

## Leveraging e-business process for business value: A layered structure perspective



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### ABSTRACT

Few studies have examined how e-business processes can be leveraged to create business value. By examining the technical, relational and business components of an e-business process, we propose a three-layer structure to identify the source of e-business value in procurement, channel management, and customer service processes. We tested research model using structural equation modeling with data collected from 196 manufacturing firms in China. Our results provide support for the following: (1) platform capability and relational governance integrated to enhance e-business process capabilities (EBPCs) and (2) EBPCs, as process enablers, facilitate digital operations activities across organizational interfaces to improve process performance.

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### 1. Introduction

Over the last two decades, the rapid advancement and wide adoption of information technology (IT) has become the engine for management innovation and IT-enabled organizational transformation [6]. With more and more firms relying on web-based e-business technologies to manage inter-firm business processes [35,52], the impact of IT has crossed firm boundaries to affect inter-firm relationships and business networks. However, many firms fail to realize the benefits of such IT-enabled transformations due to a lack of effective e-business process design capabilities and operations [3]. For example, in the US retail industry, about \$40 billion is lost annually due to inadequate or a lack of digitized inter-firm business process operations [73]. Therefore, it is important to understand the value creation mechanisms of these IT-enabled business processes. This knowledge can help managers make effective decisions in promoting e-business technologies and obtain business value from their investment in these technologies.

From a practical perspective, the e-business process represents a collection of business rules that can be applied, using the Internet, on any recurrent request (input) to coordinate

interactions (processes/additional input) and to deliver unique value (output) to customers [40]. When e-business technologies are applied to supply chain management, a firm executes IT-enabled processes across organizational interfaces together with supply chain partners according to their business rules [2]. E-business processes, therefore, provide great opportunities to establish a business-IS linkage to enhance collaboration between supply chain partners and to promote knowledge management inside and across the firm boundaries, all of which help to achieve supply chain agility and to improve process performance [44,77].

From a theoretical perspective, prior IS research mainly examines the value creation mechanisms of IT from two points of view: business process redesign (BPR) [15,59] and the resource-based view (RBV) [62]. Business process re-design suggests that business value can be generated from IT-enabled process innovations [15,59]. Technological innovations like the Internet, ubiquitous computing, social networks, and business analytics provide unprecedented methods and procedures that offer new processes and/or redesign existing ones [59]. Such new and/or improved business processes help firms achieve competitive performance in a dynamic, information-intensive, and global marketplace. Similarly, RBV indicates that firms obtain value by developing IT-enabled organizational capabilities to acquire, integrate, and reconfigure IT-related resources that are embedded in the firm's structural, cultural and process contexts [6,43,57]. Both views acknowledge that IT resources may not generate business value

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directly, but they can enable intermediate transformational processes and generate higher order organizational capabilities that are sources of firm performance [37,57,66]. Although prior research has identified relationships among IT, business process, and performance [2,13,62,75], few studies have examined how to leverage the e-business process to create business value in the information systems and operations management disciplines.

Due to the proliferation of e-business practices, there has been a recent call to further understand how embedding IT in e-business processes can generate business value [43]. In response to this call, we intend to address the following research questions in this study:

1. What key components define e-business processes between a focal firm and its partners?
2. How does a focal firm leverage e-business process capabilities to create business value?
3. How do e-business process capabilities affect performance at the process level for a focal firm?

Specifically, we use the component analysis of processes suggested by Crowston and Osborn [18] to decompose an e-business process into technical, relational and business components and further develop a three-layer research framework (i.e., *organizational assets layer, process capabilities layer and outcome layer*) to investigate how a focal firm leverages e-business processes to create business value. Drawing on interrelated IS and strategic management literature streams, we focus on platform capability (technical components), relational governance (relational components), and e-business process capabilities (business components) to examine how they work together to improve process performance. We test the research model using data collected from 196 Chinese firms through a large-scale survey.

The rest of the paper is organized as follows. We first define and decompose e-business processes in Section 2, followed by the research model and hypotheses in Section 3. Section 4 describes the operationalization of constructs and the process of data collection, followed by the data analysis in Section 5. Research findings are discussed in Section 6. We then discuss the theoretical contributions and management implications of this study and outline potential directions for future research.

## 2. Theory development

### 2.1. Definition of e-business processes and components analysis

Business processes are usually considered “the business actions that firms engage in to accomplish some business purpose or objective” [62, p. 24]. In this paper, we define e-business processes

as a form of process that represents Internet-enabled information flows across organizational boundaries and links supply chain partners to support digital operation activities including procurement, channel management and customer service.

Business processes depend on a component structure to integrate organizational resources, link supply chain partners, and execute certain business activities to accomplish a firm's business objective [18]. Drawing on the process component literature [17,18], we decompose an e-business process into technical, relational and business components. The technical component enables business process digitalization that links supply chain partners and supports information sharing in a timely manner. The relational component can develop the governance structure to effectively gain and manage its relational assets. With support from the technical and relational components, the business component creates new digital operations activities to achieve business goals. The relationships among these three components are depicted in Fig. 1.

**Technical component:** A digital platform supports a focal firm to link supply chain partners, representing the technical component of an e-business process [18]. When connected through digital platforms, a firm and its partners can achieve real-time transactional information sharing across distributed applications [57] and promote strategic and operational information sharing to establish business routines and operating procedures [14,43].

**Relational component:** Managing and refining relationships with a firm's supply chain partners represents the relational component of the e-business process. A focal firm should strengthen bonds with supply chain partners through effective relational governance [24] to implement e-business processes operation.

**Business component:** Digital operations activities represent the business component of e-business processes that enable a firm to launch various supply chain activities and achieve business goals [66]. Digital operations activities allow a focal firm to use a digital platform that helps the focal firm achieve integration with suppliers and distributors so that it can procure direct or indirect materials, respond rapidly to customer demands, and deliver value-added services over the Internet.

### 2.2. Three-layer structure in e-business value creation

We examine the value creation mechanisms of the e-business process using the component analysis lens, which allows us to track the route of business activities across organizational interfaces and to analyze the intermediate steps that transform process operations [41].

Extending the resource-based view of the firm [4], the IS business value literature suggests that IT-related resources and capabilities often serve as the basis for higher-order organizational

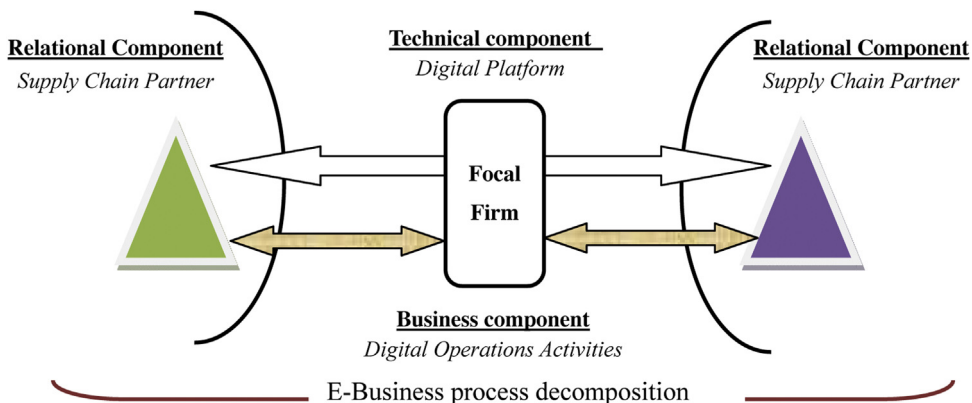


Fig. 1. Three key components of e-business processes.

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