Leveraging Event-driven IT Architecture Capability for Competitive Advantage in Healthcare Industry: a Mediated Model

Research-in-Progress

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Abstract

The adoption of health information technology (HIT) reveals salient effects on improving the existing operational capabilities of healthcare organizations. One of the important roles of IT is to facilitate the formation of organizational capabilities and, in turn, sustainable competitive advantage in healthcare organizations. In particular, paying greater attention to suitability and capability of IT architecture within firms can directly address current and future business needs. Event-driven architecture (EDA) is one of the emerging IT that has been introduced for real-time enterprises. The software vendors increasingly design health information systems that follow EDA’s design principles. Given such conditions, this study intends to contribute to the existing IS research on proposing (a) EDA capability and (b) specific EDA capabilities: sensing, responding, interoperability and flexibility capability and (c) a conceptual research model presenting the relationships among EDA capabilities, dynamic capability and competitive advantage.

Keywords:  Event-driven Architecture (EDA) Capability; Dynamic Capability; Competitive Advantage; Healthcare Information technology (HIT)
Introduction

Information technology (IT) innovations in the healthcare industry tend to trail behind other industries due to patient privacy concerns and resistance to health information technology (HIT) (Romanow et al., 2012). However, the adoption of HIT reveals salient effects on improving the existing operational capabilities of healthcare service, such as, reducing the care delivery costs, preventing some medical errors and increasing the clinical outcomes (Agarwal et al., 2010; Bhattacherjee et al., 2007; Bhattacherjee and Hikmet, 2007; Goh et al., 2011; Mantzana et al., 2007). One of the important roles of IT is to facilitate the formation of organizational capabilities and, in turn, sustainable competitive advantage in healthcare organizations (Bradley et al., 2012; Goh et al., 2011; Leung, 2012; Singh et al., 2011). In particular, paying greater attention to suitability and capability of IT architecture within firms can directly address current and future healthcare needs (Hamburg and Collins, 2010; Lucas et al., 2013).

Event-driven architecture (EDA) is one of the emerging IT architectures introduced for real-time enterprises (El Sawy and Pavlou, 2008; Ranadivé, 1999; Taylor et al., 2009). EDA is typically composed of messaging, adapters, message transformation, business flow coordination, event notification and monitoring (Ranadivé, 1999). It relies on the design principles of the publish/subscribe mechanism, the loose coupling function and the asynchronous interaction function (Michelson, 2006; Taylor et al., 2009) to synchronize the analysis of multiple data streams in real time, which is conducive to healthcare providers for integrating the medical data (Taylor et al., 2009). The software vendors increasingly design health information systems such as emerging infectious diseases system (EIDS) for public health, health monitoring systems (HMS) and remote patient monitoring system (RPMS) that follow EDA’s design principles (Mouttham et al., 2009). For example, Chen et al. (2011) propose the loose coupling-enabled emerging infectious diseases system coordinated with traditional central control system that is beneficial not only to help resolve in recognizing clinical ambiguity, but also to transform clinicians’ disease observations into central leadership. They also recognize that the feature of loose couple in developing IS infrastructure may increase hospitals’ profitability and capabilities.

Dynamic capabilities have been linked to sustaining competitive advantage and enhancing organizational performance in the field of strategic management (Sher and Lee, 2004; Teece et al., 1997; Zahra, 1999). Recent studies have begun to adopt the dynamic capabilities perspective to examine how IT can help organizations to sustain the competitive advantage (El Sawy and Pavlou, 2008; Kim et al., 2011; Pavlou and El Sawy, 2006). Healthcare organizations can increase their dynamic capabilities by implementing appropriate HIT. Through our literature review, only a handful of studies have explored the impact of IT-enabled dynamic capability within a healthcare organization (Leung, 2012; Reeves and Ford, 2004; Ridder et al., 2007; Singh et al., 2011). For example, Singh et al. (2011) states that IT-enabled dynamic capabilities enhance the ability to sense the healthcare resources and respond to patient needs in a healthcare group via IT usage. However, we do not find studies that clearly offer either conceptual or empirical examination of the relationships among specific IT architecture capability (i.e., EDA capabilities), dynamic capabilities, and competitive advantage in the healthcare industry.

Against this backdrop, we attempt to fill this research gap in IS literature by answering the following research questions:

1. What are the relationships among EDA capabilities, dynamic capability, and competitive advantage in healthcare organizations?
2. What is the nature of the relationship (e.g. direct or mediated) between EDA capabilities and competitive advantage in healthcare organizations?

Theoretical Foundation

To deduce the relationships among EDA capabilities, dynamic capability and competitive advantage, we conducted a literature search on the Social Science Citation Index (SSCI) database seeking English language articles published from January 1, 2004 to May 1, 2013. The search terms used were “Information technology capability” AND “Dynamic capability” AND “Competitive advantage.” The search engine returned 168 results. Each of the articles was reviewed from this pool, but only articles met the
following criteria were considered and included in the literature review: (1) either qualitative or quantitative study and was published in leading IS Journals, (2) the primary focus of the study is to illuminate the IT architecture and its capabilities in the IS field and (3) the study identifies the effectiveness of IT architecture capabilities on dynamic capabilities and contributes to a firm’s competitive advantage.

Based on the analysis of our literature review, we found three research gaps: (1) although many of the studies indicate that IT architecture capability supports the dynamic capability, they do not mention the effects of specific IT architecture (Orlikowski and Iacono, 2001); (2) the research on IT-dynamic capability linkage is mainly conceptual or case study oriented; (3) most studies propose IT architecture capability as positive, while few studies suggest a mixed effect of IT architecture capability on dynamic capability. Therefore, our major research objective is to unravel whether EDA capabilities in a firm are conducive to acquire the dynamic capability and competitive advantage. The conceptualization of the expected relationships among the elements of our research model is shown in Figure 1. In the rest of section, we examine each of these elements in more detail in the following sections.

**Event-Driven Architecture**

An EDA is an enterprise architecture approach that designs applications and systems to detect asynchronous events or messages and to react to them intelligently by publish/subscribe mechanism, and to deal with operations within interoperable platforms by the loose coupling function (Taylor et al., 2009; Yuan and Lu, 2009). EDA is capable to disseminate information immediately to all interested targets by integrating ordinary or notable events happening inside or outside business and further evaluate the event and optionally take action by human or automatic operation (Michelson, 2006; Taylor et al., 2009). Therefore, we define EDA capability as the ability to propagate the real-time events to all interested targets automatically and to support them to evaluate and then make decisions optionally. The formation of EDA capabilities rely on the design principles of the publish/subscribe mechanism, the loose coupling function and the asynchronous interaction function within the specific event processing mechanism (See Table 1). We describe the design principles of EDA and event processing mechanism as follows.

**Publish/subscribe mechanism** is the method of delivering messages used to disseminate the event data in an event-driven IT architecture that requires the use of publisher (event generator that guarantees sensing) and subscriber (event receiver that guarantees responding). The publishers trigger the events and store the event data in a repository while the subscribers register to their interest in certain types of events and determine what action to be taken in response to the events (Taylor et al., 2009).
Asynchronous interaction is the messaging mechanism requiring a message mediator or adapter that deals with the messages asynchronously within an event channel and process the various types of data from different publishers and subscriber without waiting for a response (Taylor et al., 2009). This interaction enables EDA to sense the outliers and report the real-time or near real-time information in an asynchronous manner (Houghton et al. 2004; Michelson, 2006).

The loose coupling, a core enabling characteristic of EDA, is a method to interconnecting the components in a system (Kaye, 2003). More specifically, loose coupling of interfaces employs a flexible file format such as extensible markup language (XML) that enables IT components to transmit data or messages and communicate easily. Loose coupling can be measured by two fundamentals: preconception and maintainability (Taylor et al., 2009). Preconception refers to the extent to which the amount of knowledge from one piece of software has about another piece of software. Maintainability refers to the level of rework required by all participants when one integrated component changes (Taylor et al., 2009, pp. 69). The ideal combination for loose coupling is lesser preconception with greater maintainability. Building an EDA with loose coupling will lead to flexibility, ease of configuration and reconfiguration, i.e., a high degree of synchronization in the systems.

Event processing mechanism in EDA. Event publishers monitor a variety of event sources, and event subscribers receive specific event data from publishers (Eugster et al, 2003; Luckham, 2002). The event processing flow includes evaluating events by following event processing rules, capturing the historical events for comparison, invoking a service, initiating a business process and notifying humans or systems (Michelson, 2006). EDA provides a complete set of services for moving, managing and integrating information to trigger productive responses within organizations (Ranadivé, 1999).

Each EDA capability is identified by the design principles of EDA. We have summarized previous researches supporting the aforementioned principles and related dimensions in Table 1.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Design principle</th>
<th>Supporting research</th>
</tr>
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<tbody>
<tr>
<td>Sensing Capability</td>
<td>Asynchronous interaction function; publish/subscribe mechanism</td>
<td>El Sawy and Pavlou (2008); Houghton et al. (2004); Taylor et al. (2009)</td>
</tr>
<tr>
<td>Responding Capability</td>
<td>Asynchronous interaction function; publish/subscribe mechanism</td>
<td>El Sawy and Pavlou (2008); Houghton et al. (2004); Taylor et al. (2009)</td>
</tr>
<tr>
<td>Interoperability Capability</td>
<td>Asynchronous interaction function; loose coupling function</td>
<td>Spooner and Classen, (2009); Taylor et al. (2009); Walker and Denna (1997)</td>
</tr>
<tr>
<td>Flexibility Capability</td>
<td>Asynchronous interaction function; loose coupling function</td>
<td>Byrd and Turner (2000); Duncan (1995); Ranadivé (1999); Taylor et al. (2009)</td>
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Dynamic Capability

Dynamic capability is a firm’s organizational ability to integrate, reconfigure, gain and renew resources to match rapidly-changing market environments (Eisenhardt and Martin, 2000; Helfat and Peteraf, 2003; Teece et al., 1997; Winter, 2003) and to enhance a firm’s agility (Roberts and Grover, 2012). Dynamic capability is conducive not only to reconfiguring a firm’s resources and routines (Zahra et al., 2006), but also to improving effectiveness for operating routines (Zollo and Winter, 2002). Dynamic capabilities lead inherent operational capabilities into new fields by reconfiguring resources in changing business circumstances. Barreto (2010) and Teece (2007) propose that dynamic capability should be considered as the ability to sense and shape opportunities and threats, to seize market opportunities and to maintain competitiveness.
Up to this point, the dynamic capability research in strategic management has two major themes: to explain the characteristics and specific role of dynamic capability (e.g., Barreto, 2010; Eisenhardt and Martin, 2000; Pavlou and El Sawy, 2011, Winter, 2003); and to explore the organizational antecedents of dynamic capability (e.g., Benner and Tushman, 2003; Danneels, 2008; Karim, 2006). IS researchers posit that IT architecture capability such as EDA as one of dynamic capability antecedents (El Sawy and Pavlou, 2008). We discuss the relationship between EDA capability and dynamic capability by assessing each EDA dimension and dynamic capability in the next section.

**EDA Capability Dimensions and Dynamic Capability**

In the context of healthcare, EDA capability reflects the extent to which a health service provider is effectively managing IT resources to enhance its strategies and processes. Healthcare organizations with superior EDA capability can be expected to enjoy more benefits due to the increased dynamic capability. Based on our literature review, we conceptualize EDA-specific capability as IT-related constructs formed by four dimensions: sensing capability, responding capability, interoperability capability, and flexibility capability.

**Sensing Capability**

*Sensing capability* refers to the ability of event-driven IT architecture to recognize event-triggering information and to provide managerial visibility into the business processes in real time (El Sawy and Pavlou, 2008; Houghton et al., 2004). Real-time information tracking and gathering is a significant requirement for current enterprise systems, from handling unpredictable accidents as early as possible to reducing unnecessary costs (Schreyögg and Kliesch-Eberl, 2007; Weick and Sutcliffe, 2001). The real-time analysis also features the event-driven IT architecture that provides early warnings by monitoring broadly scattered activities, detecting potentially relevant events, analyzing multiple data streams, and integrating real-time information across the entire organization. For example, by creating a health information system with a publish/subscribe mechanism, healthcare providers can detect abuse of prescriptions, track treatment protocols or prescribing patterns of specific doctors in hospitals against their increasing clinical costs (Taylor et al., 2009). These health-related specific event notifications or real-time warnings are generated from physiological sensors or personnel health monitoring sensors that allow on-duty medical staff to carry out appropriate medical care for meeting patient’s needs rapidly. In addition, EDA provides real-time monitoring along key performance indicators (KPIs) toward improvement of enterprise performance across horizontal groups and vertical business units (Houghton et al., 2004). Capturing KPIs could help to improve operational processes or eradicate losses and acquire new knowledge by analyzing previous daily errors.

EDA-based software with automated alerting can detect changes from any enterprise-wide operation process and provide managerial visibility into the critical business processes that help managers make decisions efficiently and respond to changing environments (Houghton et al., 2004). For example, a case of a German hospital establishes the diagnosis-related group-based system, which is responsible for collecting and integrating their clinical cording from the patient treatment process, providing the monthly reports to physicians and nurses and controlling the performance of clinical departments (Ridder et al., 2007). A healthcare organization with superior EDA sensing capability should be able to constantly obtain varying real-time information, revamp the defective operational procedures, provide accurate managerial visibility, and thus, develop greater dynamic capabilities. We thus propose that:

**Proposition 1:** Healthcare organizations with higher degree of EDA sensing capability will be more likely to have higher degree of dynamic capability.

**Responding Capability**

The second capability dimension of EDA – responding capability – emphasizes the ability of the IT architecture to support the manager’s decisions and actions at each organizational level. An EDA yields sharable knowledge such as various reporting, executive summaries, drill-down queries, statistics
analyses, and time series comparisons (Houghton et al., 2004). This knowledge enables an organization to increase the event awareness, to respond to the business threats, and ultimately to develop a clear sense of business strategy. The faster the managers are able to obtain accurate and timely information, the more effective their responses and decisions will be and the greater the benefit to all organizational levels. For example, home healthcare providers develop a remote patient monitoring system that empowers clinical managers and on-duty nurses to make autonomous decisions correlating to care delivery based on the triage protocols setting (Singh et al., 2011). Such a healthcare information system would continue to sense and respond to perceived patient needs that facilitate incremental implementation of HIT and improve patient care and productivity.

As the real-time or near real-time information is extracted from the daily operating processes of the enterprise systems, this information will be recorded and retained in the history database so that the organizational member can track outcomes and learn from them (Houghton et al., 2004). Learning from errors (e.g., unexpected events, defective operations or system anomalies) as a routine when acquiring, assimilating, transforming and exploiting knowledge, the manager may not only reconfigure existing operational processes, but may also organize new knowledge into groups. Therefore, a health organization with superior EDA responding capability should be able to continually provide helpful reports to allow managers to make appropriate decisions on how to improve existing solutions effectively, take proactive measures, and thus, to develop better dynamic capabilities:

Proposition 2: Healthcare organizations with higher degree of EDA responding capability will be more likely to have higher degree of dynamic capability.

Interoperability Capability

The third capability dimension of EDA- interoperability capability – provides a system platform which performs the exchanging and sharing of data on two or more software components (Kuehn et al., 2011; Taylor et al., 2009). The level of interoperability in IT architecture depends mainly on the extent to which applications can communicate (Taylor et al., 2009; Moraes et al., 2013). The overarching purpose of EDA interoperability is the dissemination of real-time information that allows users easier access to a broader array of data sources from disparate subsystems or devices. In contrast, limited communication links severely restricts an EDA’s IT interoperability capability and increases the costs of cross-operation process. The architectural interoperability facilitates the transformation of asynchronous information by using a message mediator, and multi-way event delivery across the organization, thereby increasing the organization’s ability to reduce the rate of redundant procedures (Spooner and Classen, 2009; Walker and Denna, 1997) and to extend the scope of services offered (Taylor et al., 2009).

Studies have shown that medical errors are originated from lack of communication between caregivers and patients (Patterson et al., 2004; Sutcliffe et al., 2004). Effective interoperable systems in a healthcare environment could be an important solution not only in early detection and prevention of adverse events such as medication errors, lack of patient monitoring, and patient deterioration, but also bridging the gap among clinical staffs (AAMI, 2012). There is an increasing emphasis in developing an interoperable healthcare system (e.g., the adoption of telemedicine systems) since it offers great promise to improve care quality and to reduce rising cost and medical errors (Dantu and Mahapatra 2013; Moraes et al., 2013). A body of research holds that high levels of interoperability capability among the health information systems are capable of (1) improving clinical workflow by adjusting inconsistent workflow; (2) capturing more real-time data to support clinical and business decision making among various IT systems; (3) boosting communication within the healthcare system; (4) reducing delays in the healthcare system; and (5) increasing the physician and nursing productivity; (6) exchanging the data among various systems seamlessly (Ackerman et al., 2009; Classen et al., 2005; Ghosh and Ahadome, 2012; Spooner and Classen, 2009). For example, Moraes et al. (2013) propose the openEHR with massaging interoperability among heterogeneous systems via the use of communication standards that facilitate the usefulness of HIT and acceptance by end-users. Therefore, a health organization with superior EDA interoperability capability would enable a healthcare system to communicate and exchange information, and thus, to develop better dynamic capabilities. We then propose accordingly that:
Proposition 3: Healthcare organizations with higher degree of EDA interoperability capability will be more likely to have higher degree of dynamic capability.

**Flexibility Capability**

The fourth proposed EDA dimension – flexibility capability – enables an organization to speed operational changes and promote a high degree of business agility via IT architecture modularity, compatibility and maintainability. IT architecture modularity is the ability to add, modify, and remove any IT components of the architecture with ease (Byrd and Turner, 2000; Duncan, 1995). Similarly, through the function of loose coupling EDA can add or move certain logical operations into distinct event processors or modify the errors of application logic layer by layer (Taylor et al., 2009). Such IT architecture modularity are able to shape the EDA flexibility capability, which promotes existing operations of information systems to be more flexible, mitigates sudden risks in a short time and, thus, enhances the market responsiveness.

IT architecture compatibility is the ability to share any type of information across any technology component (Duncan, 1995; Byrd and Turner, 2000). Likewise, the messaging process of EDA relies on the application of publish and subscribe function. The layer of message transformation between the publisher and subscriber can convert the content and syntax of a message into a consistent format that can be read by others (Ranadivé, 1999). A scenario example was presented by Mouttham (2009) that shows how IT architecture compatibility can be applied in event-driven personal health monitoring system. No matter where the patient has a health emergency (e.g., a heart attack) even if it is within different health administration domains, the configuration of his/her personal health monitoring device will be switched to an appropriate response format automatically by Message Broker and will contact a healthcare provider for coordination. Accordingly, EDA provides transparent access to all interaction patterns, device formats and delivery modes that can be managed to an expected healthcare service quality.

In addition, EDA is capable of providing IT architecture maintainability (changeability) that stems from the design principle of loose coupling. EDA maintainability enables systems to have a high degree of rework ability while one integrated component changes, related components or subsystems are not affected (Taylor et al., 2009). The greater the maintainability between components or systems, the easier it is to make components change without hard-cording procedure. EDA with maintainability can enable a firm to accelerate market responding ability and to enhance the ability of accomplishing reconfiguration ahead of competition in a dynamic environment. Therefore, a health organization with superior EDA flexibility capability would be able to facilitate quick reconfiguring of business process, to increase the market responsiveness and, thus, to foster better dynamic capabilities. We then propose that:

**Proposition 4**: Healthcare organizations with higher degree of EDA flexibility capability will be more likely to have higher degree of dynamic capability.

**Competitive Advantage in Healthcare**

The concept of competitive advantage is derived from the logic of generic competitive strategies (e.g., low-cost and differentiation strategies) and the resource-based view (RBV), as proposed by Porter (1985) and Barney (1991), respectively. Porter (1985) states that the competitive advantage stems from the values with which a firm is able to keep the cost of products or services consistently lower than their competitors and create product or service differences that competitors are unable to imitate. Barney (1991) suggests that, when a firm becomes capable of implementing a value-creating strategy and simultaneously preventing current competitors from duplicating the benefits of this strategy, a competitive advantage should be realized. Most of the definitions and measurements for competitive advantage in the strategic management or IS literature have concentrated on the context of manufacturing industry. The competitive advantage in the healthcare industry is distinct from other manufacturing or service industries due to the unique industry structure and the pattern of service delivery (Douglas and Ryman, 2003). Since this study attempts to examine how IT capabilities affect a healthcare organization’s competitive advantage from the perspective of dynamic capabilities, we should have a less ambiguous definition for competitive advantage in healthcare settings. Therefore, we employ the views of Douglas
and Ryman (2003) and Parvinen et al. (2010) to define competitive advantage as the effective implementation of acquiring and deploying of a set of valuable and distinctive competencies and resources that are embedded in healthcare services and of establishing an advantageous competitive position in the healthcare marketplace.

Competitive advantage in healthcare can be achieved by implementing innovativeness, service quality and market reputation (Dagger et al., 2007; Douglas and Ryman, 2003; Greve, 2009). Previous literature has shown that successful healthcare organizations must possess these advantages as well as link them to financial performance. For instance, Greve (2009) suggests that an organization can gain competitive advantage through proximity to innovations as an early adopter in the industry and through working on the diffusion of innovations. Dagger et al. (2007) and Douglas and Ryman (2003) indicate that competitive advantage is created by providing high quality clinical service and establishing a favorable reputation in the healthcare market.

**Dynamic Capability and Competitive Advantage in Healthcare**

Several studies have explored the impacts of dynamic capability on competitive advantage in the healthcare industry. An early study by Reeves and Ford (2004) explores dynamic capability, which plays an important role in environmental fit; however, it is not significantly correlated with financial measures in health organizations. Pablo et al. (2007) show public healthcare organizations how to identify, enable and manage their dynamic capacities successfully. Their research concludes that learning through experimenting is as a key element of dynamic capabilities and that it enables healthcare organizations to pursue organizational improvement and performance. Ridder et al. (2007) addresses how dynamic capabilities (i.e., coordination, learning and reconfiguration) contributed to optimize the diagnosis-related groups (DRGs) process in a German hospital. The researchers substantiate that support from the central medical controlling department, and accumulation of DGRs knowledge from the hospital group meetings led to the effectiveness of coordination and knowledge diffusion. Singh et al. (2011) demonstrates how IT-enabled dynamic capability can help healthcare organizations maintain competitive advantage. Their study states that IT-enabled dynamic capabilities enhance the ability to sense the healthcare resources and respond to patient needs in a healthcare group via IT usage (i.e., remote patient monitoring and electronic medical records). Another study to be presented by Leung (2012) discusses how to use the electronic medical records, telemedicine and social media as HIT tools to improve the dynamic capabilities of healthcare organizations. Based on the above literature, we propose that:

**Proposition 5:** Healthcare organizations with higher degree of dynamic capability will be more likely to have higher level of competitive advantage.

**The Mediating Role of Dynamic Capability**

Proposition 1 proposes a positive relationship between EDA capability and dynamic capability, and proposition 5 foresees a positive relationship between dynamic capability and competitive advantage. Together, these propositions specify a model in which EDA capability indirectly increases competitive advantage by contributing to dynamic capability. This is in line with Devaraj and Kohli (2003), and Wade and Hulland (2004); that is, as IT architecture capabilities may not directly confer or facilitate competitive advantage. Porter’s (1985) value chain model also provides a perspective of a need for a mediating link between IT and competitive advantage. Dynamic capabilities in healthcare organization can be considered as functional competencies and can also be involved in the primary functional activities (e.g., medical service and delivery) and directly enhance service profitability and competitive advantage. In contrast, EDA capabilities in healthcare organizations are viewed as infrastructural resources, indirectly supporting impacts on the primary activity by directly boosting the dynamic capabilities. Drawing on these arguments, we propose an indirect impact of EDA capabilities in healthcare on competitive advantage through the mediating role of dynamic capabilities as:

**Proposition 6:** Dynamic capability mediates the impact of EDA capabilities on competitive advantage in healthcare organizations.
Conclusion and Future Research

We developed an integrated conceptual model proposing that the relationship between EDA capability and competitive advantage is mediated by dynamic capability. Relevant research related to EDA capability and the elements of the research model are reviewed. Based on the review of the literature, relationships between the elements of the research model and six propositions were presented. The major contribution of this paper is the proposed conceptual definition of EDA capability and related to dynamic capability. By theorizing specific IT, i.e., EDA, we answer the call to have IT artifact (Orlikowski and Lacono, 2001) and IT infrastructure capability (Sambamurthy and Zmud, 2000; Guillemette and Paré, 2012) in IS research. In addition, EDA capability is decomposed into four dimensions: sensing, responding, interoperability and flexibility. In doing so, we attempt to offer researchers and practitioners a better understanding of the foundation and impacts of EDA capability.

Despite the importance of realizing specific IT architecture capability for firm prosperity and the scholarly attention devoted to it, EDA capability remains underspecified, and empirical work is still in its infancy. In particular, the EDA capability has not been systematically conceptualized or empirically grounded. Given the lack of research on EDA capability in IS research, we were interested in developing EDA capability scale and test its contribution to dynamic capabilities and competitive advantage in our future research. Therefore, the next step of our research is scale development because there is no available validated scale to examine our proposed model. We plan to follow the scale development process presented by Mackenzi et al. (2011). Constructs in this paper have been conceptually defined. The next steps are (1) development of measures, (2) model specification, (3) scale evaluation and refinement, (4) validation, and then (5) norm development. After we have validated scales, we will conduct an empirical study, i.e., surveying chief information officer (CIO)/IT managers in healthcare industry to test our model.

References


