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## Editorial

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## 1 Introduction

Many information systems (ISs) researchers have focused their attention on the IT's enabling roles for business processes, IT's impact on organisational outcomes, and IT's contribution in creation of business opportunities (Park et al., 2012; Park and Hong, 2012). However, the potential value of IT is not always apparent and it is unclear how the full potential of IT system is actually realised through organisational capabilities.

Today, the emerging electronic economy is bringing new forms of IT-enabled intermediation, virtual supply chains, rapidly changing electronic commerce technologies, increasing knowledge intensity, and unprecedented sensitivity for time-to-market by customers (El Sawy et al., 1999; Park and Hong, 2012). The enterprises that want to survive in such a demanding environment will need to innovate and invent new ways of creating value, and will require adaptive enterprise architectures and agile IT infrastructures. There are lots of academic investigations on how information technology (IT) can create performance gains for firms in a supply chain management (SCM) context. SCM systems championed by network leaders in their supplier networks are now ubiquitous (Subramani, 2004). ISs strategy is of central importance to IS practice and research (Chen et al., 2010). Drawing on the information processing view, resource-based view, and transaction cost theory, a series of researches explicate how buyer performance can result from buyer's use of relation-specific information processing solutions and supplier's relational responses (Wang et al., 2013). Supply chain partners are:

- 1 engaging in interlinked processes that enable rich (broad-ranging, high quality, and privileged) information sharing
- 2 building IT infrastructures that allow them to process information obtained from their partners to create new knowledge (Malhotra et al., 2005; Cha et al., 2008).

In addition, the need for continual value innovation is driving supply chains to evolve from a pure transactional focus to leveraging inter-organisational partnerships for sharing information and, ultimately, market knowledge creation (Malhotra et al., 2001). Firms have been investing over \$5 billion a year in recent years on new IT and software in their manufacturing plants (Banker et al., 2006).

For future SCM, it is important to build absorptive capacity such that organisations can acquire, assimilate, transform, and exploit knowledge to produce dynamic organisational capabilities (Malhotra et al., 2005; Cha et al., 2008). Many traditional organisations have undertaken major initiatives to leverage information technologies such as internet to transform how they coordinate value activities with customers, suppliers, and other business partners with the objective of improving firm performance (Barua et al., 2004). Recently, researchers have begun investigating emerging,

technology-enabled innovation that involve the use of technology and intelligent software agents in enterprise supply chains (Nissen and Sengupta, 2006; Vijayasarathy, 2010). In the domain of SCM, various software packages have been developed for planning business strategies (Kobayashi et al., 2003). Finally, the importance of IT has been increasing in both developing and developed countries over the past three decades (Lee et al., 2011). Customers are demanding more value customised to their exact needs so that information-based technologies need to satisfy details of customer needs in streams of supply chain (El Sawy et al., 1999; Park and Hong, 2012).

## **2 Recent trends on SCM and IT strategy**

When we review recent research trends about relationships between SCM and IT strategy, we can show four trends as follows. First, there is a trend of analysis of relationships between sustainable collaboration between supply chain partners, supply chain relationships and trust (SCR/SCT) (Kumar and van Dissel, 1996; Klein and Rai, 2009; Rai et al., 2012; Wang et al., 2013). IS research has studied how buyers and suppliers can benefit from improved information visibility in supply chains characterised by uncertainty (Wang et al., 2013). The results of previous studies help more granularly understand how relation-specific inter-firm information processing solutions can lead to performance through enhanced inter-firm governance capabilities. Klein and Rai (2009) suggest that partnerships for supply chain services engage in cooperative initiatives to generate relational rents and are an alternative to conventional 'arms length' transactional exchanges. Rai et al. (2012) seek to identify the means by which IT helps co-create relational value in the context of inter-firm relationships in the logistics industry as a large and information-intensive industry. These partnerships and relationships need to be motivated to go beyond the sharing of order-related information and to share strategic information which has the potential for both additional rent generation, conflicts and risks of misappropriation (Klein and Rai, 2009; Rai et al., 2012; Wang et al., 2013).

Second, we can see a trend of analysis about IT platform building capability strategy (Rai et al., 2006; Seddon et al., 2010; Vijayasarathy, 2010; Banker et al., 2011; Markus and Loebbecke, 2013). Previous best practice exemplars suggest that the notion of digital platforms plays a critical role in managing supply chain activities and creating partnerships that generate performance gains for firms (Rai et al., 2006). For example, digital platforms for buying and selling agricultural commodities have generated significant interest in the trade literature as a way to link rural communities to the internet (Banker et al., 2011). Examining the use of shared digital platforms, Markus and Loebbecke (2013) also suggest the business community is an underexploited reference in conducting research on digital business strategies (DBS). Software agents combine and integrate capabilities of several IT applications in a novel manner that enables SCM and decision making in modes not supported previously by IT and not reported previously in the ISs literature (Nissen and Sengupta, 2006). By investigating the comparative performance of human and software agents across varying levels of ambiguity in the procurement domain, Nissen and Sengupta (2006) did the experimentation to help elucidate some new boundaries of computer-based decision making quite broadly.

Third, to keep a competitive advantage, we can suggest an importance of knowledge and supply chain integration using IT (Malhotra et al., 2005; Cha et al., 2008; Iyer et al., 2009; Shih et al., 2012). Drawing upon contingency theory 'fit' research in the IT and

SCM literature, Iyer et al. (2009) applied the 'fit' concept to the relationship between B2B e-commerce supply chain integration and performance and demonstrated that the effect of B2B supply chain integration on financial, market, and operational performance decreased as product turbulence and demand unpredictability jointly increased.

Fourth, considering emerging markets like BRICs, we must understand an importance of customer reviews (El Sawy et al., 1999; Mudambi and Schuff, 2010; Lee et al., 2011). Although the importance of IT has been increasing in both developing and developed countries over the past three decades, almost all findings on IT productivity have been based on data collected in developed countries and research on productivity in developing countries has been sparse (Lee et al., 2011). In particular, it is very crucial for emerging markets which companies hardly know. Customers are demanding more value customised to their exact needs, at less cost, and as quickly as possible (El Sawy et al., 1999). Customer reviews are increasingly available online for a wide range of products and services (Mudambi and Schuff, 2010). They supplement other information provided by electronic storefronts such as product descriptions, reviews from experts, and personalised advice generated by automated recommendation systems.

Based on these recent trends indicating the importance of application of IT to supply chains, we planned special issues about building IS capabilities in the age of complexity. As recent research trends say, our special issues are comprised of three themes as described below.

### *Theme 1 SCM practices and IT utilisation (three papers)*

The first set of three papers provides analyses concerning relationships between SCM practices and IT utilisation.

The opening paper, 'Supply chain management practices – IT utilisation alignment: impact on supply chain performance and firm performance' by Qrunfleh and Tarafdar, examines alignment between SCM practices and IT utilisation and its impact on supply chain performance and firm performance. Applying the information processing view of firms to the supply chain and drawing from the notion of ISs capabilities, they define three SCM practices – IT utilisation alignment capabilities, as the fit between three specific types of SCM practices and three corresponding kinds of IT utilisation. Based on hypotheses suggesting positive associations between these capabilities, and supply chain performance and firm performance, they show that two capabilities namely inter-firm SCM practices-IT use external alignment and information SCM practices-IT use infrastructural alignment are positively associated with supply chain performance and firm performance.

The second paper, 'Environmental social governance management: a theoretical perspective for the role of disclosure in the supply chain' by Whitelock, examines three extra-financial factors – environmental, social, and governance concerns – that have been requested by stakeholders of the largest US stock-listed companies to be adopted by their CEOs, incorporated into their operations, and reported on, in their annual reports. These factors are viewed from the perspective of the focal firm, and in the context of SCM. It seeks to use these factors to help explain the variation between firms' corporate value and firms' market value. This research also proposes a framework to examine the relationships among the constructs – environmental social governance (ESG) collaboration, ESG activity/practice, and business performance. It makes an argument for

collaboration with supply chain members, regarding environmental, social, and governance issues, and seeks to propose an ESG collaboration – business performance link. In the process, in particular, this paper builds a case for ESG in general, and ESG collaboration in the supply chain. It does so by describing a process of four steps:

- 1 the case for ESG
- 2 the case for ESG collaboration
- 3 the case for ESG collaboration in the supply chain
- 4 ESG collaboration in the supply chain – business performance link.

The third paper ‘Quantitative analysis of the effects of dual integration on firm’s competitiveness’ by Akiike and Park suggests integration attained between IT system and human factors as an important method. Integration attained by IT system means companies introduce IT systems for integrating supply chain processes between suppliers and customers. On the other hand, integration attained by human factors means companies construct continuous and cooperated relationships by physical integration and introduction to just in time system between suppliers and customers like Toyota production system and Toyota supplier system. In this paper, they conducted an empirical analysis to explore the effects of two types of integration and dual integration on firm’s competitiveness by using 5th IMSS data. They show that each of the two types of integration has effects on firm’s competitiveness. Simultaneous integration of both also has effects on it. For integration of supply chains, both sides of IT and human factors are considered simultaneously.

### *Theme 2 IS practices and utilisation in Asia and the Pacific Rim (three papers)*

The next three papers examine IS practices and utilisation in Asia and the Pacific Rim contexts. These three papers cover topics on online e-government service delivery mechanisms, CRM, PLM issues in Asia and the Pacific Rim, as described below.

The fourth paper, ‘Success factors of online services in Kathmandu, Nepal: an empirical analysis’ by Manandhar et al., investigates the factors related to the successful implementation of online e-government service delivery mechanism in Kathmandu, Nepal. The approach taken was based on DeLone and McLean IS success model, with data gathered through a questionnaire. System quality has significant relations with intention to use and net benefits that online services would bring about, while the constructs in information quality and service quality were also significant, but they were identified as implementation barriers. The conclusion of this study is that the successful implementation of online services depends on the system quality which functions as an integral part of all quality measures in the Nepalese perspective.

The fifth paper, ‘Interaction of marketing, R&D and critical innovation: case study of Korean and Japanese firms’ by Shin and Roh, discusses how interactive mechanisms of marketing and R&D along the product development cycle result in innovative outcomes. In particular, they analyse customer relationship management (CRM) as an interaction mechanism of marketing and R&D. This paper provides a research model which defines such interaction mechanisms with the help of a case study of Korean and Japanese firms that allows for an examination of innovation outcomes.

The sixth paper, 'A professional training programme design for global manufacturing strategy: investigations and action project group activities through industry-university cooperation' by Tamaki et al., discusses three research issues. The first issue is an instructional design and practice of a new course named 'global product strategy' for undergraduates at the Department of Business in Aoyama Gakuin University in Japan. Secondly, an investigation of the 'PLM Expert Educational Program' at the Korea Advanced Institute of Science and Technology (KAIST) was made so as to re-design the educational program for adult education in Japan. Finally, several policies to enhance the curriculum design of a 'global PLM strategy' education programme through university-industry research collaboration and joint education are described. Furthermore, an action group project was implemented from October, 2012 to September, 2013 to prepare for research and development of a 'global production producer' (GMP) training program in the future.

### *Theme 3 Studies on IT strategic issues for emerging markets (three papers)*

The next three articles deal with IT strategies and roles issues related to emerging markets as described below.

The seventh paper 'International entrepreneurship and information technology strategies of the multinational enterprises from emerging markets' by Yang and Sugie, provides a theoretical framework for international entrepreneurship and internationalisation strategies of multinational enterprises from emerging markets (EM MNEs) that strive to acquire competitive advantages through dynamic international expansion. EM MNEs share certain features of internationalisation strategies in common: springboard, dynamic internalisation, technological catch-up, and knowledge exploration. Furthermore, innovation for creating new products and production methods led by contemporary EM MNEs is the outcome of their pursuit of externally oriented and knowledge-seeking, dynamic opportunity-seeking, and agile mimic international entrepreneurship.

The eighth paper 'The role of IT for global firms in emerging markets' by Park and Hong, explores IT strategy for global firms in emerging markets such as BRICS. In the contexts of slowing down of advanced economies and rapid growth of emerging economies, it is crucial for firms to deploy their product development capabilities that fit to the global market reality. In particular, increasing complexity in product development requires expanding roles of IT system that supports the overall product development processes. This study presents an architecture analysis framework and IT system methods based on core competence strategy. Based on this framework, they examine the concepts and implementation details of linkage competence that integrates customer competence and technology competence using case examples, and suggest that architecture analysis and portfolio analysis methods are useful for product development for emerging markets.

The ninth and final paper 'Stakeholders' pressure and managerial responses: lessons from hybrid car development and commercialisation' by Roh et al., proposes the idea that the management's proactive responses guide firms to achieve sustainable competitive advantage in the supply chain. These proactive responses overcome 'long-term planning traps' by strategic intent, short- and long-term concurrency, and strategic flexibility. They present a research model that synthesises three theoretical lenses: institutional theory, stakeholder theory, and strategic choice theory. Examining seven automotive companies

that competed for the development and commercialisation of the hybrid car, they suggest that while stakeholders' pressures play a significant role, managerial vision and perspective allow firms to progress toward innovative product development even under unfavourable market conditions and competing stakeholder pressures. In this strategic process, integrated ISs enable firms to scan the implicit customer demands and facilitate the translations of the market information to product development.

### 3 Concluding remarks

A number of anonymous reviewers participated in the rigorous review processes for the selection of papers for this special issue. Their dedication for this special issue has made this special issue possible.

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Five guest editors – YoungWon Park (University of Tokyo, Japan), Paul Hong (University of Toledo, USA), Monideepa Tarafdar (Lancaster University, UK), Jeong-Dong Lee (Seoul National University, Korea) and Geon-Cheol Shin (Kyung Hee University, Korea) – worked well together on this special issue.

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