



Internet resources and capabilities: Japanese SME risk-taking, industry and performance

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ABSTRACT

This study investigates how Internet-related resources and capabilities are influencing performance in Japanese small- and medium-sized enterprises (SMEs). We use a structural equation modelling approach to test these relationships between Internet readiness, Internet capability, risk-taking perceptions and performance within Japanese SMEs (350 SMEs). Unlike other counterpart countries, such as South Korea, Japanese SMEs have been relatively slow in implementing Internet technologies into business practice. However, the results indicate that if Japanese SMEs allocate appropriate resources and deploy Internet capabilities these firms will benefit with performance gains. Further, we find that both the perception of risk-taking and the industry in which the firm operates are key factors in either inhibiting or enhancing the firm's ability to leverage Internet-related capabilities for firm performance.

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Introduction

By the early 1970s many successful Japanese organizations were considered to be world champions in industrial innovations (Rothwell 1992). The Japanese economy had many decades of incredible economic performance, due in part to the innovative practices of Japanese organizations as Japanese firms had the ability to leverage capabilities through their networks outside of the firm and had industry structures that were favourable to innovation (Teece 1996). However, in the past few decades Japan has been in a state of economic stagnation (The Economist 2009; Otaki 2016; Pieterse 2018), with low productivity levels and an inability to keep pace with global innovation standards (Desvaux et al. 2015). This phase of Japanese economic history has been like no other, with recent significant reform in monetary and fiscal liberalization emphasizing stimulus within Japanese economic policy (The Economist 2009). Some also suggest this is a consequence of the lack of competitiveness by firms due to the risk-averse attitudes of many Japanese leaders in management (Froese 2013); that is, managers in Japan are not prepared to adapt

to global business environments, which negatively impacts the competitiveness of Japanese firms (The Economist 2010). As a consequence, the Japanese Government has been encouraging firms to be more open and global, emphasizing the advantages of risk-taking as a way in which to compete now and in the future (METI 2010a). Others also suggest that Japanese organizations need to take more appropriate innovation risk, so as to find a way forward for Japan's commercial future (Desvaux et al. 2015).

Although Japan may have impediments to innovation, larger Japanese firms have shown that, when it comes to technology development, they hold a dominant position in Asia and the world in the area of patents for new technologies (Javalgi et al. 2011). As such, Japan was the *benchmark* or a beacon for technology. For example, Internet technology adoption in Japan for consumer technology products has been very high, with much of the population (consumers) adopting and adapting Internet-related technologies in their daily lives, as Japan was an early world-leader in relation to Information Communication Technology (ICT) (Ayanso, Cho, and Lertwachara 2010). However, contrary to this leadership position, there have been inconsistencies in the adoption of Internet technologies within smaller Japanese organizations; that is, for some time there have been very low levels of Internet technology implementation within Japanese small- and medium-sized enterprises (SMEs), which is contradictory to their country-level leadership position within ICT (Tachiki, Hamaya, and Yukawa 2004; The Economist 2010; Fukao et al. 2016).

For example, in chain stores and daily goods manufacturing, such as the food, drink and toiletries industries, network systems were slow to shift to the use of the Internet (DSRI [The Distribution Systems Research Institute] 2008). As Gong, Li, and Stump (2007) suggest, uncertainty avoidance in a country like Japan may inhibit adoption of new technologies such as the Internet. Rowley (2017) highlights that although globalization has led to global similarities or convergences there are also divergences such as technology differences, as visible in Japan. For example, over the last decade South Korean SMEs have embraced the Internet of things with vigour, leading to significant increases in industry competitiveness (Shin 2017). However, there is little known about the exact reasons why there is such reluctance by Japanese firms to adopt Internet technologies into their business practices and whether or not these Internet-related activities will actually enhance firm performances in Japan. As resources and capabilities within firms have been shown to be an appropriate mechanism in which to evaluate Internet technology implementation within SMEs (Glavas, Mathews, and Bianchi 2017), this study uses a resource-based view (RBV) to assess the impact of the Internet on Japanese SMEs and their performance.

This study attempts to give some insight into how Japanese SMEs use the Internet and how the Internet impacts their firm-level performance. The article has four sections: First, it outlines the literature related to Internet technology acceptance in Japan and the resources and capabilities perspective of Internet implementation within SMEs; second, the methodology is discussed; third, the results and a discussion are presented; finally, contributions and the limitations are explained.

Literature review and hypotheses development

It has been well-argued that business performance increases due to information technology (IT) (Melville, Kraemer, and Gurbaxani 2004). Although there are diverging views

about what specific value IT brings to the firm, we can assume that it is good for firm performance. However, the resource of ICT by itself does not benefit firm performance. *Rather, it is the application of the IT resources that can generate some level of competitive advantage.* This RBV perspective is commonly used to better understand how resources and capabilities are used to generate competitiveness within an organization (see Wernerfelt 1984, 1995; Barney 2001).

Firms have both resources and capabilities at their disposal within their organization that can be developed and leveraged as specific capabilities for the operation of functional activity and/or to create advantage over their competition in the market (Helfat and Peteraf 2003). This perspective of the firm is normally referred to as the RBV of the firm (Wernerfelt 1984, 1995; Barney 2001). This conceptual perspective generally highlights the internal organizational view, as opposed to the external and/or product perspectives of strategic management of the firm. Using RBV helps to give a focused, firm-level lens in relation to investigating how firms leverage capability. The RBV along with capability perspectives have been used in country-specific context studies so as to help identify idiosyncratic factors of firm characteristics that vary from the norm due to this national context (see Wei et al. 2016). Recent research shows that when evaluating innovation within organizations performance is reliant on country-context factors as well as firm-level capabilities and the size of the firm (Ballot et al. 2015). Therefore, when evaluating innovation such as new technologies country-specific elements along with firm-level capabilities related to technology should be included in the evaluation.

Internet readiness can be seen as an indicator, which can be described as the resources allocated toward Internet-related technology, where there is a link between technology, innovation and application of the Internet (Oliveira and Martins 2011). An organization's readiness to adopt the Internet and subsequent related Internet technologies has been a focal topic for some time (see Hong and Zhu 2006; Mehrstens, Cragg, and Mills 2001). As found by Liao, Kickul, and Ma (2009), firms today survive in a hyper-competitive environment and as such resource stock, Internet-related capabilities and innovation are intertwined within the firm's strategy for growth; that is, Internet-related capabilities are those resources combined to develop Internet-related knowledge and ability that have been leveraged in a particular activity for the firm in their endeavour for performance (Mathews et al. 2016). Capabilities – in this case Internet-related capabilities – are used to create a competitive advantage to derive a performance position. Further, each firm has a distinct set of capabilities which serves as an aggregate for this position. Differences in adoption of radical technologies among firms can be attributed to a firm's capability with respect to new technologies (Srinivasan, Lilien, and Rangaswamy 2002). However, these Internet capabilities are yet to be explored in Japan.

Adoption of the Internet, for example e-commerce, is driven by forces in the global and national environment as well as national policy (Gibbs, Kraemer, and Dedrick 2003). The national environment includes: information infrastructure; industry infrastructure and competition and national policy, including telecom liberalization. Tan, Tyler, and Manica (2007) argue that country-specific contexts may in fact have an impact on adoption of technologies such as e-commerce. For example, studies of business-to-business electronic commerce in China investigating internal, external and contextual factors highlight the importance of a country context. Inhibiting factors in China included restricted computer access, a lack of trust within the country, a lack of enterprise-wide information sharing, a culture of intolerance towards

sharing information and an incapability to deal with rapid and dynamic change that inhibits adoption. More recently China has seen a significant increase in the digitalization of business activity due in part to pressure from consumers, a positive government policy shift and tapping into the entrepreneurial abilities of the Chinese business culture (McKinsey et al. 2017). Researchers (Tan, Tyler, and Manica 2007) have showed that the country context, such as the business culture, may inhibit the adoption of the Internet in firms. Barnes and Huff (2003) argue that in some countries, such as Japan, technology and consumer technology acceptance is very high and as such we can learn valuable key lessons from those countries. However, a high level of Internet consumer adoption does not automatically lead firms to adapt more frequently to the use of the Internet.

It could be argued that the telecommunications sector in Japan became decoupled from global markets because of the dynamics of competition, shaped and reshaped by political dynamics and regulatory structures domestically (Kushida 2011). These dynamics create what is considered a phenomenon in which winning in an isolated domestic market led to losing in global markets. Japan's telecommunications-related end-product, services and content firms led the domestic sector moving towards high levels of sophistication, but this highly developed domestic sector did not lead to the prominence of Japanese firms in global markets. Japan does have a sophisticated mobile telephone industry with strong Internet access service provisions that encourage Japan's institutional systems to stimulate the self-propagating nature of ICTs (Chen and Watanabe 2006).

Tachiki, Hamaya, and Yukawa (2004) suggest in their early research that e-commerce adoption in Japan is not lagging behind that of other developed countries. However, in 2010 *The Economist* highlighted that Japanese SMEs were falling behind their counterparts of other OECD nations in regard to Internet adoption and application. Considering that technological development plays such a significant role in the day-to-day business practice for Japanese firms, we therefore propose three questions: first, '*How does Internet readiness and capability of firms influence their performance?*'; second, '*How does risk-taking perception influence Internet readiness and capability in regard to firm performance?*'; third, '*What are the Japanese contextual factors contribute to the development or lack of development of Internet related resources and capability within SMEs?*'

As the Internet has been generally shown to lead to SME firm-level growth performances (see Glavas, Mathews, and Bianchi 2017), we suggest that commitment and investment or Internet readiness in a firm and leveraging Internet business capabilities are the way in which these firms will facilitate this performance. A resource viewpoint of the firm highlights that resources – in this case technology-related resources – may give a firm a distinct competitive advantage in the market over potential competitors (Barney 1991). In particular, SMEs have a greater limitation in relation to resources, which shrinks the resources available and restricts capability development and deployment (Lu and Beamish 2001).

As firms allocate Internet resources they are more prone to exploit these resources for firm-level performances such as sales, market share, etc. Firms that start to develop resources related to the Internet can be assessed in relation to their Internet readiness (Vize et al. 2013). This Internet readiness of the firm is an antecedent to the development of business activity where the Internet can play a role. Further, these Internet business capabilities should also have a positive impact on the firm's performance (Mathews et al. 2016). Therefore, the firm's culture to embrace innovation will enhance its development

of resources in relation to the Internet and also assist with the implementation of Internet-related business activities with related capabilities.

Further, the amount and type of resources allocated enable organizations to develop different types of capabilities (Wernerfelt 1984). These resources are managed by individuals within the organization and are therefore allocated according to management, for example what types of resources are allocated toward technology. As such, managers' perceptions of risk or risk-taking propensity has a direct impact on which resources a firm allocates, or which resources are used and the way in which these resources are allocated. This is particularly critical when there is an innovation, either an incremental or a more significant radical innovation, for the firm (Forés and Camisón 2016). Therefore, the view of risk or perception of risk-taking due to change is an important factor in a firm's resource allocation. When managers are averse to taking risks or exploiting opportunities this tends to lead to stagnation of innovation and a reluctance sometimes to adopt new types of technology. Further, managerial decisions also impact which set of capabilities to develop and when to develop said capabilities for specific types of innovation. Therefore, managers within Japanese SMEs play a significant role in the organization's resources and capabilities.

Zhu, Kraemer, and Xu (2003) state that in the European Union, Internet implementation such as Internet readiness is an important driver for any firm. We suggest this is also the case for Japanese SMEs – that when these firms are readier for the Internet (Parasuraman 2000; Vize et al. 2013) this will lead to higher firm performance; thus, *those SMEs with higher levels of Internet readiness will also have higher firm-level performance* (Hypothesis 1). Further, in line with this resources viewpoint, we can also apply a capabilities perspective (Tan, Tyler, and Manica 2007); that is, *higher Internet readiness of firms will lead to a higher development of related Internet business capabilities* (Hypothesis 2). Thus, firms that are ready to use the Internet should also be more capable. To this end, *firms with a higher Internet business capability will also show better firm performance* (Hypothesis 3) (see Glavas, Mathews, and Bianchi 2017).

One caveat to this resources and capabilities perspective is that other factors will also play a role in how the Internet is used for performance. For example, the perception of risk within the firm is important as it indicates how the firm embraces risk as an opportunity rather than a negative factor (Tjosvold and Yu 2007); that is, the perception of risk as a risk-taking measure as opposed to managers' risk aversion shows how firms take advantage of opportunity. Further, within the Japanese context, including how teams view risk is also a prudent way in which to evaluate the firm's culture of opportunity exploitation. Therefore, *a higher optimistic perception of risk or risk-taking will lead to more resources allocated for the Internet and a higher Internet readiness within the firm* (Hypothesis 4). In this vein, *firms with a risk-taking perception will also develop more Internet business capabilities* (Hypothesis 5). Further, this optimistic perception or *risk-taking perception in the firm will also have a positive impact on firm performance* (Hypothesis 6).

Moreover, how the Internet is used for firm performance is also influenced by the industry in which the firm operates. As Teece (1996) highlights, in the 1990s Japanese industry had a willingness to innovate, with a progressive structural industry systems and an ability to combine capabilities inside and outside the firm, which led to innovative Japanese organizations. We highlight this by including industry as a potential factor influencing resources allocation and capability development; that is, different industries

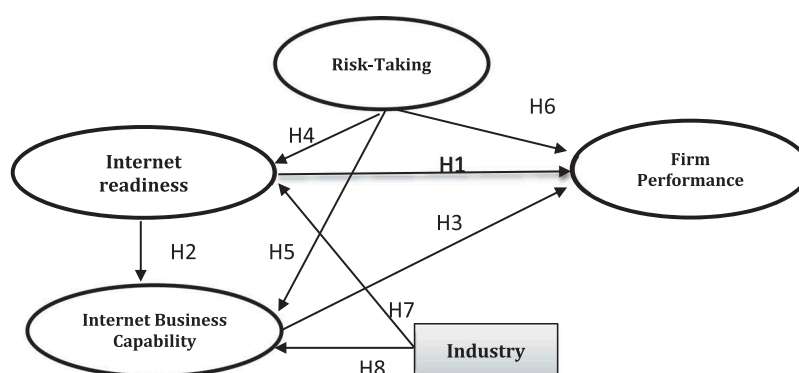


Figure 1. Final model (8 hypotheses).

are exposed to and influenced by their environment – for example, whether or not the industry is a globally facing industry and exposed to global standard technologies such as the Internet. Further, research has shown that industry-specific elements, such as Internet infrastructure, can be different from one industry to another (Lee, Oh, and Lee 2017). Therefore, *industry will influence the Internet readiness of the firm* (Hypothesis 7) and *Internet business capability* (Hypothesis 8). In all, we propose these eight hypotheses as illustrated in Figure 1.

Research methodology and results

Background

In a survey of e-commerce business-to-business and business to consumer markets has shown some positive increases as the sector was worth approximately 333 trillion yen in 2017 (METI 2018). Although significant, Japan still lags behind other OECD nations in relation the adoption of more sophisticated digital technologies (Organisation for Economic Co-operation and Development (OECD) 2017a). The reason for this maybe because after the Internet started to spread in Japan, both the former-established closed network telecommunications infrastructure as well as the global Internet infrastructure were fragmented in usage (METI 2010b). Japanese SMEs have also struggled to compete and collaborate internationally, and as such there level of digitalization within SMEs has suffered in comparison with counterpart OECD countries (Organisation for Economic Co-operation and Development (OECD) 2017a).

We tested the hypotheses with respect to the relationships between Internet readiness, Internet business capabilities, firm performance and perceived risk. Data for this research was collected using a postal survey method from Japanese SMEs drawn from information from government SME databases. We chose to contact the senior decision makers in the firms who were knowledgeable about the firm's business as well as Internet operations so as to get those top managers with appropriate knowledge (Huber and Power 1985). Each invitation indicated the specific focus of the study. Participants were asked about their role in the firm and the relationship to business activities, so as to make sure we obtained the appropriate data-rich information. The

questionnaire was developed in English, then translated into Japanese by one of the research team members, and was then back-translated, as recommended by Brislin (1970). A total of 2,753 surveys were posted with 356 returned, giving the study a response rate of 12.9%. The survey was disseminated and collected from industrial goods manufacturing firms, consumer goods manufacturing firms and wholesale/retail firms. These industry choices help to give both predicted similarity in these industry groups as well as variance in Internet usage levels; as highlighted earlier, industry has been shown to be a potential driver or inhibitor of technology implementation in Japan. Six cases were deemed to have insufficient or non-reliable data and excluded these as outliers, leaving the study with 350 usable data cases (a 12.7% response rate).

We measured 13 types of Internet technologies that would generally be used by firms. These descriptive measures are related to actual use of specific Internet technologies beyond adoption (Minhee and Kyesook 2011). A broad range of Internet technologies have been highlighted and respondents were asked to indicate their level of usage, with results showing very low levels of Internet technology usage. For example, e-mail, Intranet and website usage achieved mean scores of above 4 out of 7, with all other mean scores showing scores below 4. These results highlight the low usage of web spaces, customer support systems, transactional technology, Internet directories, marketplaces and cloud technologies, with scores between 2 and 3.5 out of 7, and also very low usage (in some cases with mean scores of below 2 out of 7) for technologies such as instant messaging, mobile and social media technology usage. Further, Internet resources or Internet readiness scores highlight low to moderate levels of firm readiness.

Table 2 presents measures related to the readiness of the firm for Internet technology – those resources allocated to Internet technology in the firm. Questions related to resource efficiencies and benefits of the resources are the core of these items (Parasuraman 2000; Vize et al. 2013). For the most part these Japanese SMEs had moderate rates of Internet readiness. Most items scored above 3.5 out of 7. Further, the alpha reliability score = .881 and KMO = .834 for Internet readiness shows the construct has an appropriate level of construct reliability. Further, in Table 2 measurements also assess the capability of firms where the Internet is leveraged for business activities. For example, the study measures the specific Internet business capabilities related to activities such as marketing, sales, research, procurement and the exchange of data between firms. Rather than just measuring Internet technology usage these items highlight what level of business activity is impacted by the Internet within regular business processes, such as the firm's management and marketing. Internet business capabilities is a more nuanced perspective of the application of Internet technologies into business activity (adapted from Aspelund and Moen 2004; Gibbs, Kraemer, and Dedrick 2003; and Glavas and Mathews 2014). The alpha reliability score = .712 and KMO = .711 for Internet business capabilities show the construct had a reasonable level of construct reliability.

An exploratory factor analysis (EFA) indicates reasonable model fit, but not all items in the factors are reliable. Hence, because this is a new way in which to measure the impact of the Internet an EFA was used as a mechanism to strengthen the reliability of the factors and eliminate weak items within the measures. As a consequence, some items were excluded (see Table 2). The EFA process used a maximum likelihood rotation to establish good factor consistency and reliable items related to the factor. The alpha score for risk perception = .784 and KMO = .719 giving an appropriate level of construct reliability. The measure was adapted from Tjosvold and Yu (2007). The alpha score = .853 and KMO = .765 for firm performance

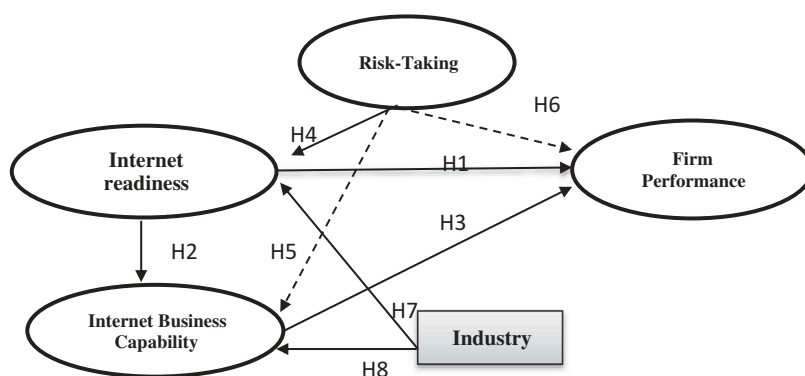


Figure 2. Final model (8 hypotheses).

show the construct had an appropriate level of construct reliability. These items have been adapted from Murphy, Trailer and Hill (1996) and Wiklund and Shepherd (2003).

The hypotheses were tested using the confirmatory factor analysis (CFA) within a structural equation modelling process. This method allowed us to identify the antecedents of firm-level capabilities and performance. The model used in the analysis was estimated using IBM AMOS. A CFA shows reasonable fit for the baseline model, indicating there is reasonable statistical relationships between the factors: CMIN/DF = 3.18, $\chi^2 = 560.553$; d.f. = 176; RMSEA = 0.079; SRMR; .063; TLI = 0.838; CFI = 0.864. The final model excluding items with low loadings has a better model fit (with four excluded items, see Table 2) and is a better representation of the data, with model fit indices highlighting good model fit scores: CMIN/DF = 2.34, $\chi^2 = 305.263$; d.f. = 130; RMSEA = 0.062; SRMR = .066; TLI = 0.907; CFI = 0.921.

All the regression coefficients were tested in the structural equation model. All hypotheses were found to be significant except for Hypotheses 5 and 6 (Perceived risk-taking on Internet business capabilities and firm performance). The results support Hypotheses 1 and 2, which predict Internet readiness has a positive impact on firm performance, as well as Internet business capabilities having a positive impact on firm performance (Hypothesis 1; $\beta = .17$, $p < .05$; Hypothesis 2; $\beta = .20$, $p < .05$). Hypothesis 3 was supported, as higher Internet readiness was a good predictor of the application of Internet business capabilities ($\beta = .56$, $p < .001$). Hypothesis 4 showed that having a positive perception of risk-taking had a positive impact on the Internet readiness of the firm ($\beta = .22$, $p < .001$). Further to this, Internet readiness was found to have indirect effects. However, Hypotheses 5 and 6 were not supported, as having a positive orientation of risk did not impact the Internet business capabilities or directly impact the overall performance of the firm. Conversely, industry was found to be statistically significantly related with Internet readiness and Internet business capabilities, as predicted in Hypothesis 7 ($\beta = .15$, $p < .01$) and Hypothesis 8 ($\beta = .18$, $p < .01$), as illustrated in Figure 2. Further, firm size was tested against all variables and was only found to be associated with firm performance ($\beta = .17$, $p < .001$), which is consistent with the literature.

Discussion

The findings in this study indicate that the Internet readiness of Japanese SMEs are impacted by factors such as their perceptions of risk-taking as well as the industry within which they operate. Although there are some indications that Japanese organizations are adopting digital technologies at increasing speed (see METI 2018), we found contradictory evidence when it comes to SME Internet adoption for business activity, as these Internet activity measures were shown to be low (see Table 1). As suggested by Aoyama (2001), Japan may have a distinct or divergent path of Internet adoption and application from their counterpart economies, such as in the United States because of specific idiosyncrasies within Japan. That is, the study highlights distinct factors such as the policy environment in Japan, past and present regulatory setting and industry environments that may have been beneficial for SMEs previously are now potential impediments to Internet innovation. Further, the risk-averse business culture in Japan has also unfortunately slowed the digital revolution for SMEs.

This study tests Internet integration from an Resource Based View approach so as to better understand how perceived risk-taking and industry factors impact Internet resource allocation and the development of Internet capabilities. Results shows that, just like SMEs from other developed and developing countries (see Bianchi and Mathews 2016; Mathews et al. 2016), Japanese SMEs do benefit from Internet business-related capabilities – although, as Internet resources are at low levels, many Japanese SMEs do not necessarily see these benefits. These findings extend our understanding of Internet capabilities. That is, the leveraging of Internet resources even at low levels has a positive benefit or impact on the firms leveraging of Internet capabilities, as well as positively impacting the overall firm performance, something yet to be examined.

Countries such as the United States, South Korea (Organisation for Economic Co-operation and Development (OECD) 2017b) and more recently China (particularly top tier and secondary tier cities) have relatively sophisticated Internet capability development within the SME sector (McKinsey et al. 2017). This business phenomenon has led to conducive business environments where digitalization is at the forefront of the strategic imperatives for these SME organizations. There are those countries that have

Table 1. Internet usage – descriptive data related to types of Internet technology usage.

How much does your firm use the following Internet technologies? 1 = no usage, 7 = extensive usage		
	Mean	SD
e-mail	6.27	1.38
Firm website	4.24	2.11
Personal website space for customers/clients or suppliers (extranet or personal web-space)	3.46	2.16
Online customer support systems (example, auto email system, online helpdesk or other)	2.44	1.99
An intranet system (internal firm computer system)	4.77	2.40
Consumer transaction technologies either through electronic transfer or a form of website shopping cart	2.14	1.89
Internet directories: General and/or industry-based websites that support a directory so that customers can find the firm/website	2.16	1.78
Internet marketplaces: Websites that support buyers and sellers in any way (for example, ebay.com, amazon.com)	2.07	1.74
Instant messaging systems such as LINE, Viber, Tango, WhatsApp	1.59	1.31
Mobile phone apps	1.59	1.38
My mobile to source knowledge related to the firm	1.80	1.56
Social media website space such as Mixie or Facebook	1.71	1.44
Cloud technology	2.03	1.70

Table 2. Measurements and exploratory analysis.

Constructs	Measure Indicators Sources	Mean	SD	Factor loading
Internet readiness $\alpha = .881$ KMO = .834				
<i>Please indicate the extent of agreement. 1 = Strongly disagree, 7 = Strongly agree.</i>				
Adapted from Parasuraman (2000) and Vize et al. (2013)	The Internet makes me feel more efficient in business	4.57	1.87	.882
Optimistic perspectives	I am doing more activities now with Internet technology than a couple of years ago	4.65	1.91	.876
	I like doing business with Internet technology because I am not limited to regular business hours	3.59	1.89	.613
	In general, I am among the first of my competitors to acquire new Internet technology when it appears	3.08	1.57	.692
	I keep up with the latest Internet technological developments in my area of interest	3.42	1.56	.738*
	I find I have fewer problems than my competitors in making Internet technology work for me	3.57	1.45	.622*
Internet business capabilities $\alpha = .712$ KMO = .711				
<i>The firm uses the Internet for the following business activities? 1 = no implementation, 7 = extensive implementation</i>				
Adapted from Aspelund and Moen (2004), Gibbs, Kraemer, and Dedrick (2003) and Glavas and Mathews (2014)	Online marketing and advertising	2.86	1.82	.542
	Online sales	2.18	1.86	.541*
	Online after sales service and support	2.18	1.86	.759
	Market research	2.41	1.80	.501
	Online procurement	2.94	2.01	.487#
	Exchange of operational data with suppliers	2.80	2.04	#
Risk-taking perception $\alpha = .784$ KMO = .719				
<i>The following questions are related to your firm. 1 = strongly disagree, 7 = strongly agree</i>				
Adapted from Tjosvold and Yu (2007)	We would rather make mistakes than do nothing	5.60	1.55	#
	We think it is fine to risk an error every once in a while	3.72	1.93	.663
	To get better in what we do, we don't mind that something can go wrong in the process	4.25	1.73	.729
	For our team to achieve something, we have to risk the possibility of mistakes	4.67	1.65	.805
	Taking calculated risks is encouraged in this team	4.56	2.93	#
	In this team deviating from existing methods is encouraged	5.05	1.55	.585*
Performance $\alpha = .853$ KMO = .765				
<i>The following questions are related to general firm performance, 1 = strongly disagree, 7 = strongly agree</i>				
Adapted from Murphy, Trailer and Hill (1996); and Wiklund and Shepherd (2003)	Profitability	3.84	1.60	.896
	Sales growth	3.65	1.59	.681
	Market share	3.74	1.56	.606
	Overall performance	4.10	1.42	.862

Note # and * means the item has been excluded in the process of parsimony

seen significant integration of digitalization within many of their industries as well as at the small and medium enterprise level. Take for example; the United States, United Kingdom and South Korea, with South Korea and the United Kingdom leading the way in SME Internet technology adoption (see Stankovska, Josimovski, and Edwards 2016; Shin 2017; respectively). More recently China has also seen a phenomenal growth of digitalization within industry and organizations due to the progressive government policy and regulatory changes promoting innovation, consumer driven disruption and

the opening up of entrepreneurial opportunity in relation to profitability within the country (McKinsey et al. 2017). Whereas countries such as Japan and Germany who have had many years of very strong economic dominance have seen less than stellar digitalization within the SMEs sector of their respective economies (Organisation for Economic Co-operation and Development (OECD) 2017b). These distinct and divergent paths of digitalization have now led to a readjustment in the ICT world leadership rankings for SMEs where Japan does not rank as well as it once did.

Theoretical implications

The study examines the relationship between Internet readiness of the firm (allocated resources), Internet-related capabilities and firms' business performance. Previous research highlights the importance of combining firm-level resource perspectives with strategy and firm performance within a country context (Wei et al. 2016). Others have shown that firm-level technology through capabilities such as Internet capabilities have an impact on improving growth (Bianchi and Mathews 2016). The findings in this study confirm previous research and extend our understanding by combining both Internet resources and Internet capabilities, something not highlighted in the literature; that is, this study provides evidence that both Internet resources and capabilities should be evaluated simultaneously so as to better understand their impact on firm performance. Combining both measures of the Internet as a related resource (Internet readiness) and Internet capabilities (Internet business capabilities) highlights the importance of allocating firm-level Internet resources. This is consistent with broader propositions that find there is a relationship between the Internet and firm value (Melville, Kraemer, and Gurbaxani 2004; Bhatt et al. 2010). The findings suggest that Japanese SMEs investing in Internet-related resources will enhance the development of their Internet-related capabilities. However, Internet resources and capabilities are also impacted by other factors in the firm, such as the perception of risk-taking and external factors such as industry-specific elements.

Findings indicate that firms in this study report low levels of Internet resources and, consequently, have lower levels of Internet business capabilities. Recent industry research highlights a small increase in the adoption of Internet technologies for Japanese SMEs but also highlight a lack of Internet implementation, which is mostly a passive or defensive adoption of the Internet as opposed to the exploitation of the technology (see International Foundation for Information Technology 2015; Shoko Chukin Bank Research Unit 2017). However, this study shows that when these Internet resources increase this does enhance firms' Internet capabilities, which in turn leads to increases in firm performance. These findings extend our understanding of Internet capabilities, as generally Internet capability studies only highlight high-performing firms for evaluation (see Mathews and Healy 2008; Reuber and Fischer 2011; Glavas and Mathews 2014); that is, studies that focus on Internet capabilities have been shown to have a positive effect on firm growth performance for high-performing firms but have not evaluated firms at the below-average-level. Many firms within this study (the sample of SMEs) cannot be classified as high-performing firms in relation to the Internet. This is distinct from other recent studies seen in Australia and Chile. (Mathews et al. 2016; Bianchi and Mathews 2016) highlight that those SMEs with high levels of Internet capabilities will also have higher levels of firm international growth. However, within those two studies in Australia and

Chile the SMEs had moderate to high levels of Internet-related capabilities that were being leveraged in their business activity for performance (see Mathews et al. 2016; Bianchi and Mathews 2016); that is, this study shows that even a small incremental increase at low levels in Internet resources will have a benefit of enhancing Internet capabilities and will also give some performance benefit to the firm.

However, the study also shows that the resources allocated toward the Internet are influenced by the perception of risk; that is, when the firm has an optimistic perception of their environment in relation to risk-taking it encourages innovation, for example allows for *trial and error* and encourages improvement, which in turn enables the firm to benefit from increased Internet readiness. With the increase in Internet resources allocation due to this positive mindset or perception of risk-taking within the firm there are also increases in Internet capability development, which can be used as a competitive advantage. As opposed to risk being a negative impediment, which is normally how risk is viewed in business studies (see Marcati, Guido, and Peluso 2008), in this study perception of risk looks at the link between risk perceptions and opportunities – a risk-taking perspective (Tjosvold and Yu 2007) – in this case technological advancement within the firm. This way of measuring risk was chosen as risk-taking measures have been shown to work best in group decision-making settings, for example studies in China where risk taking is sometimes done within a collective as is the case in Japan.

As such, this study uses the measure in Japan to evaluate the risk-taking culture within the firm, which is also an environment where a collective decision-making process is common. This highlights the need for measures that are culturally appropriate, as opposed to measuring a single *individual decision maker* perspective which is normally seen in business research. This is particularly important as the study attempts to identify the factors needed for the best way in which to exploit the Internet for growth. Therefore, the perception of risk-taking, or what is sometimes called a risk-taking climate (see García-Granero et al. 2015), within the firm impacts the decision making, for example to take advantage of these innovation opportunities such as the Internet.

However, depending on the industry in which the firm operates the results may vary for both Internet resources and Internet capabilities. For example, some industries such as manufacturing may be more global in nature and therefore have more pressure to have higher levels of Internet adoption, which in turn means higher levels of resources allocated to the Internet, and the Internet capabilities developed may vary. As previously highlighted, Japanese organizations had phenomenal success in the 1950s through to the 1970s in part due to organizations having the ability to use their external networks to leverage capabilities not found in their own firm, as well as an industry structure conducive to the expansion of innovation such as technology (Teece 1996). However, these same industry structures may now have a negative impact on the technology innovation of these firms. Therefore, just as internal factors are critical in the allocation of resources within the firm, industry factors are also influential. We suggest that industry factors, such as supply chain network power between larger and smaller firms, within Japan may play a role in innovation management of these SMEs (Tung 2002). For example, tight business partnerships are considered by Japanese firms as more reliable and less uncertain, which can minimize technology innovation, and therefore adoption, and are a mechanism to avoid high risk. However, this once-comparative advantages for Japan have been questioned as evidence is mounting that these tight networks may not be a source of competitive advantage anymore and are sometimes

detrimental to Japan's changing contemporary economy (see Matous and Todo 2015). For example, in Japan's consumer goods industries, industry networks have impacted the type of technology adoption for SMEs (Lohtia, Ikeo, and Subramanian 1999). In addition, adopting a new technology usually demands new skills, systems and investment. Legacy technologies in industries and therefore in firms may be sensitive to the costs of switching to the new open-standard systems such as the Internet (Zhu et al. 2006). Although it has been some years now since the first major report on Japanese SME Internet usage by Tachiki et al. in 2004, smaller Japanese firms remain slow adopters of Internet technology within their business activity. The legacies of the past and issues related to industry network protections only give researchers a limited understanding of what is happening in Japan in relation to Internet technology exploitation. This study gives some insight into both firm-level and industry factors as to how Japanese SMEs implement newer technologies such as the Internet. The findings in this study will give Japanese SMEs a mechanism or framework to help understand the impact of allocated resources, and develop and deploy Internet capabilities for the purpose of firm performance, despite the impediments.

Limitations and future research

Although this study highlights some important insights into Japanese SMEs' Internet implementation, as in other studies there are limitations that provide opportunities to conduct further research. The study shows that country-context elements may not necessarily exist elsewhere; however, these concepts need to be explored with a greater level of depth. For example, the study identifies risk-taking perceptions and the industry as influencing the building of Internet resources and the leveraging of Internet capabilities. The study does not, however, delve substantially into these factors. Further, future research could investigate other countries where SME Internet implementation has been slow, such as Germany (see Schwartz 2017), so as to compare these inhibiting factors. Surprisingly, both the Japanese and German economies have had significant growth but also have slow Internet development within SMEs. The authors encourage a more in-depth exploration of the connections between risk orientation and industry factors so as to better understand where potential blockages occur in relation to the exploitation of Internet capabilities. Thus, a qualitative exploration is encouraged in future studies for a more informed understanding of this phenomenon, especially why many Japanese firms have not adopted the Internet sufficiently despite the growth of Internet businesses globally. For example, which particular industry factors are inhibiting the innovation path of SMEs in relation to the Internet? Moreover, future research could investigate the over-reliance on networks such as Keiretsu Groups (Traditional Japanese industry networks) within the supply chain (Tung 2002) as a potential impediment to the technological innovation within these Japanese SMEs and whether or not this influences Internet-related innovation. Therefore, future research should also focus on where Japanese firms are excelling in relation to Internet capabilities, for example those in the anime industry, so as to map the optimal framework of Internet capability leveraging.

Conclusions

In conclusion, Japanese SMEs – like SMEs in other OECD nations – do benefit from the development and deployment of Internet-related resources and capabilities. In this study

we extend our understanding of Internet capabilities by highlighting the need to include Internet readiness as a measure of resource allocation so as to fully comprehend the process of combining resource and capabilities; that is, the degree to which Japanese SMEs will build Internet-related resources is related to their development and leveraging of Internet capabilities. Combining the measures of technology resources and capabilities has been shown in the past to be a fruitful way in which to evaluate the impact of capabilities on firm performance (see Gruber et al. 2010), which has been tested in this study. Further, this study highlights the distinct nature of a single country, where the impact of risk-taking perceptions and industry influences Internet implementation, as well as the development and deployment of these specific types of resources and capabilities. That is, the Japanese industry environment plays a central role in influencing firms in their strategic implementation of new technology such as the Internet, as well as their ability then to build and implement appropriate resources and capabilities to exploit the obvious opportunities that exist as a consequence of the Internet. This potential industry impediment highlights a crucial roadblock for Japanese SMEs – something that has already been acknowledged by some (Matous and Todo 2015). That is, the hierarchical nature of industry structure in Japanese did once benefit the organizational innovation practice for SMEs, but has now creates impediments in adoption of external global technologies such as the Internet due to this insular industry ecosystem.

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