significance levels for Pearson Correlation (two-tailed) † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 1. The Means, Standard Deviations (SDs), AVEs, CRs, and Correlations of Constructs

All constructs were measured on the seven-point Likert scale. IT capability as a second-order construct was reflected in two first-order dimensions: IT infrastructure and IT human resources (Bharadwaj 2000). Four items respectively were designed to measure IT infrastructure and IT human resource, ranging from 1 "totally disagree" to 7 "totally agree". In terms of IIP, we designed measurement items based on the current literature (Churchill 1979). After the exploratory factor analysis (EFA) of the pre-test data (N = 52), two items were omitted. We thereby finalized the scales for IIP: four items for IOS-enabled interaction practice and five items for SM-enabled interaction practice. As for measuring marketing and financial performance, scales were adapted from Venkatraman & Ramanujam (1986) , Wu et al. (2006) and Flynn et al. (2010).

Given that this research relied on data from a single source, it is likely to be susceptible to common method bias (CMB). According to Podsakoff et al. (2003), We controlled CMB through the procedure and

statistical controls. First, we assured all respondents that they did not need to disclose their names and only aggregate results would be reported; in addition, we promised them that there were no correct or incorrect answers, and they should answer all questions frankly. Second, as mentioned earlier, we refined all measurement items through multiple interviews with three Ph.D. students and five field managers as well as pre-tests to keep them simple, specific and accurate. Finally, after conducting Harman's single factor test, we found that only 33.7% of the variance in the variables can be explained by one factor, which means CMB is unlikely to be a problem. (Podsakoff et al. 2003).

To minimize the confounding effect of spurious correlation, this study controlled the relationship duration and annual sales (i.e. the logarithm of the approximate number of annual sales) of the supplier. Besides, this study used a dummy variable to control for whether the supplier is a state-owned company (Yes = 1; No = 0). We used the internal consistency reliability (Cronbach's α) and composite reliability of the latent variable (CR) to reflect the scale reliability. The value of Cronbach's α and CR for all variables both exceeded 0.8, which shows that the scale had good reliability. Convergent validity was established by examining significant factor loadings on each construct. All significant standardized factor loadings were above 0.6, and the average variances extracted (AVEs) for all constructs were higher than 0.5. Therefore, the measures in this study satisfied convergent validity (Fornell & Larcker 1981). According to Table 1, the AVE for each construct was greater than the squared correlations between the measure and other constructs, indicating a strong discriminant validity (Fornell & Larcker 1981). For the mean, standard deviation (SD), AVEs, CR, and correlation of each construct, please refer to Table 1 above.

Results

Main effect

The standardized path coefficients and the fit statistics are shown in Figure 1. The overall fit statistics indicate an excellent model fit for the full model (CMIN=1019.559, DF=332, χ2/df=3.071, CFI=0.910, TLI=0.897, IFI=0.910, RMSEA=0.064). Regarding the hypothesized relationship, IT capability had positive effects on both IOS (β=0.618, p<0.001) and SM (β=0.602, p<0.001). Thus, H1 and H2 were supported. The effects of IOS on marketing performance (β=0.190, p<0.001) and financial performance (β=0.119, p<0.05) were positive and significant. Hence, the results supported H3. Further, SM can positively affect marketing performance (β=0.349, p<0.001) while the effect on financial performance (β=0.190, p<0.001) was insignificant. Therefore, H4a was supported and H4b was rejected. Besides, the results also indicated that marketing performance had a positive effect on financial performance (β=0.412, p<0.001), which supported H7.

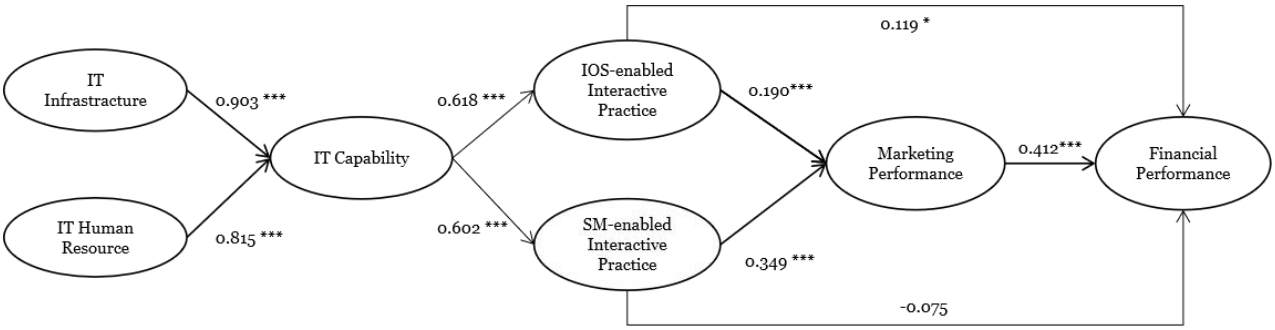

Figure 1. Full Model Estimate-Standardized Parameters

Mediating effect

According to the results of table 2, IOS partially mediated the effect of ITC on FP; SM partially mediated the effect of ITC on MP; MP partially mediated the effect of IOS on FP; MP fully mediated the effect of SM on FP. Therefore, H5a, H6b, H8a, and H8b were all supported. For the path of ITC-SM-FP, SM had no significant effect on financial performance. When SM was integrated into the relationship between IT capability and financial performance, the significant effect of IT capability and financial performance did

not (β = 0.337, p<0.001) decrease noticeably. The Sobel test did not pass either. In addition, according to the bootstrapping analysis, the indirect path effect (β=0.019) of IT capability on financial performance with SM had a 95% confidence interval that included zero (-0.025, 0.066). Hence, H6a was not supported.

	X	M	Y	a	b	c	c*	Sobel Test		Bootstrapping (95%)		
								Z	*P*	Effect	LLCI	ULCI
H5a	ITC	IOS	FP	0.618***	0.119*	0.333***	0.274***	2.49	0.013	0.071	0.012	0.139
H5b	ITC	IOS	MP	0.618***	0.190**	0.520***	0.476***	4.201	0.000	0.08	0.037	0.123
H6a	ITC	SM	FP	0.602***	-0.075	0.333***	0.337***	-1.035	0.301	0.019	-0.025	0.066
H6b	ITC	SM	MP	0.602***	0.349***	0.520***	0.438***	5.157	0.000	0.08	0.043	0.121
H8a	IOS	MP	FP	0.190**	0.412***	0.226***	0.119*	3.917	0.000	0.095	0.063	0.133
H8b	SM	MP	FP	0.349***	0.412***	0.168***	-0.075	4.153	0.000	0.168	0.115	0.225

Note: X represents the independent variable, M represents mediator, Y represents the dependent variable, a represents the coefficient between XM, b represents the coefficient between MZ, c represents the coefficient between XY without mediator, c* represents the coefficient between XY with the mediator

Table 2. Results of Mediation Analysis

Discussions and conclusions

This study explored how IT capability affects firm employees to adopt internet interaction practices that, in turn, affect firm performance. According to the empirical results, IT capability had significant positive effects on IOS-enabled and SM-enabled interaction practice. Second, IOS-enabled interaction practice had significant positive effects on both marketing performance and financial performance, SM-enabled interaction practice only had a significant positive effect on marketing performance. More importantly, IOS-enabled interaction practice partly mediated the positive influence of IT capability on marketing performance and financial performance, while SM-enabled interaction practice partly mediated the positive impact of IT capability on marketing performance; marketing performance partly mediated the positive impact of IOS-enabled interaction practice and fully mediated the positive impact of SM-enabled interaction practice on financial performance.

After examining the research model, H1, H2, H3a, H3b, H4a, H5a, H5b, H6a, H7, H8a and H8b were supported. Contrary to expectations, H4b and H6b were rejected. As for H4b, we believe that this may be because it is difficult to store a large amount of cooperative information on social media, such as changes in demand or supply, so there are certain limitations in using social media to cooperate with partners. Second, although it can provide simple online discussion to a certain extent, it is difficult to replace offline communication and cannot effectively improve cooperation. Third, there are certain hidden risks of using social media in the workplace, that is, employees use social media to communicate non-work-related content, which will backfire and fail to achieve the purpose of improving performance. As for H6b, SM-enabled internet interaction has no mediation effect of IT capability to financial performance effect. However, SM-enabled internet interaction can influence financial performance through the mediation effect of marketing performance, that is, marketing performance completely mediates the impact of SM-enabled internet interaction on financial performance. Combining that SM-enabled internet interaction mediates the impact of IT capability to marketing performance, we have reason to speculate that IT capability can still influence financial performance through the mediating effect of SM-enabled internet interaction and marketing performance.

Contributions and implications

Compared with the existing studies which have identified the mediating mechanisms of behavioral or high-order capabilities between IT capability and firm performance, such as knowledge sharing/process coupling (Iyengar et al. 2015), corporate entrepreneurship (Chen et al. 2015) and organizational agility (Chakravarty et al. 2013) etc., we follow the paradigm and enrich the literature by incorporating the information technology artifacts (inter-organizational information systems and social media) and contextualizing two distinctive mechanisms named internet interaction praxis operationalized as IOS-

enable interaction practice and SM-enabled interaction practice. Further, we respond to the call for more research on social media in the business to business context (Li et al. 2017; Wang et al. 2016) and explore how firms use social media for B2B communications to bridge the aforementioned underling relationship (Tajudeen et al. 2018).

This study also has some implications for managers. First, our results demonstrate that IT capability contributes to the marketing and financial performance of a firm, although in a circuitous way. Arguably, in the current business environment, the homogenization and ubiquitous nature of information systems have decreased the strategic importance (Carr, 2004). Even though companies can easily replicate the IT capability of their competitors, there is still doubt on the impact and superiority of IT capability (Masli et al. 2011). Based on our research, executives who perceive the return on IT capability to be vague and inconsistent would likely see a more consistent path by focusing on the role of IT capability in supporting IOS-enabled and SM-enabled interaction praxis. Second, the social media represented by WhatsApp, WeChat and Skype, etc. have rich and powerful functions. If properly used, social media could increase internal and external communication and improve the firms' management level. Our findings show that SM-enabled interaction practice has a positive effect on marketing performance and partly mediates the relationship between IT capability and marketing performance. Therefore, managers need to allow and encourage employees to use SM tools to communicate and interact with partners, which helps facilitate marketing performance, and further improve financial performance.

Limitations

This study answered the following research questions by examining eight hypotheses: *how the IT capability is first transformed into increased interaction practices between the firm and its vendors and how these practices then further translate to firm performance.* These findings based on the data of 504 suppliers not only offer a new and unique perspective for currently plentiful literature on information technology but also provide a deeper understanding of the adoption of internet interaction practices in which firms can adjust the interaction practices in the context of IT revolution and organizational level. This study still has a few limitations. First, future studies could examine the research hypotheses and model based on the data from both parties of a dyad relationship. As for the measurement in this study, the IT capability of firms as a second-order construct was divided into IT infrastructure resources and IT human resources. This study did not measure the use of internet tools for firm frontier personnel and managers. In fact, the employees' ability to use internet tools may also affect their choice of internet tools and should be considered in future research. Besides, measurement items in this paper were based on the self-evaluation of the employees of the company, which might cause the subjective bias. Therefore, future studies can adopt more objective measurement indicators such as internet speed, number of computers, server capacity and so on.

REFERENCES

Aral, S., Dellarocas, C., Godes, D. 2013. "Introduction to the Special Issue—Social Media and Business Transformation: A Framework for Research," *Information Systems Research* (24:1), pp. 3-13.

Bharadwaj, A. S. 2000. "A Resource-based Perspective on Information Technology Capability and Firm Performance: An Empirical Investigation," *MIS Quarterly* (24:1), pp. 169-196.

Bhatt, G. D., and Grover, V. 2005. "Types of Information Technology Capabilities and Their Role in Competitive Advantage: An Empirical Study," *Journal of Management Information Systems* (22:2), pp. 253-277.

Bowersox, D. J., Closs, D. J., and Stank, T. P. 1999. "21st Century Logistics: Making Supply Chain Integration a Reality, Michigan State University and Council of Logistics Management," *East Lansing*, MI.

Carr N G. 2004. "Does IT Matter?: Information Technology and the Corrosion of Competitive Advantage," *Harvard Business Press*.

Chakravarty, A., Grewal, R., and Sambamurthy, V. 2013. "Information Technology Competencies, Organizational Agility, and Firm Performance: Enabling and Facilitating Roles," *Information Systems Research* (24:4), pp. 976-997.

Chen, Y., Wang, Y., Nevo, S., Jin, J., Wang, L., and Chow, W. S. 2014. "IT Capability and Organizational Performance: The Roles of Business Process Agility and Environmental Factors," *European Journal of Information Systems* (23:3), pp. 326-342.

Chen, Y., Wang, Y., Nevo, S., Benitez-Amado, J., and Kou, G. 2015. "IT Capabilities and Product Innovation Performance: The Roles of Corporate Entrepreneurship and Competitive Intensity," *Information & Management* (52:6), pp. 643-657.

Churchill, J. G. A. 1979. "A Paradigm for Developing Better Measures of Marketing Constructs," *Journal of Marketing Research* (16), pp. 64-73.

Cohen, W. M., and Levinthal, D. A. 1990. "Absorptive Capacity: A New Perspective on Learning and Innovation," *Administrative Science Quarterly* (35:1), pp. 128-152.

Dholakia, U. M., Blazevic, V., Wiertz, C., and Algesheimer, R. 2009. "Communal Service Delivery: How Customers Benefit from Participation in Firm-hosted Virtual p3 Communities," *Journal of Service Research* (12:2), pp. 208-226.

Dong, S., Xu, S. X., and Zhu, K. X. 2009. "Research Note—Information Technology in Supply Chains: The Value of IT-Enabled Resources Under Competition," *Information Systems Research* (20:1), pp. 18-32.

Fink, L. 2011. "How do IT Capabilities Create Strategic Value? Toward Greater Integration of Insights from Reductionistic and Holistic Approaches," *European Journal of Information Systems* (20:1), pp. 16-33.

Flynn, B. B., Huo, B. and Zhao, X. 2010. "The Impact of Supply Chain Integration on Performance: A Contingency and Configuration Approach," *Journal of Operations Management* (28: 1), pp. 58–71.

Fornell, C., and Larcker, D. F. 1981. "Structural Equation Models with Unobservable Variables and Measurement Rrror: Algebra and statistics."

Frohlich, M. T. 2002. "E-Integration in The Supply Chain: Barriers Performance," *Decision Sciences* (33:4), pp. 537–556.

Iyengar, K., Sweeney, J. R., and Montealegre, R. 2015. "Information Technology Use as A Learning Mechanism: The Impact of IT Use on Knowledge Transfer Effectiveness, Absorptive Capacity, and Franchisee Performance," *MIS Quarterly* (39:3), pp. 615-641.

Jacks, T., Palvia, P., Schilhavy, R., and Wang, L. 2011. "A Framework for the Impact of IT on Organizational Performance," *Business Process Management Journal* (17:5), pp. 846-870.

Jussila, J. J., Kärkkäinen, H., and Aramo-Immonen, H. 2014. "Social Media Utilization in Business-to-Business Relationships of Technology Industry Firms," *Computers in Human Behavior* (30), pp. 606-613.

Klein, R., and Rai, A. 2009. "Interfirm Strategic Information Flows in Logistics Supply Chain Relationships," *MIS Quarterly* (33:4), pp. 735-762.

Kozlenkova, I. V., and Samaha, S. A. 2014. "Palmatier R W. Resource-based Theory in Marketing," *Journal of the Academy of Marketing Science* (42:1), pp. 1-21.

Lamberton, C., and Stephen, A. T. 2016. "A Thematic Exploration of Digital, Social Media, and Mobile Marketing: Research Evolution from 2000 to 2015 and An Agenda for Future Inquiry," *Journal of Marketing* (80:6), pp. 146-172.

Li, J. J., Poppo, L., and Zhou, K. Z. 2008. "Do Managerial Ties in China Always Produce Value? Competition, Uncertainty, and Domestic VS. Foreign Firms," *Strategic Management Journal (*29: 4), pp. 383-400.

Li, M., Zheng, X., and Zhuang, G. 2017. "Information Technology-enabled Interactions, Mutual Monitoring, and Supplier-buyer Cooperation: A Network Perspective," *Journal of Business Research* (78), pp. 268-276.

Lin, F. R., Huang, S. H., and Lin, S. C. 2002. "Effects of Information Sharing on Supply Chain Performance in Electronic Commerce," *IEEE Transactions on engineering management* (49:3), pp. 258-268.

Liu, H., Ke, W, Wei, K. K., and Hua, Z. 2013. "The Impact of IT Capabilities on Firm Performance: The Mediating Roles of Absorptive Capacity and Supply Chain Agility," *Decision Support Systems* (54:3), pp. 1452-1462.

Lu, Y., and Ramamurthy, K. 2011. "Understanding the Link Between Information Tchnology Capability and Organizational Agility: An Empirical Examination," *MIS Quarterly* (35:4), pp. 931-954.

Masli, A., Richardson, V. J., Sanchez, J. M., and Smith, R. E. 2011. "The Business Value of IT: A Synthesis and Framework of Archival Research," *Journal of Information Systems (*25:2), pp. 81-116.

Mithas, S., Ramasubbu, N., and Sambamurthy, V. 2011. "How Information Management Capability Influences Firm Performance," *MIS Quarterly* (35:1), pp. 237-256.

Nwankpa, J. K., and Datta, P. 2017. "Balancing Exploration and Exploitation of IT Resources: The Influence of Digital Business Intensity on Perceived Organizational Performance" *European Journal of Information Systems* (26:5), pp. 469-488.

Orlikowski, W. J., and Iacono, C. S. 2001. "Research Commentary: Desperately Seeking The "IT" in IT Research—A Call to Theorizing The IT Artifact," *Information Systems Research* (12:2), pp. 121-134.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., and Podsakoff, N. P. 2003. "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies," *Journal of Applied Psychology (*88: 5), pp. 879–903.

Rai, A., and Tang, X. 2010. "Leveraging IT Capabilities and Competitive Process Capabilities for The Management of Interorganizational Relationship Portfolios," *Information Systems Research* (21:3), pp. 516-542.

Roberts, N., and Grover, V. 2012. "Leveraging Information Technology Infrastructure to Facilitate A Firm's Customer Agility and Competitive Activity: An Empirical Investigation," *Journal of Management Information Systems* (28:4), pp. 231-270.

Robey, D., Im, G., and Wareham, J. D. 2008. "Theoretical Foundations of Empirical Research on Interorganizational Systems: Assessing Past Contributions and Guiding Future Directions," *Journal of the Association for Information Systems* (9:9), Article. 4.

Ross, J. W., Beath, C. M., and Goodhue, D. L. 1996. "Develop Long-Term Competitiveness Through IT Assets," *Sloan Management Review* (38), pp. 31-57.

Shang, S., and Seddon, P. B. 2002. "Assessing and Managing The Benefits of Enterprise Systems: The Business Manager's Perspective," *Information Systems Journal* (12:4), pp. 271-299.

Shankar, V., and Balasubramanian, S. 2009. "Mobile Marketing: A Synthesis and Prognosis," *Journal of Interactive Marketing* (23:2), pp. 118-129.

Sun, Y., Fang, Y., Lim, K. H., and Straub, D. 2012. "User Satisfaction with Information Technology Service Delivery: A Social Capital Perspective," *Information Systems Research* (23:4), pp. 1195-1211.

Tajudeen, F. P., Jaafar, N. I., and Ainin, S. 2018. "Understanding The Impact of Social Media Usage Among Organizations," *Information & Management* (55: 3), pp. 308-321.

Venkatraman, N., and Ramanujam, V. 1986. "Measurement of Business Performance in Strategy Research: A Comparison of Approaches," *Academy of Management Review* (11:4), pp. 801-814.

Vuori, M. 2012. "Exploring Uses of Social Media in A Global Corporation," *Journal of Systems and Information Technology* (14:2), pp. 155-170.

Wang, W. Y., Pauleen, D. J., and Zhang, T. 2016. "How Social Media Applications Affect B2B Communication and Improve Business Performance in SMEs," *Industrial Marketing Management*, 54, pp. 4-14.

Wu, F., Yeniyurt, S., Kim, D., and Cavusgil, S. T. 2006. "The Impact of Information Technology on Supply Chain Capabilities and Firm Performance: A Resource-based View," *Industrial Marketing Management* (35:4), pp. 493-504.

Wu, S. P. J., Straub, D. W., and Liang, T. P. 2015. "How Information Technology Governance Mechanisms and Strategic Alignment Influence Organizational Performance: Insights From A Matched Survey of Business and IT Managers," *MIS Quarterly* (39:2), pp. 497-518.

Zhang, M., Sarker, S., and McCullough, J. 2008. "Measuring Information Technology Capability of Export-Focused Small or Medium Sized Enterprises in China: Scale Development and Validation," *Journal of Global Information Management* (16:3), pp. 1-25.