Is your IT eco-system ready to facilitate organizational innovation? Deriving an IT eco-system readiness measurement model

Completed Research Paper

Sachithra Lokuge
Queensland University of Technology
2 George Street, Brisbane, Australia
s.lokuge@qut.edu.au

Darshana Sedera
Queensland University of Technology
2 George Street, Brisbane, Australia
d.sedera@qut.edu.au

Abstract

Anecdotal commentary suggests that nearly 90% of ideas never convert to innovations due to the lack of organizational readiness. Despite a wealth of studies contributing to a better understanding of innovation, much less attention has been devoted to our understanding of how to better equip the IT eco-system to facilitate innovation. This paper conceptualizes "IT eco-system readiness" as a formative, multidimensional index. Such a validated and widely accepted index would facilitate cumulative research on the role of IT for innovation, while at the same time provide a benchmark to track their readiness of the IT eco-system. The validated model includes seven dimensions. Study findings evidence the necessity, additivity, and completeness of these seven dimensions. The validation involved two studies. Study-1 included an inductive analysis of 774 qualitative impacts resulted in an a-priori model of 21 measures, which was then operationalized in the subsequent quantitative survey, using 378 representing 189 organizations.

Keywords: IT portfolio management, Innovation, Readiness, Formative Index, Case Study, Survey Research, CIO

Introduction

Historically, 'having an IT system' meant that the organization was innovating. The relationship between information technology (IT) and innovation has been a much discussed topic in academia (Chae et al. 2014; Melville et al. 2004) and practice (Davenport and Short 1990; McAfee 2006), with many studies resorting to a highly positive view of technology's role in assisting organizations innovate (McAfee and Brynjolfsson 2008). Traditionally, when IT was scares, organizations needed substantial resources to acquire and manage. As such, readiness to innovate using IT meant that an organization had adequate resources to acquire and manage IT solutions. However, the aforementioned view has been challenged by the substantial changes in the corporate IT landscape in recent times. Especially since the mid-2000s, corporate IT has been presented with a plethora of technology options (Sedera et al. 2016). The advent and substantial proliferation of mobile computing, cloud computing, in-memory and social media, collectively referred to as 'digital technologies' (Nylén and Holmström 2015; Yoo et al. 2012; Yoo et al. 2010), fueled by the consumerization of IT (Harris et al. 2012), are presenting organizations with considerable opportunities to employ IT to innovate. Researchers highlight that not just the modernity of IT, but also the people managing the IT portfolio, end-users, and the technology and management consultants could provide an eco-system for IT enabled innovation (Nylén and Holmström 2015; Swanson and Ramiller 2004; Weill and Vitale 2002). Yet, getting your IT eco-system ready to support innovations is notoriously challenging because it usually entails multiple, simultaneous adjustments in resources, staffing, culture, decision making, communication, and reward systems.

The concept of innovation readiness has received limited attention in organizational literature (Lokuge and Sedera 2014c; Snyder-Halpern 2001). The terms 'readiness' and 'innovation,' can be combined to create two primary lenses: (i) the readiness of an organization to withstand an innovation, and (ii) the readiness of an organization to deliver or enable innovation. This study focusses on the latter, and specifically observing the role of the IT eco-system in delivering innovations. Studies observing the readiness to facilitate innovation have focused on such attributes like human and material resource availability (King et al. 1994; Stewart 1994) , attitude of top management (Mirchandani and Motwani 2001), organizational characteristics (Egan et al. 1981; Hung et al. 2010; Ingersoll et al. 2000). These studies suggest that research on firm-level readiness can, at best, only provide a partial explanation of the phenomenon and it is difficult to develop a unifying, one-size-fits-all framework of a readiness since the framework may be sensitive to the type of innovation and its adoption context (Yen et al. 2012). Similarly, although one might expect these readiness factors to be equivalently explanatory when applied in the context IT eco-system, one should avoid such facile generalization of prior research findings without taking a holistic view of the IT eco-system. In sum, what has been noticeably missing from the literature is a robust framework and instrument to study the firm level study of IT eco-system readiness to facilitate organizations innovation.

This study subscribes to the innovation definition of Crossan and Apaydin (2010, p. 1155), which states that innovation is a "production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems." Crossan and Apaydin (2010) definition affirms the anecdotal commentary that innovation takes place in an 'everyday organizations,' and that it goes beyond the definitions that idealize innovation as 'new to the world' (e.g., Garcia and Calantone 2002). For the majority of the organizations dealing with common products or services, the term 'innovation' does not resonate with the new-to-the-world concept, as it would for technology or manufacturing innovators like Google, Apple Inc. or BMW. As such, Lai et al. (2009) argue that innovation need not be a totally new concept to the world and could even be considered as an imitation of something already used elsewhere, but new to the unit of adoption. Yet, anecdotal commentary suggests that most organizations are not ready to take advantage of their IT portfolio to innovate (Lichtenthaler et al. 2011). The importance of making your IT portfolio innovation ready has been evidenced in practitioner materials, including testimonials of large corporations (Unilever 2015), vendor roadmaps (SAP 2015) and commercial research reports (Gartner 2000).

The driving research question in this study is "*what are the salient factors necessary for an organization to make the IT eco-system ready to facilitate innovations?"* It brings all three perspectives (i.e. IT ecosystem, innovation and readiness) into a coherent single question. Focusing on the management of an innovation, this study assesses innovation readiness using both qualitative and quantitative methods. The qualitative study (labeled as study-1) provides an incredibly rich context-specific information(Isabella 1990) and derives the measures necessary for the quantitative study (labeled as study-2). A well-focused quantitative assessment using a formative, additive, parsimonious multi-dimensional innovation readiness index is what is sought in study-2 (Parasuraman 2000). Such an index would be an efficient means to garner innovation readiness at large global firms because these quantitative instruments can be distributed widely in relatively short periods of time.

The paper proceeds in the following manner. First, the study defines innovation and readiness, defining the scope of the design of the study. Next, it describes the qualitative study-1 that was completed to derive the constructs and measures of innovation readiness. The a-priori innovation readiness model is described next. Subsequently, the paper introduces study-2, a quantitative study designed to test the a-priori innovation model. Finally, the results of the study are described, drawing conclusions for research and practice.

Innovation and Readiness

Innovation is considered to be a complex subject (Van de Ven 1986). While there is a strong tradition of research on the diffusion of innovation (Rogers 1995), antecedents of innovation (Jansen et al. 2006) and even some aspects of organizational innovation (Damanpour 1991), there is very little attention has been

paid to innovation readiness in the literature (Snyder-Halpern 2001). However, innovation readiness denotes the closest antecedent of innovation itself. Thus, innovation readiness factors determine the continuation of an idea from ideation to incubation to actual innovation being implemented. An early study by Larsen and Roberts (1971) note that approximately 90% of ideas never convert to innovations *due to the lack of readiness*. Similar observations are made 4 decades later by the technology consultant firm Gartner (2009), highlighting that organizations lose substantial opportunities due to their lack of innovation readiness. In observing innovation outcomes, information systems (IS) scholars have identified that organizational innovation readiness is directly proportionate to innovation outcomes and inversely proportionate to innovation risk (Snyder-Halpern 2001).

The relationship between information technology (IT) and innovation has long been a much discussed topic in academia (Chae et al. 2014; Melville et al. 2004) and practice (Davenport and Short 1990; McAfee 2006), with many studies resorting to a highly positive view of technology's role in assisting innovation (Lokuge and Sedera 2014a; Lokuge and Sedera 2014b). In the current competitive markets, organizations are increasingly under pressure to continuously innovate with IT to maximize the values and benefits embedded in their existing and continuing corporate IT investments (Chua and Khoo 2011; Nwankpa et al. 2013; Srivardhana and Pawlowski 2007). On the other hand, the 'digital technologies' (Nylén and Holmström 2015; Yoo et al. 2012; Yoo et al. 2010), and 'consumerization of IT' (Harris et al. 2012), are presenting organizations with opportunities to employ IT to innovate. As Nambisan (2013, p.216) highlights, digital technologies have an imperative role in the modern IT portfolio, especially in relation to trigger innovations. He argues that digital technologies "are being embedded to an ever increasing range of products and services…thereby expanding the role and relevance of IT in any innovation." Digital technologies purport to provide organizations with high potential for innovation through their affordability, ease of adoption and ease of connectivity with customers, suppliers and employees (Cea et al. 2014; Chakravarty et al. 2013; Yoo et al. 2012; Yoo et al. 2010). However, such opportunities will be compromised if the IT eco-system is not ready to kindle innovations.

So, what is readiness and how can one define IT eco-system innovation readiness? It may be best to begin by contrasting the concepts of *readiness* and *effectiveness*. Effectiveness refers to the summative evaluation of an organization performing an operation. It is usually measured as performance on some outcome or outcomes associated with success. Readiness, in contrast, refers to the potential of an organization to perform well in situations. It is usually measured by assessing a subset of hypothetical elements or components of effectiveness. Thus, readiness represents an estimate or prediction of effectiveness. Clearly, effectiveness is a more direct measure of operational competence. However, reliable measures of effectiveness are only available after the fact—after the operation the unit was intended to perform has been carried out. Further, the unique circumstances of every engagement limit the information these measures can provide about overall effectiveness. Readiness measures provide additional, practicable options for assessing capability, preparation, and likely performance. Readiness measures may be superior to effectiveness measures obtained from real world operations in terms of their diagnostic value. Conventional readiness measures are divided into logical components of performance, like in the case of the IT eco-system. Effectiveness measures, in contrast, are often presented as global assessments of unit success. The componential and analytic nature of readiness measures makes possible the diagnosis of specific deficiencies in organizational performance. Based on these considerations, measures of readiness should be practical and feasible to obtain, predictive of success across a full range of likely missions and sufficiently multidimensional to be diagnostic. When measuring readiness, some researchers have focused on the psychological state (Herscovitch and Meyer 2002; Meyer and Herscovitch 2001), while others have studied it through structural forms such as an organization's resources (Bloom et al. 2000; Lehman et al. 2002). As such, the term 'readiness' indicates a state of being both psychologically (willing) and behaviorally prepared (able) to take an action (Weiner 2009).

Innovation readiness of the IT eco-system means the ability of the IT eco-system to facilitate innovations in an organization. However, much of academic discussions on innovation and readiness have focused on the readiness to cope with IT innovations. For example, Kwahk and Lee (2008) investigated the role of readiness for change in ERP implementations. Such foci are not the emphasis of this study. However, research on innovation antecedents (Carlo et al. 2014; Damanpour and Evan 1984), on what factors might be considered for IT eco-system innovation readiness index would be related to this study. Such studies, though not specific to the IT eco-system, have identified factors that allow organizations to introduce and facilitate an innovative environment. For example, studies have asserted that resource availability (Drazin

and Schoonhoven 1996; Ecker et al. 2013), organizational culture (Backmann 2013; Kessler and Chakrabarti 1996) and incentives (Fey and Birkinshaw 2005; Mueller et al. 2013) make an organization innovation ready. However, the scope and approach of these studies vary, as such very little consensus has been arrived at regarding the appropriate scope of the antecedents (Sears and Baba 2011).

The scope of the innovation readiness index

The broadness of 'innovation' and 'readiness' disciplines require a careful determination of the scope of the present study. First, considering the commonly accepted innovation process of ideation, incubation, and implementation (Utterback 1971), the focus of this study is on the role of the IT eco-system at the implementation phase. In other words, this research focuses solely on the readiness of the IT eco-system to facilitate the implementation of an innovation. It is acknowledged that the IT eco-system also would contribute to generation of new ideas (i.e. ideation) and prototyping of innovations at the incubation phase. Those phases are considered beyond the scope of the current study.

Furthermore, this study does not limit its scope to a particular type of innovation. Various researchers have classified innovation into innovation types including product-process, technical-administrative, and organizational (Damanpour 1988; Damanpour 1991; Damanpour and Aravind 2012). Others have classified innovation based on newness as radical and incremental (Dewar and Dutton 1986). However, such distinctions are not adhered to in this study. We argue that the readiness of the IT eco-system would facilitate all innovations, regardless of its type and that such classifications would not provide meaningful insights to the study objectives.

The research model for developing the innovation readiness index

To develop measures, we implemented the three broad instrument development stages (i.e., Item Creation, Scale Development, and Instrument Testing) employed by Moore and Benbasat (1991) and detailed by MacKenzie et al. (2011). The first and the second stages were completed using a qualitative study (study-1). Instrument validation was done using a quantitative survey (study-2). Figure 1 is an illustration of the specific process this study followed in study-1 and 2.

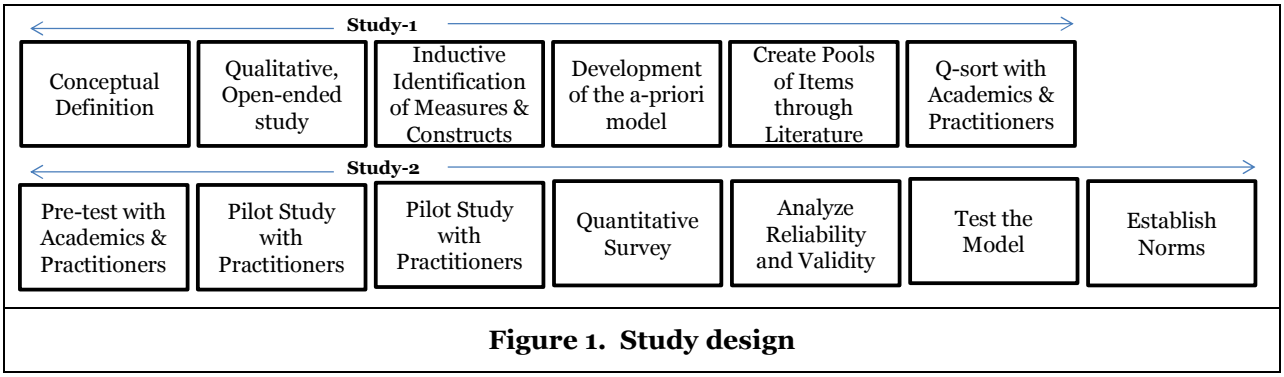

Figure 1. Study design

Study-1

The qualitative study-1 aims to generate a set of starting constructs and measures that represents readiness to innovate with the IT eco-system[1] (Hinkin 1995; Hunt 1991). Herein, this study strives to develop a good formative index – one that exhausts the entire domain of the construct completely, meaning that the constructs should collectively represent all the relevant aspects of the variable of interest (Bagozzi and Fornell 1982; Bagozzi and Phillips 1982; Fornell and Bookstein 1982). Its purpose, akin to

[1] As noted by Hinkin (1995), this step further enhances the content validity of our measures, as this process allowed us to refine and / or replace items before preparing and administering a questionnaire. As per Hunt (1991), an inductive approach is used, also called 'grouping' or 'classification from below' is appropriate when the theory is extended to a different or new context.

the function phase of the Burton-Jones and Straub (Burton-Jones and Straub 2006) approach, is to justify the a-priori salient attributes relating to the IT eco-system readiness. While a common approach to identifying a-priori measures is to select from the existing literature, based on conceptual arguments, this research was unable to find any reasonable scales relating innovation readiness led to the inductive study approach. The qualitative data in study-1 ensures that (i) the referent constructs and measures are not only conceptually, but also empirically relevant in the contemporary IS context and (ii) identify constructs and measures important for innovation.

Study-1 consists of a field study of 09 case organizations. The sample participants included 09 Chief Information Officers (or their equivalent position) and 18 line-of-business (LOB) managers, 2 representing each organization. Interviews were conducted as individual[2], face-to-face, semi-structured interviews lasting between 40-60 minutes each. In total, our interviews transcribed to approximately 24 hours and 45 minutes. Two non-probability sampling techniques, purposive and snowball, were utilized in the selection of interview participants to ensure that they were appropriate opinion leaders (purposive) with well-developed views on the research topic (Minichiello et al. 1995). The Line-of-Business managers were selected as the lead representative of an innovation within six months prior to data collection (snow-balling). Given the generative purpose of the interview, the sample size did not have to be large since "the validity, meaningfulness, and insights generated from qualitative inquiry have more to do with the information-richness of the cases selected and the observational/analytical capabilities of the researcher than with sample size" (Patton 2002, p 185). At the beginning of the meeting, the participants were briefed about the objective of the study. The overarching question in study-1 was "*Can you describe how the IT eco-system is helping deliver innovation in your organization?*" The word 'readiness' was purposely avoided in our questioning to minimize biasness of party-line responses. A series of follow-up questions sought clarifications and additional information facilitated through the open ended nature of the interviews. The study-1 yielded a total of 774 raw-citations on 21 unique themes of innovation readiness. Decomposition of the textual responses of the transcript was straightforward, simply involving the extraction of contiguous phrases, without modification. In order to minimize individual errors of judgment, two researchers participated in the mapping exercise, each person mapping approximately 25% of citations and comparing results. Comparison of the individual classifications revealed an average inter-coder agreement of 80 percent[3]. Discrepancies were discussed until a consensus was reached and formal criteria for classification were documented. Table 1 presents the 7 themes, 21 dimensions and the number of citations per dimension within bracket. Next, the content validation was established by observing the degree to which each dimension reflects (the operationalizing measure) its nominated theme (the construct). Measurement representativeness, comprehensiveness and clarity were established using Q-sort approach following suggestions of Grant and Davis (1997)[4].

Deriving the a-priori model

Results of study-1 helped us form the a-priori innovation readiness model constructs and measures. Specifying a parsimonious a-priori model involved: (i) elimination and consolidation of dimensions; (ii) introduction of new domains or measures; and (iii) revisiting the relevance of the domains identified in study-1. There were concerns about the theme 'strategic readiness' due to the low citation count. Yet, instead of eliminating, it was retained in the a-priori model to be tested using quantitative data in study-2.

[2] Our decision to gather data individually (instead of gathering data through a single panel of 12 participants) was motivated by: (i) lack of peer influence on selecting categories, (ii) less frivolity and thus (iii) better concentration of the participants.

[3] Krippendorff recommends inter-coder reliability of at least 70% (Krippendorff, 1980)

[4] This approach followed here is analogous to the Q-sort approach suggested by (Kendall et al. 1987) for attaining content validity.

Table 1: The themes, measures and citations of Study – 1				
Theme / Citations	**CIO**	**LOB**	**%**	**Sample Quote**
Resource readiness				
…flexible financial (64)	38	26	8%	*I have a flexible budget based on projects - LOB#6*
…flexible human resources (57)	32	25	7%	*we can hire short-term, project based IT staff - CIO#7*
…flexible infrastructure (47)	30	17	6%	*most of our systems are now on cloud - CIO#5*
Cultural Readiness				
…sharing ideas (27)	18	9	3%	*when there is a new project, I bring all departments to a forum - CIO#2*
…decentralized decisions (14)	8	6	2%	*I commissioned this project for my department - LOB#3*
…risk aversion (41)	28	13	5%	*risk is something inherent in all projects, not a show-stopper - CIO#1*
Strategy Readiness				
…clarity of goals (16)	7	9	2%	*every goal must be clear, precise… - CIO#8*
…relevance of goals (17)	8	9	2%	*if we have to follow goals, then they have to be relevant - LOB#1*
…communicating goals (13)	6	7	2%	*all departments must know our strategic direction - CIO#6*
Technology Readiness				
…stability of the ES (59)	36	23	8%	*all efforts must be made to make the ES steady - LOB#4*
…digital tech availability (61)	20	41	8%	*we should have a feast of new technologies - CIO#7*
…infrastructure stability (37)	28	9	5%	*it's all ugly if we can't have infrastructure supporting things - LOB#1*
Psychological Readiness				
…attitude (28)	17	11	4%	*we have less resources, but our attitude is always positive - CIO#4*
…psychological motivation (26)	17	9	3%	*staff are willing to pick-up tough assignments - CIO#5*
…empowered (32)	17	15	4%	*decisions are made within departments… - LOB#16*
Cognitive Readiness				
…knowledge (41)	19	22	5%	*core knowledge we need are…tech, process and organizational - CIO#1*
…skills (52)	27	25	7%	*staff must be skilled in core tech stuff - CIO#2*
…adaptability (35)	18	17	5%	*three major projects of multiple tech types…staff must be adaptable - CIO#4*

Partnership Readiness				
…software vendor (30)	18	12	4%	*most projects are done jointly with the software vendor - CIO#9*
…management consultant (44)	26	18	6%	*we had 2 consulting companies putting bids for this - CIO#2*
…customer/supplier (33)	16	17	4%	*nowadays, we have to work closely with our suppliers in all solutions - LOB#13*

Figure 2 depicts the innovation readiness a-priori model. It includes seven constructs and the associated measures derived through study-1. The seven constructs of the a-priori model of innovation readiness are all conceived and measured as formative constructs. The a-priori model antecedents: (i) need not co-vary, (ii) are not interchangeable, (iii) cause the core-construct as opposed to being caused by it. In addition, the model may include different antecedents and consequences in potentially quite different nomological nets (Cenfetelli and Bassellier 2009; Jarvis et al. 2003; Petter et al. 2007).

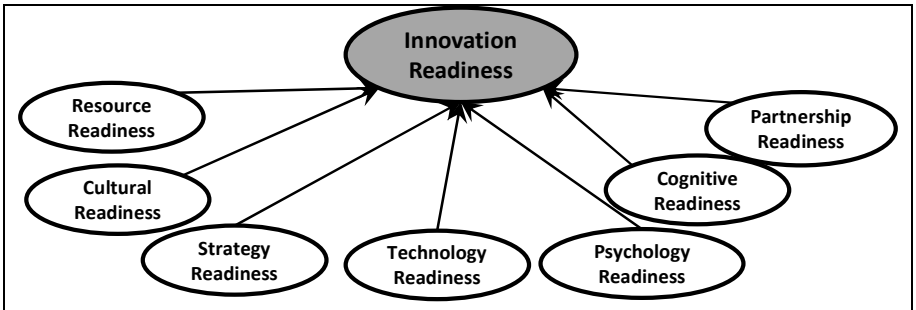

Figure 2. The innovation readiness a-priori model

As mentioned, a formative index matches the study objectives of providing a parsimonious, mutually exclusive, additive set of constructs. A similar approach was employed by Gable et al. (2008). The formative index of innovation readiness does not purport (is not concerned with) any causality among the dimensions; rather, akin to analytic theory[5] (Gregor 2006), the constructs are posited to be formative dimensions of the multidimensional concept of innovation readiness, wherein the dimensions have a causal relationship with the overarching measure, namely, innovation readiness. Herein, we acknowledge that some studies may have employed similar constructs as causally related (or in some cases as a process), but such studies did not intend to measure the innovation readiness at a point in time. This snapshot or cross-sectional approach is often criticized where the intent of research is to test causality (due to it not technically testing for temporality[6]); however, in the case of the innovation readiness model, a snapshot of the system is precisely what is sought. Furthermore, the conception of the constructs as formative is particularly useful so that they provide the 'specific and actionable attributes' of a concept (Mathieson et al. 2001). Particularly interesting from a practical viewpoint would be the weights of the constructs. This is particularly interesting from a practical viewpoint as the weight of the construct can be used to draw practical implications on the importance of specific details and therefore guide practical enforcement on the characteristics (See details in Furneaux and Wade 2011).

[5] The first of Gregor's (2006, p. 612) five types of theory in IS are analytic theories which "analyze 'what is' as opposed to explaining causality or attempting predictive generalizations … they describe or classify specific dimensions or characteristics of individuals, groups, situations or events by summarizing the commonalities found in discrete observations".

[6] One variable should empirically precede the other in temporal order.

Resource Readiness

Resource readiness highlights the importance of flexible assembly of IT related resources to help an idea turn in to an innovation implemented (Happ 1996; Pennings and Buitendam 1987; Wang and Sedera 2011). Resources are not only the financial, but also include human resources, and IT infrastructure, which are all considered as determinants of innovation readiness. The nine organizations relish the flexibility in budget flexibility, admittedly at different degrees, for innovation implementations.

> *"It's not how much you have… it's what you can do with it. If you are going to tie dollars to projects at the start of a financial year, then it stops us from innovating" CIO#4*

Similarly, effective innovation implementation requires flexibility in re-deployment and re-skilling of employees (Chin and Haughton 1994; Zaltman et al. 1977).

> *"The first thing I look at in staff is how adoptable they are to changing environments" LOB #11*

Study-1 data shows that companies are willing to try and experiment with IT hardware and software obtained through subscribed service models. This allows them to develop innovations much faster than hosting IT on premise.

> *"We have all sorts of new IT. We don't buy them, mostly are from Amazon or Rackspace" CIO#1*

Three measures were developed to understand resource readiness for innovations using, (i) flexible financial resources (Oke et al. 2012; Popadiuk and Choo 2006), (ii) human resources (Gumusluoğlu and Ilsev 2009; Im et al. 2013), and (iii) flexible infrastructure resources (Ecker et al. 2013; Troilo et al. 2014).

Cultural Readiness

The role of culture in innovation have been discussed extensively in extent literature (Damanpour 1991; Jansen et al. 2006). Study-1 highlighted that the contemporary organizations must be innovation engage in an innovation savvy culture. The nine cases highlight that (i) the massive proliferation of social media, (ii) digital natives entering the workplace and (iii) the smart mobile phones enable organizations to create and maintain vibrant organizational culture around innovation (Büschgens et al. 2013).

> *"All ideas are shared on Yammer…then people start discussing the best ways delivering it" CIO#5*

Some case participants argued argue that a culture of de-centralized decision making helps organizations implement innovations faster.

> *"The decision making delays were the worst, we now have a flat culture" – LOB#7*

Cases suggested that the risks in technology solutions delivering innovations are mostly modest and that a complete failure is nearly impossible (Patanakul et al. 2012; Robeson and O'Connor 2013). The lowering of the risks in IT products is due to the low cost and trialability of systems.

> *"The management must be able to trust us. IT is now much safer and cheaper, and we trial before we even commit to a solution now" – CIO#9*

Three measures were developed for innovation savvy culture: (i) sharing of ideal in a connected workplace (Patanakul et al. 2012; Shane et al. 1995), (ii) the decentralization of decision making culture (Ford and Gioia 2000; Lengnick-Hall 1992), and (iii) risk aversion (Larson and Gobel 1989).

Strategic Readiness

Strategic goals provide the knowledge that communicates a plan of action and form the guidelines for compliance in innovation readiness. A poor understanding of the details of such changes and unsureness of what is expected have been found to be prominent but often unrecognized factors in the failure of innovate. Studies discuss the importance of the clarity, continuous refinement and communication of strategic goals (Bharadwaj et al. 2013; Grover and Kohli 2013; Nylén and Holmström 2015).

> *"IT must always try and align with strategic goals. That's the way to innovate" – LOB#14*

Communicating strategies with all relevant staff was also deemed important for innovation readiness.

"New ideas must cleave around the strategic goals…and all staff must know them" – CIO#3

As mentioned earlier, there were reservations about whether this construct is more related to ideation. Yet, in the interest of inclusion, three measures were developed and included to the a-priori model: (i) the clarity of goals (Greenhalgh et al. 2004; Oke et al. 2012), (ii) the relevance (Damanpour 1991; Robeson and O'Connor 2013), and (iii) strategy communication (Backmann 2013; Evanschitzky et al. 2012).

Technology Readiness

Technology readiness relates to the state of the IT portfolio. Specifically, study-1 highlights that the stability of the enterprise system. In all nine cases, similar to most organizations, an enterprise system was installed to conduct main business processes like financial accounting and human capital management which highlights the importance of the existing enterprise systems (Eden et al. 2012; Eden et al. 2014).

"Nothing can be done if SAP [enterprise system] is unstable" – CIO#1

Furthermore, the participants outlined the importance of having access to digital technologies will define readiness. The advent and massive proliferation of mobile computing, cloud computing, in-memory technologies and social media, collectively referred to as digital technologies (Nambisan 2013; Yoo et al. 2012), fueled by the consumerization of IT (Harris et al. 2012) seem to have presented organizations with opportunities to innovate in flexible, easy-to-deploy and cost-effective ways (Lokuge et al. 2016; Vodanovich et al. 2010; Walther et al. 2013). Availability of such technologies 'on-demand' is considered important by the respondents.

"The whole world is moving to cloud, mobile and social media. We have many of these available on subscriptions" – CIO#5

The infrastructure readiness, especially in maintaining a secure and stable environment, is also mentioned by the participants.

"Security and stability comes from up-to-date blades and racks. For our industry sector they are very important. That's why we invest a bit on the infrastructure" – CIO#7

Three measures were developed to measure the technology readiness, employing (i) stability of the enterprise system (Sedera et al. 2016), (ii) availability of digital technologies (Sedera et al. 2016) and (iii) stability of the IT infrastructure (Tilson et al. 2010; Tilson et al. 2012).

Psychological Readiness

Open-ended creativity is an important attribute of an organization that is ready to deliver innovations through their IT eco-system. Motivation is one of the salient attributes that encourages open-ended value creation, especially in demanding circumstances (Berlyne 1965; Ryan and Deci 2000). Motivational attitude is a psychological state that allows organizations overcome deficiencies in resources like in finance and human capital.

"We work as one team until we deliver the solution necessary. Great attitude" – LOB#18

Psychological motivation facilitates exploratory behavior observed through thinking, learning and behaving beyond the expectations, which are fundamental in delivering innovations through IT (Sauer and Yetton 1997; Zack 2003).

"If your staff can pick up work not just for the sake of work, but with passion, then you can deliver any innovation" – LOB#11

Furthermore, we found that leaders motivate staff to be empowered to make decisions and commit beyond.

"We maximize empowerment…it is within boundaries, but making them empowered motivates them to take ownership of our projects" – CIO#2

Three measures were developed to understand how motivation facilitates: (i) attitude of the employees (Damanpour and Schneider 2006; Evanschitzky et al. 2012), (ii) motivation (Damanpour 1991;

Damanpour and Aravind 2012), and (iii) empowerment (Ecker et al. 2013; Mate-Sanchez-Val and Harris 2014).

Cognitive Readiness

Study-1 participants identified knowledge, skills and adaptability of the staff as a core readiness facet. Together, they can be called 'cognitive readiness.' They noted that such characteristics may be of special relevance and significance for organizations that must adapt quickly to rapidly emerging, unforeseen challenges. Both individuals and organizational units can be prepared to perform many of the essential tasks that are anticipated as necessary for accomplishing tasks bestowed with them.

> *"Knowledge of the software, business processes and competitor environment is a crucial one" – CIO#8*

The participants also highlighted that technical skills of the IT staff are essential for innovation readiness.

> *"At the end of the day, we have to have the core technical skills to deliver solutions" – CIO#6*

Furthermore, the adaptability of the staff for technical and organizational changes were also outlined as important for delivering innovations.

> *"…the only thing permanent now is 'change'. So we need adoptability in all staff" – CIO#9*

Three measures were developed from the literature associated with (i) knowledge, (ii) skills and (iii) adaptability (Lamb and Kling 2003; Sedera and Dey 2013).

Partnership Readiness

Making and maintaining innovation readiness is a challenge not only for the organization, but also for its external partners. Especially for the IT eco-system, the software and hardware vendors and the participation of customers and suppliers become crucial (Ceccagnoli et al. 2012; Gawer 2014; Maduka Nuwangi et al. 2014; Nuwangi et al. 2012). Study-1 case participants demonstrated a strong reliance on the networked eco-systems of multiple software and vendors in rapid solution developments.

> *"We have a great relationship with SAP. It is not just SAP then we have, we have their army of developers as well. In most cases, they also have their eco-system as well" – CIO#5*

Similarly, consulting companies also play a pivotal role in making innovation ready. Their role was especially evident in delivering substantial technology solutions for reasonably long periods of time.

> *"Consultants are best for projects are over 6 months, and budgets over $2 million" – CIO#4*

Finally, participants outlined customer and vendor partnerships that are essential for developing collaborative innovations. All case organizations had at least 2 such innovations being considered in 2015.

> *"Innovations alone won't work. We have to have partnerships with customers/suppliers" – CIO#7*

The partnership readiness dimension included three measure derived through the literature: (i) software or hardware vendor relationship, (ii) relationship readiness with management consultants and (iii) readiness for establishing partnerships with customers or vendors (Lubatkin and O'Neill 1987; Teo and Bhattacherjee 2014).

Study 2

The purpose of study 2 is to test the innovation readiness survey specified through the a-priori model based on the constructs and measures derived through study-1. A literature-based, survey instrument was designed to operationalize the 21 measures of the seven constructs in Figure 2 (see the complete instrument in Appendix A). The instrument was pilot-tested with a sample of 26 participants who attended a CIO business seminar. The pilot survey analysis resulted in the addition of some explanatory statements. For example, there was concern about whether the readiness to innovate relates to the *organization* or to the *individual* who is responding to the survey. As such, a new statement was added instructing the respondents as follows: "This survey measures *the innovation readiness of your*

organization." The survey instrument was then circulated among 350 companies at an International CIO forum in November 2014. The event participation organization registration indicated that all participating organizations were large and were representative of all industry sectors. Further, the survey instrument captured demographic details to assert that the organizations considered for the analysis possessed the following criteria: (i) the organization had a dedicated CIO/CTO (henceforth referred only as the CIO to minimize repetition) and a team of IT staff that managed the organization's IT portfolio, (ii) the organization had used a portfolio of technologies for the past five years and documentation of the IT roadmap since the implementation of the ES was available, and (iii) at the time of the data collection, the CIO had been in the position for at least six months, was not in the last six months of their appointment[7], and was participating in regular meetings with the executive leadership team (e.g., CEO, CFO).

The sample of both CIOs and Line-of-Business managers was appropriate for the study objectives, as these personnel would be able to comment knowledgeably on behalf of the organization or department in relation to innovation through IT portfolio (Grover et al. 1993). The CIO and an LOB-manager are involved in the information resources that influence organizational strategy, and has the direct responsibility for the planning of the IT framework necessary to cope with an organization's competitive environment. Matching responses from one hundred and eighty nine (189) companies were selected for the analysis. It included 189 CIOs and matching 189 LOB-managers, one each from an organization, yielding a total respondent sample of 378.

Data Analysis

The model and construct validation in this research are reported under four headings: (i) the content validity (which was tested using the content validity ratio [CVR]), (ii) the construct validity (which was tested using the composite reliability, average variance extracted [AVE]), (iii) the outer model (which was tested using the partial least squares [PLS] technique) and (iv) the structural model.

Content Validity

Since the constructs and measures were derived inductively for innovation readiness, the establishment of content validity was a priority. The current study followed the guidelines of McKenzie et al. (1999) for establishing content validity, which entailed four steps[8]: (i) using the guidelines proposed by Lynn (1986), an initial draft of the survey instrument was created by canvassing the related literature in order to derive its measures; (ii) following the guidelines of the American Educational Research Association (2002), a panel of respondents was established to review and evaluate the possible survey questions, ensuring that the panel had the necessary training, experience and qualifications; (iii) the panel critiqued the survey constructs; and (iv) the panel conducted a review of the questionnaire, assessing how well each item represented each construct. In this fourth step, a quantitative assessment was made, establishing the CVR for each item/question based on the formula proposed by Lawshe (1975). Based on the pilot tests, the minimum CVR value of 0.79 was observed at a statistical significance of $p<0.05$. Feedback from the pilot-test respondents resulted in minor modifications to the wording of the survey items (Lawshe 1975; Lynn 1986; McKenzie et al. 1999) and endorsement of the research model and its constructs and measures.

Construct Validity

Construct validity for each construct was established using the AVE. All the constructs demonstrated satisfactory convergent and discriminant validity, with the AVE for all seven constructs measuring above 0.5 (Fornell and Larcker 1981). The AVE of each construct was greater than the variance shared between the construct and the other constructs in the model, indicating strong discriminant validity (Chin et al. 1988). Table 2 presents the results of the AVE analysis.

---

[7] This was essential in order to determine that the present IT leadership was not 'in transit.' This is an important consideration because it has been argued that companies with in-transit CIOs do not embark on strategic initiatives.

[8] The four-step approach followed here is analogous to the Q-sort approach for attaining content validity (Kendall and Kendall 1993; Kendall et al. 1987; Tractinsky and Jarvenpaa 1995).

Table 2: AVE values of the constructs (significant at 0.005)							
	1	**2**	**3**	**4**	**5**	**6**	**7**
Resource Readiness (1)	0.862						
Cultural Readiness (2)	0.244	0.901					
Strategy Readiness (3)	0.512	0.212	0.932				
Technology Readiness (4)	0.234	0.341	0.214	0.851			
Psychological Readiness (5)	0.452	0.301	0.126	0.134	0.864		
Cognitive Readiness (6)	0.103	0.211	0.109	0.1	0.229	0.869	
Partnership Readiness (7)	0.542	0.192	0.411	0.135	0.341	0.411	0.912

Testing the Measurement Model

Following the guidelines of Cenfetelli and Bassellier (2009), Diamantopoulos and Siguaw (2006) and Diamantopoulos and Winklhofer (2001), the items were first tested for multi-collinearity amongst the measures using variance inflation factors (VIF). The VIF from a regression of all the constructs ranged between 1.1 and 2.2, indicating that no significant multi-collinearity existed.

To test the outer and inner models, the study employed the PLS technique using SmartPLS 3 software (Ringle et al. 2005). The PLS test (Wold 1989) is a structural equation modeling technique that is well suited for highly complex predictive models and that supports the mapping of formative observed variables (Becker et al. 2012; Chin et al. 1988; Henseler and Sarstedt 2013; Wold 1989). SmartPLS was used together with the bootstrap resampling method (5000 resamples) to determine the significance of the paths within the structural model (Gefen et al. 2000; Petter et al. 2007). Further, as suggested by Diamantopoulos and Winklhofer (2001, p. 272), the innovation readiness construct was measured by two global items that "summarize the essence of the construct that the index purports to measure" and examine the extent to which the items associated with the index correlate with these global items.

Figure 3 depicts the results of the measurement model test, with values significant at the level of 0.005 Alpha. Supporting our prepositions, and further validating the readiness constructs, the results indicated that all construct demonstrated strong and significant predictors of innovation readiness. Overall, the model constructs explained 73% of the variance of the Innovation Readiness construct. This percentage of explanation exceeds the explanation of variances reported in comparable similar papers in the literature (e.g., Snyder-Halpern 2001; Yen et al. 2012) and is adequate considering model parsimony. From Figure 3, the study establishes the convergent and discriminant validity of the model constructs. The convergent validity of the constructs conformed to the heuristics of Gefen and Straub (2005), with all the t-values of the outer model loadings exceeding the one-sided[9] cut-off of 1.645 levels[10] significant at the 0.05 alpha protection level. As mentioned, despite the low loading of strategy readiness as an innovation readiness construct, it was retained in the interest of further assessment in future studies. This was acceptable, since strategy readiness construct did not display excessive collinearity (see the results in Table 2).

[9] The one-sided test was appropriate because we only hypothesized a positive contribution of the formative components of expertise. The two-sided cut-off of 1.96 was used otherwise.

[10] The t-values of the loadings are, in essence, equivalent to t-values in least-squares regressions. Each measurement item is explained by the linear regression of its latent construct and its measurement error (Gefen and Straub 2005).

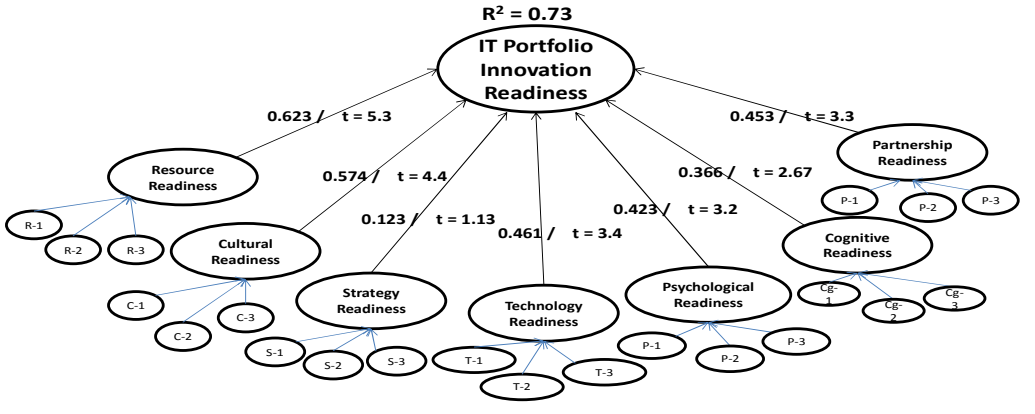

Figure 3. Results of the analysis explaining 73% of the variance

Additivity

The additivity of the model constructs was evidenced indirectly by the measurement model analysis. As a further test of additivity, next we averaged the items associated with each construct to yield seven independent variables and regressed against the average of measures used for innovation readiness The results demonstrate that *each* independent variable makes a significant incremental contribution to r^2, suggesting that all seven constructs are useful in deriving the single overarching innovation readiness index.

Cohort Analysis

Next, the study sought to explores whether the CIOs and the LOB-Managers held similar or dissimilar views of innovation readiness. Here, the constructs were subjected to an independent sample t-test, making observations of the significance scores. Table 3 provides the results of an independent sample t-test that compared the seven constructs of the readiness index against the CIO and LOB-manager data.

Table 3: Results of the independent sample t-test

	Technology Readiness	Partnership Readiness	Strategy Readiness	Psych-Readiness	Cognitive Readiness	Resource Readiness	Cultural Readiness
	Sig / t-value*	Sig / t-value*	Sig / t-value*	Sig / t-value*	Sig / t-value*	Sig / t-value*	Sig / t-value*
CIO Vs. LOB-manager	0.04 / - 2.24	0.02/ -2.67	0.01 / -2.78	0.562/ 0.08	0.629 / 0.03	0.652 / 0.03	0.358 / 0.12
Interpretation	*Different*	*Different*	*Different*	*Indifferent*	*Indifferent*	*Indifferent*	*Indifferent*

* Significant at 0.05

The results of the cohort analysis demonstrate differences between the views held by the respondent parties in relation to the innovation readiness. Significant differences were observed in relation to: (i) technology readiness, (ii) partnership readiness, and (iii) strategy readiness. No differences were observed for: (i) Resources, (ii) Culture, (iii) Motivation, and (iv) Aversion. The differences highlight the need of inclusive of the sample, when measuring innovation readiness.

Common Method Bias

Sharma et al. (2009) advise against the common practice of gathering perceptual data on both the independent variable and the dependent variable from the same respondent, as it may create common method variance (CMV). However, as observed by Gorla et al. (2010), CMV is more likely to exist in abstract constructs (e.g., attitude), compared to the concrete measures associated with innovation. Even

so, paying attention to the need to reduce CMV, the items for readiness and its antecedents were not grouped under their construct headings in the survey. We also employed Harman's one-factor test, with the result that not all the measures led to a single factor solution; thus confirming that CMV was unlikely.

The Acid Test – The Nomological Net

The acid test of a newly developed construct is the nomological net test, where the newly developed construct is tested in a nomological net. Theoretically and tautologically, it was appropriate to consider "innovations" as the dependent variable of innovation readiness. In a simple hypothesis, one might conceive this as "Higher innovation readiness leads to high innovations" (Garvin 2012; Hall and Vredenburg 2012). The three reflective measures of innovation (see Appendix A) loaded into a single factor with factor loadings of 0.7652, 0.6721 and 0.7451. The structural model analysis presented in Figure 4 shows the relationship between innovation readiness as the independent variable and Innovations as the dependent variable. As Figure 4 depicts, the path coefficient was 0.651 and the r^2 was of 0.41. The results were adequate to establish the measurement adequacy of the independent variable.

Not only did the results of the nomological net testing (Figure 4) evidence the existence of a strong, positive relationship between innovation readiness and innovation as hypothesized, they further evidenced the validity of both constructs; put simply, if either construct is not valid we are unlikely to see a relationship (Diamantopoulos and Winklhofer 2001; Edwards and Bagozzi 2000). This further evidence of construct validity is sometimes referred to as 'identification through structural relations' (see for e.g. Jarvis et al. (2003, p. 214: Figure 5, Panel 4).

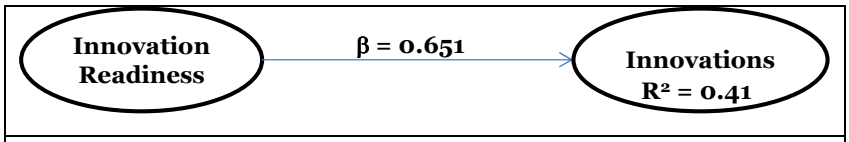

Figure 4. The nomological net testing

Furthermore, a post-hoc analysis was conducted to observe the direct effect of the innovation readiness constructs on the innovation construct. It too revealed strong and significant path coefficients (β at $p < 0.005$ confidence level) for all innovation readiness factors ($\beta_{\text{Resource readiness}} = 0.32$ $\beta_{\text{Cultural readiness}} = 0.26$, $\beta_{\text{Strategy readiness}} = 0.19$, $\beta_{\text{Psychological readiness}} = 0.31$, $\beta_{\text{Technology readiness}} = 0.35$, $\beta_{\text{Cognitive readiness}} = 0.38$ and $\beta_{\text{Partnership readiness}} = 0.14$).

Discussion of Results

The series of tests completed above generated a wealth of observations about the innovation readiness of an organization.

The Innovation Readiness Model

The formative innovation readiness construct is the main contribution of the study. It conceived 7 constructs and 21 measures developed through an inductive approach, and then validated using a survey instrument. The seven constructs were conceived as formative for research clarity and practitioner value. The items to measure each construct were carefully constructed from an extensive literature review, following the approach of Burton-Jones and Straub (2006).

Although this snapshot or cross-sectional approach is often criticized where the intent of research is to test causality (due to it not technically testing for temporality[11]), a snapshot of organizational readiness was precisely sought for the innovation readiness model. Thus, we suggest that the validated constructs and measures of innovation readiness can be used in combination as constructs of a measurement model

[11] One variable should empirically precede the other in temporal order.

for the purpose of evaluating overall readiness. Alternatively, these same constructs and their related, validated measures may be used in a nomological net to test causality; in so doing however, close attention must be paid to the timing of the measurement and the consequent direction of the paths. It is further noted that the validation of these constructs, either within a nomological net or a predictive chain or within a measurement model, lends credence to the constructs for either purpose[12].

A provocative question herein is "Are these constructs specific only to the IT portfolio innovation readiness?" It is noted that the seven constructs were *not* developed through the extent literature, rather were derived inductively through a sample of CIOs and LOB-manager who have engaged in an IT related innovation project. Therefore, the measures yielded through the inductive analysis are specific only to IT portfolio innovations. In other words, the construct titles (e.g., resource readiness) would be meaningful to many disciplines; the *measures* are very specific to the IT portfolio and its role in delivering innovations. Further, the 73% variance explained by the constructs of innovation readiness provides evidence of parsimony and completeness of the constructs. The nomological net test between innovation readiness and innovations provided further evidence of the strength of the innovation readiness model.

This paper has stringently treated the model and its constructs as formative. The authors have from the outset and throughout the study consistently conceived the model constructs as formative, manifested in extensive attention to the completeness, mutual exclusivity, and necessity of the dimensions and measures. Overall, the model described 73% of the model variance. Other statistics (e.g., CVR, VIF and AVE) evidenced a strong model, with adequate model parsimony. The cohort analysis, which evidenced differences in opinions between the CIOs and the department heads, suggested that the study model is responsive to various respondent groups. At the same time, it evidenced significant differences in views on innovation readiness between the CIO and the LOB-manager. Developing a further understanding of such disagreements will lead to possible identification of reasons why most innovation attempts are unsuccessful.

Implications for Research

The innovation readiness index derived through this study and the approach followed in its development address several areas of uncertainty in past IS research. First, in light of the plethora of studies highlighting antecedents of innovation and the importance of innovation, this study provides a consolidated approach that takes into account extant literature, as well as the modern IS landscape. Second, the study represents the first test of the sufficiency and necessity (or not) of an innovation readiness index with seven validated constructs. To the extent that the innovation readiness index is robust across systems, contexts and time, the index may serve as a validated independent variable in ongoing research into the drivers of innovation. As an independent variable, innovation readiness model may aid in understanding the relationship between IT and organizational innovation (or organizational performance as an ultimate variable). With further research, the innovation readiness index may ultimately yield valuable cross-organizational comparisons of IT innovation readiness among application areas, system sourcing scenarios, sectors, geography, cultures, organization size, and other demographic groupings.

Implications for Practice

The innovation readiness index may be of interest to organizations seeking to: (1) evaluate how ready are they to innovate with a contemporary IS using an easy-to-understand, simple, perceptual survey instrument; (2) assess the level of readiness from multiple stakeholder perspectives; (3) measure innovation readiness using a mix of tangible (e.g., resources) as well as less tangible indicators (e.g., culture); (4) establish an innovation readiness benchmark for comparison across versions, upgrades, organizations, departments, system types and system modules or across other demographic groupings; (5) allocate and manage investments into innovation readiness factors and; and (6) focus scarce resources and attention on those aspects of the IS and the organization most in need. Analyzing the data samples on the basis of various demographics or other distinctions can facilitate potentially useful comparisons for

[12] Having said this, we further encourage researchers to heed the caution of Burton-Jones et al. (2006) that operationalization must be undertaken in full light of the specific theory and hypotheses being tested.

practitioners. As a rule, highly consistent scores indicate some level of consensus about the constructs of innovation readiness (e.g., across the full sample, within stakeholder groups, or within organizational entities). Inconsistent scoring may point to areas of difference within these groupings, warranting attention for better innovation.

Limitations and Future Research

We recognize several limitations of the readiness index requiring attention beyond the scope of this study and paper. First, the model was developed and validated with a sample of 198 organizations, may be perceived as small at the global scale. This raises questions about whether the a-priori model was complete and representative of contemporary IS in general, and whether the final list of measures and constructs are, indeed, generalizable. Thus, although the initial findings are encouraging, further research is necessary to extend generalizability. Specifically, generalizability could be strengthened through re-testing the model in the diverse settings of various systems, contexts and timelines.

Appendix A: Innovation Readiness Survey Instrument

In this survey, the term innovation refers to "the production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems."

(R-1) My organization is flexible in allocating adequate financial resources necessary to innovate with the IT portfolio.

(R-2) My organization is flexible in allocating adequate human resources necessary to innovate with the IT portfolio.

(R-3) My organization is flexible in allocating adequate IT infrastructure resources necessary to innovate with the IT portfolio.

(C-1) My organization is has a well-established way of sharing ideas and thoughts to engage with the IT portfolio for innovations.

(C-2) My organization has a de-centralized decision making process that facilitates the engagement of all business areas to use the IT portfolio for innovations.

(C-3) My organization takes reasonable risky assessment of engaging IT to facilitate innovations.

(S-1) Our organizational strategic goals are clear to me when engaging the IT portfolio to facilitate innovations.

(S-2) Our organizational strategic goals are relevant to me when using the IT portfolio to facilitate innovations.

(S-3) I am well-aware of our organizational strategic goals communicated to me four using the IT portfolio to facilitate innovations.

(T-1) Enterprise system/s in my organization are / is stable, up-to-date and reliable.

(T-2) I have access to a range of new technologies like cloud, mobile and big data analytics available to facilitate innovations.

(T-3) Our IT infrastructure is stable, up-to-date and reliable to facilitate innovations.

(P-1) Our staff members have the right attitudes that facilitate innovations.

(P-2) Our staff members are motivated to facilitate innovations.

(P-3) Our staff members are empowered to make decisions that facilitate innovations.

(Cg-1) Our staff members have the appropriate knowledge to facilitate innovations.

(Cg-2) Our staff members have the appropriate skills to facilitate innovations.

(Cg-3) Our staff members have the appropriate adaptability to facilitate innovation.

(Pr-1) My organization has a good relationship with the software vendors to facilitate innovations.

(Pr-2) My organization has a good relationship with the management consultants to facilitate innovations.

(Pr-3) My organization has a good relationship with our suppliers and vendors to facilitate innovations.

(Global-1) Our IT portfolio is well-equipped to support any innovations in the organization.

(Global-2) Our organization is well-equipped to support any innovations.

(Innovations-1) We are good at implementing new ideas in the organization.

(Innovations-2) We have introduced enough new products and services to compete with our competition.

(Innovations-3) Most of our new ideas are now implemented.

References

American Educational Research Association. 2002. "Standards for Educational and Psychological Testing," American Psychological Association, Washington , DC.

Backmann, J. 2013. "Antecedents of Interorganizational New Product Development Project Performance: A Meta-Analysis," *Academy of Management Proceedings*: Academy of Management.

Bagozzi, R., and Fornell, C. 1982. "Theoretical Concepts Measurements, and Meaning," in: *A Second Generation of Multi-Variate Analysis,* C. Fornell (ed.). New York pp. 24-38.

Bagozzi, R.P., and Phillips, L.W. 1982. "Representing and Testing Organizational Theories: A Holistic Construal," *Administrative Science Quarterly* (27:3), pp 459-489.

Becker, J.-M., Klein, K., and Wetzels, M. 2012. "Hierarchical Latent Variable Models in Pls-Sem: Guidelines for Using Reflective-Formative Type Models," *Long Range Planning* (45:5), pp 359-394.

Berlyne, D.E. 1965. *Structure and Direction in Thinking*. New York: John Wiley & Sons.

Bharadwaj, A., El Sawy, O.A., Pavlou, P.A., and Venkatraman, N. 2013. "Digital Business Strategy: Toward a Next Generation of Insights," *MIS Quarterly* (37:2), pp 471-482.

Bloom, J.R., Devers, K., Wallace, N.T., and Wilson, N. 2000. "Implementing Capitation of Medicaid Mental Health Services in Colorado: Is "Readiness" a Necessary Condition? ," *Journal of Behavioral Health Services & Research* (27:4), pp 437-445.

Burton-Jones, A., and Straub, D.W. 2006. "Reconceptualizing System Usage: An Approach and Empirical Test," *Information Systems Research* (17:3), pp 228-246.

Büschgens, T., Bausch, A., and Balkin, D.B. 2013. "Organizational Culture and Innovation: A Meta-Analytic Review," *Journal of Product Innovation Management* (30:4), pp 763-781.

Carlo, J.L., Gaskin, J., Lyytinen, K., and Rose, G.M. 2014. "Early Vs. Late Adoption of Radical Information Technology Innovations across Software Development Organizations: An Extension of the Disruptive Information Technology Innovation Model," *Information Systems Journal* (24:3).

Cea, D., Nin, J., Tous, R., Torres, J., and Ayguadé, E. 2014. "Towards the Cloudification of the Social Networks Analytics," in: *Modeling Decisions for Artificial Intelligence*. Springer, pp. 192-203.

Ceccagnoli, M., Forman, C., Huang, P., and Wu, D. 2012. "Cocreation of Value in a Platform Ecosystem: The Case of Enterprise Software," *MIS Quarterly* (36:1), pp 263-290.

Cenfetelli, R.T., and Bassellier, G. 2009. "Interpretation of Formative Measurement in Information Systems Research," *MIS Quarterly* (33:4), pp 689-707.

Chae, H.-C., Koh, C.E., and Prybutok, V.R. 2014. "Information Technology Capability and Firm Performance: Contradictory Findings and Their Possible Causes," *MIS Quarterly* (38:1), pp 305-326.

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.

Chin, J.P., Diehl, V.A., and Norman, K.L. 1988. "Development of an Instrument Measuring User Satisfaction of the Human-Computer Interface," *Proceedings Of The SIGCHI Conference On Human Factors In Computing Systems,* J.J. O'Hare (ed.), Washington, D.C., USA: ACM Press, pp. 213-218.

Chin, L., and Haughton, D. 1994. "A Study of Users' Perceptions on the Benefits of Information Systems in Hospitals," *Healthcare Information Management: Journal of the Healthcare Information and Management Systems Society of the American Hospital Association* (9:1), pp 37-46.

Chua, C.E.H., and Khoo, H.M. 2011. "How Organizations Motivate Users to Participate in Support Upgrades of Customized Packaged Software," *Information & Management* (48:8), pp 328-335.

Crossan, M.M., and Apaydin, M. 2010. "A Multi-Dimensional Framework of Organizational Innovation: A Systematic Review of the Literature," *Journal of Management Studies* (47:6), pp 1154-1191.

Damanpour, F. 1988. "Innovation Type, Radicalness and the Adoption Process," *Communication Research* (15:5), pp 545-567.

Damanpour, F. 1991. "Organizational Innovation: A Meta-Analysis of Effects of Determinants and Moderators," *Academy of Management Journal* (34:3), pp 555-590.

Damanpour, F., and Aravind, D. 2012. "Managerial Innovation: Conceptions, Processes, and Antecedents," *Management and Organization Review* (8:2), pp 423-454.

Damanpour, F., and Evan, W.M. 1984. "Organizational Innovation and Performance: The Problem of "Organizational Lag," *Administrative Science Quarterly* (29:3), pp 392–409.

Damanpour, F., and Schneider, M. 2006. "Phases of the Adoption of Innovation in Organizations: Effects of Environment, Organization and Top Managers," *British Journal of Management* (17:3), pp 215-236.

Davenport, T.H., and Short, J.E. 1990. "The New Industrial Engineering: Information Technology and Business Process Redesign," *Sloan Management Review* (31:4), pp 11-27.

Dewar, R.D., and Dutton, J.E. 1986. "The Adoption of Radical and Incremental Innovations: An Empirical Analysis," *Management Science* (32:11), pp 1422-1433.

Diamantopoulos, A., and Siguaw , J.A. 2006. "Formative Versus Reflective Indicators in Organizational Measure Development: A Comparison and Empirical Illustration," *British Journal of Management* (17:4).

Diamantopoulos, A., and Winklhofer, H.M. 2001. "Index Construction with Formative Indicators: An Alternative to Scale Development," *Journal of Marketing Research* (38:2), pp 269-273.

Drazin, R., and Schoonhoven, C.B. 1996. "Community, Population, and Organization Effects on Innovation: A Multilevel Perspective," *Academy of Management Journal* (39:5), pp 1065-1083.

Ecker, B., Triest, S., and Williams, C. 2013. "Management Control and the Decentralization of R&D," *Journal of Management* (39:4), pp 906-927.

Eden, R., Sedera, D., and Tan, F. 2012. "Archival Analysis of Enterprise Resource Planning Systems: The Current State and Future Directions," *International Conference on Information Systems*, Orlando Florida, USA: AIS Electronic Library (AISeL).

Eden, R., Sedera, D., and Tan, F. 2014. "Sustaining the Momentum: Archival Analysis of Enterprise Resource Planning Systems (2006–2012)," *Communications of the Association for Information Systems* (35:3), pp 39-82.

Edwards, J.R., and Bagozzi, R.P. 2000. "On the Nature and Direction of Relationships between Constructs and Their Measures," *Psychol Methods* (5), pp 155–174.

Egan, E.C., McElmurry, B.J., and Jameson, H.M. 1981. "Practice-Based Research: Assessing Your Department's Readiness," *Journal of Nursing Administration* (11:10), pp 26-32.

Evanschitzky, H., Eisend, M., Calantone, R.J., and Jiang, Y. 2012. "Success Factors of Product Innovation: An Updated Meta-Analysis," *Journal of Product Innovation Management* (29:S1), pp 21-37.

Fey, C.F., and Birkinshaw, J. 2005. "External Sources of Knowledge, Governance Mode, and R&D Performance," *Journal of Management* (31:4), pp 597-621.

Ford, C.M., and Gioia, D.A. 2000. "Factors Influencing Creativity in the Domain of Managerial Decision Making," *Journal of Management* (26:4), pp 705-732.

Fornell, C., and Bookstein, F. 1982. "Two Structural Equation Models: Lisrel and Pls Applied to Consumer Exit-Voice Theory," *Journal of Marketing Research* (19), pp 440-452.

Fornell, C., and Larcker, D.F. 1981. "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research* (18:1), pp 39-50.

Furneaux, B., and Wade, M. 2011. "An Exploration of Organizational Level Information Systems Discontinuance Intentions," *MIS Quarterly* (35:3), pp 573-598.

Gable, G.G., Sedera, D., and Chan, T. 2008. "Re-Conceptualizing Information System Success: The IS-Impact Measurement Model," *Journal of the Association for Information Systems* (9:7), pp 377-408.

Garcia, R., and Calantone, R. 2002. "A Critical Look at Technological Innovation Typology and Innovativeness Terminology: A Literature Review," *Journal of Product Innovation Management* (19:2), pp 110-132.

Gartner. 2000. "Enterprise Resource Planning Scenario: A Five Year Overview," Brisbane.

Gartner. 2009. "Gartner Reveals Five Business Intelligence Predictors for 2009 and Beyond."
Garvin, D.A. 2012. "The Processes of Organization and Management," *Sloan Management Review* (39).
Gawer, A. 2014. "Bridging Differing Perspectives on Technological Platforms: Toward an Integrative Framework," *Research Policy* (43:7), pp 1239-1249.
Gefen, D., and Straub, D. 2005. "A Practical Guide to Factorial Validity Using Pls-Graph: Tutorial and Annotated Example.," *Communications of the Association for Information Systems* (16), pp 91-103.
Gefen, D., Straub, D.W., and Boudreau, M.-C. 2000. "Structural Equation Modeling and Regression: Guidelines for Research Practice," *Communications of the AIS* (4:7), pp 1-79.
Gorla, N., Somers, T.M., and Wong, B. 2010. "Organizational Impact of System Quality, Information Quality, and Service Quality," *The Journal of Strategic Information Systems* (19:3), pp 207-228.
Grant, J.S., and Davis, L.L. 1997. "Selection and Use of Content Experts for Instrument Development," *Research in Nursing and Health* (20:2), pp 269-274.
Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., and Kyriakidou, O. 2004. "Diffusion of Innovations in Service Organizations: Systematic Review and Recommendations," *Milbank Quarterly* (82:4), pp 581-629.
Gregor, S. 2006. "The Nature of Theory in Information Systems," *MIS Quarterly* (30:3), pp 611-642.
Grover, V., Jeong, S.-R., Kettinger, W.J., and Lee, C.C. 1993. "The Chief Information Officer: A Study of Managerial Roles," *Journal of Management Information Systems* (10:2), pp 107-130.
Grover, V., and Kohli, R. 2013. "Revealing Your Hand: Caveats in Implementing Digital Business Strategy," *MIS Quarterly* (37:2), pp 655-662.
Gumusluoğlu, L., and Ilsev, A. 2009. "Transformational Leadership and Organizational Innovation: The Roles of Internal and External Support for Innovation," *Journal of Product Innovation Management Decision* (26:3), pp 264-277.
Hall, J., and Vredenburg, H. 2012. "The Challenges of Innovating for Sustainable Development," *MIT Sloan Management Review* (45:1).
Happ, B. 1996. "Applying Technology Assessment to Information Systems," in: *Information Management in Nursing and Health Care,* M.E. Miller, C.A. Romano and B.R. Heller (eds.). Pennsylvania: Springhouse Corporation, pp. 74-82.
Harris, J., Ives, B., and Junglas, I. 2012. "IT Consumerization: When Gadgets Turn into Enterprise IT Tools," *MIS Quarterly Executive* (11:3), pp 99-112.
Henseler, J., and Sarstedt, M. 2013. "Goodness-of-Fit Indices for Partial Least Squares Path Modeling," *Computational Statistics* (28:2), pp 565-580.
Herscovitch, L., and Meyer, J.P. 2002. "Commitment to Organizational Change: Extension of a Three-Component Model," *Journal of Applied Psychology* (87:3), pp 474-487.
Hinkin, T.R. 1995. "A Review of Scale Development Practices in the Study of Organizations," *Journal of Management* (21:5), pp 967-988.
Hung, S.-Y., Hung, W.-H., Tsai, C.-A., and Jiang, S.-C. 2010. "Critical Factors of Hospital Adoption on CRM System: Organizational and Information System Perspectives," *Decision support systems* (48:4), pp 592-603.
Hunt, S.D. 1991. *Modern Marketing Theory*. Cincinnati, OH: South-Western Publishing.
Im, K.S., Grover, V., and Teng, J.T. 2013. "Research Note-Do Large Firms Become Smaller by Using Information Technology?," *Information Systems Research* (24:2), pp 470-491.
Ingersoll, G.L., Kirsch, J.C., Merk, S.E., and Lightfoot, J. 2000. "Relationship of Organizational Culture and Readiness for Change to Employee Commitment to the Organization," *Journal of Nursing Administration* (30:1), pp 11-20.
Isabella, L.A. 1990. "Evolving Interpretations as a Change Unfolds: How Managers Construe Key Organizational Events," *Academy of Management Journal* (33:1), pp 7-41.
Jansen, J.J.P., Van Den Bosch, F.A.J., and Volberda, H.W. 2006. "Exploratory Innovation, Exploitative Innovation, and Performance: Effects of Organizational Antecedents and Environmental Moderators," *Management Science* (52:11), pp 1661-1674.
Jarvis, C.B., MacKenzie, S.B., and Podsakoff, P.A. 2003. "A Critical Review of Construct Indicators and Measurement Model Misspecification in Marketing and Consumer Research," *Journal of Consumer Research* (30:2), pp 199-216.
Kendall, J.E., and E., K.K. 1993. "Metaphors and Methodologies: Living Beyond the Systems Machine," *MIS Quarterly* (17:2), p 149.
Kendall, K.E., Buffington, J.R., and Kendall, J.E. 1987. "The Relationship of Organizational Subcultures to Dss User Satisfaction," *Human Systems Management* (7:1), pp 31-39.

Kessler, E.H., and Chakrabarti, A.K. 1996. "Innovation Speed: A Conceptual Model of Context, Antecedents and Outcomes," *Academy of Management Review* (21:4), pp 1143-1191.
King, J.L., Gurbaxani, V., Kraemer, K.L., McFarlan, F.W., Raman, K., and Yap, C.-S. 1994. "Institutional Factors in Information Technology Innovation," *Information systems research* (5:2), pp 139-169.
Krippendorff, K. 1980. *Content Analysis: An Introduction to Its Methodology*. Beverly Hills, CA: Sage.
Kwahk, K.-Y., and Lee, J.-N. 2008. "The Role of Readiness for Change in ERP Implementation: Theoretical Bases and Empirical Validation," *Information & Management* (45:7), pp 474-481.
Lai, E.L.-C., Riezman, R., and Wang, P. 2009. "Outsourcing of Innovation," *Economic Theory* (38:3), pp 485-515.
Lamb, R., and Kling, R. 2003. "Reconceptualizing Users as Social Actors in Information Systems Research," *MIS Quarterly* (27:2), pp 197-236.
Larsen, J., and Roberts, A.O.H. 1971. "Effective Use of Mental Health Research Information, Final Report to the National Institute of Mental Health." American Institutes for Research, Palo Alto, California.
Larson, E.W., and Gobel, D.H. 1989. "Significance of Project Management Structure on Development Success," *Engineering Management, IEEE Transactions on* (36:2), pp 119-125.
Lawshe, C.H. 1975. "A Quantitative Approach to Content Validity," *Personnel Psychology* (28:4), pp 563-575.
Lehman, W.E.K., Greener, J.M., and Simpson, D.D. 2002. "Assessing Organizational Readiness for Change," *Journal of Substance Abuse Treatment* (22:4), pp 197-209.
Lengnick-Hall, C.A. 1992. "Innovation and Competitive Advantage: What We Know and What We Need to Learn," *Journal of Management* (18:2), pp 399-429.
Lichtenthaler, U., Hoegl, M., and Muethel, M. 2011. "Is Your Company Ready for Open Innovation," *MIT Sloan Management Review* (53:1), pp 45-48.
Lokuge, S., and Sedera, D. 2014a. "Deriving Information Systems Innovation Execution Mechanisms," *Australasian Conference on Information Systems (ACIS 2014)*, Auckland, New Zealand: AIS Library.
Lokuge, S., and Sedera, D. 2014b. "Enterprise Systems Lifecycle-Wide Innovation," *Americas Conference on Information Systems (AMCIS 2014)*, Savannah, Georgia: AIS Library.
Lokuge, S., and Sedera, D. 2014c. "Enterprise Systems Lifecycle-Wide Innovation Readiness," *Pacific Asia Conference on Information Systems (PACIS 2014)*, Chengdu, China: AIS Library.
Lokuge, S., Sedera, D., and Grover, V. 2016. "Thinking inside the Box: Five Organizational Strategies Enabled through Information Systems," *Pacific Asia Conference on Information Systems (PACIS 2016)*, Chiyai, Taiwan: AIS.
Lubatkin, M., and O'Neill, H. 1987. "Merger Strategies and Capital Market Risk," *Academy of Management Journal* (30:4), pp 665-684.
Lynn, M.R. 1986. "Determination and Quantification of Content Validity," *Nursing Research* (35:6), pp 382-385.
MacKenzie, S.B., Podsakoff, P.M., and Podsakoff, N.P. 2011. "Construct Measurement and Validation Procedures in Mis and Behavioral Research: Integrating New and Existing Techniques," *MIS Quarterly* (35:2), pp 293-334.
Maduka Nuwangi, S., Sedera, D., C. Srivastava, S., and Murphy, G. 2014. "Intra-Organizational Information Asymmetry in Offshore Isd Outsourcing," *VINE: The journal of information and knowledge management systems* (44:1), pp 94-120.
Mate-Sanchez-Val, M., and Harris, R. 2014. "Differential Empirical Innovation Factors for Spain and the Uk," *Research Policy* (43:2), pp 451-463.
Mathieson, K., Peacock, E., and Chin, W.W. 2001. "Extending the Technology Acceptance Model: The Influence of Perceived User Resources," *ACM SigMIS Database* (32:3), pp 86-112.
McAfee, A. 2006. "Mastering the Three Worlds of Information Technology," *Harvard Business Review* (84:11), November, pp 141-148.
McAfee, A., and Brynjolfsson, E. 2008. "Investing in the IT That Makes a Competitive Difference," *Harvard Business Review* (86:7/8), pp 98-107.
McKenzie, J.F., Wood, M.L., and Kotecki, J.E. 1999. "Establishing Content Validity: Using Qualitative and Quantitative Steps," *American Journal of Health Behaviour* (23:4), pp 311-318.
Melville, N., Kraemer, K., and Gurbaxani, V. 2004. "Information Technology and Organizational Performance: An Integrative Model of IT Business Value," *MIS Quarterly* (28:2), pp 283-322.
Meyer, J.P., and Herscovitch, L. 2001. "Commitment in the Workplace: Toward a General Model," *Human Resource Management Review* (11:3), pp 299-326.
Minichiello, V., Aroni, R., Timewell, E., and Alexander, L. 1995. *In-Depth Interviewing* Melbourne: Longman Cheshire

Mirchandani, D.A., and Motwani, J. 2001. "Understanding Small Business Electronic Commerce Adoption: An Empirical Analysis," *The Journal of Computer Information Systems* (41:3), p 70.
Moore, G.C., and Benbasat, I. 1991. "Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation," *Information Systems Research* (2:3), pp 192-222.
Mueller, V., Rosenbusch, N., and Bausch, A. 2013. "Success Patterns of Exploratory and Exploitative Innovation: A Meta-Analysis of the Influence of Institutional Factors," *Journal of Management* (39:6), pp 1606-1636.
Nambisan, S. 2013. "Information Technology and Product/Service Innovation: A Brief Assessment and Some Suggestions for Future Research," *Journal of the Association for Information Systems* (14:4), pp 215-226.
Nuwangi, S.M., Sedera, D., and Murphy, G. 2012. "Multi-Level Knowledge Transfer in Software Development Outsourcing Projects: The Agency Theory View," in: *International Conference on Information Systems*. Orlando, Florida.
Nwankpa, J.K., Roumani, Y., Brandyberry, A., Guffrida, A., Hu, M., and Shanker, M. 2013. "Understanding the Link between Initial ERP System and ERP-Enabled Adoption," *Information Resources Management Journal* (26:4), pp 18-39.
Nylén, D., and Holmström, J. 2015. "Digital Innovation Strategy: A Framework for Diagnosing and Improving Digital Product and Service Innovation," *Business Horizons* (58:1), pp 57-67.
Oke, A., Walumbwa, F.O., and Myers, A. 2012. "Innovation Strategy, Human Resource Policy, and Firms' Revenue Growth: The Roles of Environmental Uncertainty and Innovation Performance*," *Decision Sciences* (43:2), pp 273-302.
Parasuraman, A. 2000. "Technology Readiness Index (Tri) a Multiple-Item Scale to Measure Readiness to Embrace New Technologies," *Journal of Service Research* (2:4), pp 307-320.
Patanakul, P., Chen, J., and Lynn, G.S. 2012. "Autonomous Teams and New Product Development," *Journal of Product Innovation Management* (29:5), pp 734-750.
Patton, M.Q. 2002. *Qualitative Research & Evaluation Methods*. Thousand Oaks, CA: Sage Publications.
Pennings, J.M., and Buitendam, A. 1987. *New Technology as Organizational Innovation: The Development and Diffusion of Microelectronics*. Ballinger Pub Co.
Petter, S., Straub, D., and Rai, A. 2007. "Specifying Formative Constructs in Information Systems Research," *MIS Quarterly* (31:4), pp 623-656.
Popadiuk, S., and Choo, C.W. 2006. "Innovation and Knowledge Creation: How Are These Concepts Related?," *International Journal of Information Management* (26:4), pp 302-312.
Ringle, C.M., Wende, S., and Will, A. 2005. "Smartpls." 2.0 (beta). from http://www.smartpls.de
Robeson, D., and O'Connor, G.C. 2013. "Boards of Directors, Innovation, and Performance: An Exploration at Multiple Levels," *Journal of Product Innovation Management* (30:4), pp 608-625.
Rogers, E.M. 1995. *Diffusion of Innovations*, (4th ed ed.). New York: Free Press.
Ryan, R.M., and Deci, E.L. 2000. "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," *American Psychologist* (55:1), p 68.
SAP. 2015. "Explore SAP Solution." Retrieved Feb 03, 2015, from http://go.sap.com/solution.html
Sauer, C., and Yetton, P.W. 1997. *Steps to the Future: Fresh Thinking on the Management of IT-Based Organisational Transformation*. San Francisco: Jossey-Bass Publishers.
Sears, G.J., and Baba, V.V. 2011. "Toward a Multistage, Multilevel Theory of Innovation," *Canadian Journal of Administrative Sciences* (28:4), pp 357-372.
Sedera, D., and Dey, S. 2013. "User Expertise in Contemporary Information Systems: Conceptualization, Measurement and Application," *Information & Management* (50:8), pp 621–637
Sedera, D., Lokuge, S., Grover, V., Sarker, S., and Sarker, S. 2016. "Innovating with Enterprise Systems and Digital Platforms: A Contingent Resource-Based Theory View," *Information & Management* (53:3), pp 366–379.
Shane, S., Venkataraman, S., and MacMillan, I. 1995. "Cultural Differences in Innovation Championing Strategies," *Journal of Management* (21:5), pp 931-952.
Sharma, R., Yetton, P., and Crawford, J. 2009. "Estimating the Effect of Common Method Variance: The Method-Method Pair Technique with an Illustration from Tam Research," *MIS Quarterly* (33:3).
Snyder-Halpern, R. 2001. "Indicators of Organizational Readiness for Clinical Information Technology/Systems Innovation: A Delphi Study," *International Journal of Medical Informatics* (63:3), pp 179-204.
Srivardhana, T., and Pawlowski, S.D. 2007. "ERP Systems as an Enabler of Sustained Business Process Innovation: A Knowledge-Based View," *The Journal of Strategic Information Systems* (16:1), pp 51-69.
Stewart, T.A. 1994. "Rate Your Readiness to Change," *Fortune* (129:3), pp 106-110.
Swanson, E.B., and Ramiller, N.C. 2004. "Innovating Mindfully with Information Technology," *MIS Quarterly* (28:4), pp 553-583.

Teo, T.S., and Bhattacherjee, A. 2014. "Knowledge Transfer and Utilization in IT Outsourcing Partnerships: A Preliminary Model of Antecedents and Outcomes," *Information & Management* (51:2), pp 177-186.
Tilson, D., Lyytinen, K., and Sørensen, C. 2010. "Research Commentary-Digital Infrastructures: The Missing IS Research Agenda," *Information Systems Research* (21:4), pp 748-759.
Tilson, D., Sørensen, C., and Lyytinen, K. 2012. "Change and Control Paradoxes in Mobile Infrastructure Innovation: The Android and Ios Mobile Operating Systems Cases," *System Science (HICSS), 2012 45th Hawaii International Conference on*: IEEE, pp. 1324-1333.
Tractinsky, N., and Jarvenpaa, S.L. 1995. "Information Systems Design Decisions in a Global Versus Domestic Context," *MIS Quarterly* (19:4), p 28.
Troilo, G., De Luca, L.M., and Atuahene-Gima, K. 2014. "More Innovation with Less? A Strategic Contingency View of Slack Resources, Information Search, and Radical Innovation," *Journal of Product Innovation Management* (31:2), pp 259-277.
Unilever. 2015. "Customer Journey: Unilever." Retrieved Feb 2015, from http://www.sap.com/customer-testimonials/index.html
Utterback, J.M. 1971. "The Process of Technological Innovation within the Firm," *The Academy of Management Journal* (14:1), pp 75-88.
Van de Ven, A.H. 1986. "Central Problems in the Management of Innovation," *Management Science* (32:5), pp 590-607.
Vodanovich, S., Sundaram, D., and Myers, M. 2010. "Digital Natives and Ubiquitous Information Systems," *Information Systems Research* (21:4), pp 711-723.
Walther, S., Sedera, D., Sarker, S., and Eymann, T. 2013. "Evaluating Operational Cloud Enterprise System Success: An Organizational Perspective," *European Conference on Information Systems (ECIS 2013)*, Utrecht, p. 16.
Wang, W., and Sedera, D. 2011. "A Framework for Understanding the Benefits of Supply Chain Management Systems," *Pacific Asia Conference on Information Systems (PACIS)*, Brisbane, Australia: AIS, p. 211.
Weill, P., and Vitale, M. 2002. "What IT Infrastructure Capabilities Are Needed to Implement E-Business Models?," *MIS Quarterly Executive* (1:1), pp 17-35.
Weiner, B.J. 2009. "A Theory of Organizational Readiness for Change," *Implementation Science* (4:1), pp 67-76.
Wold, H. 1989. *Introduction to the Second Generation of Multivariate Analysis*. New York: Paragon House: H. Wold (ed.).
Yen, H.R., Wang, W., Wei, C.-P., Hsu, S.H.-Y., and Chiu, H.-C. 2012. "Service Innovation Readiness: Dimensions and Performance Outcome," *Decision Support Systems* (53:4), pp 813-824.
Yoo, Y., Boland Jr, R.J., Lyytinen, K., and Majchrzak, A. 2012. "Organizing for Innovation in the Digitized World," *Organization Science* (23:5), pp 1398-1408.
Yoo, Y., Henfridsson, O., and Lyytinen, K. 2010. "The New Organizing Logic of Digital Innovation: An Agenda for Information Systems Research," *Information Systems Research* (21:4), pp 724-735.
Zack, M. 2003. "Rethinking the Knowledge-Based Organization," *Sloan Management Review* (44:4), pp 67-71.
Zaltman, G., Duncan, R., and Holbek, J. 1977. *Innovations and Organizations*. New York: John Wiley & Sons.