



# Application capability of e-business, e-business success, and organizational performance: Empirical evidence from China

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## ABSTRACT

Previous research efforts suggested that firms' overall e-business success tends to deliver greater organizational performance. However, few researchers examined how a firm leverages e-business investment to gain greater e-business success. Even fewer researchers investigated the different impacts of different levels of e-business success on organizational performance. This paper addresses two questions: (1) what capabilities influence a firm's ability to build e-business success and enjoy greater organizational performance, where firm-level e-business success is measured by *e-business service capability* and *IT-enabled collaborative advantage*; and (2) whether the two ways of measuring e-business success result in different impacts on organizational performance? We propose that a firm's *application capability of e-business* involving systems development and systems usage is positively related to a firm's overall e-business success, thus having a positive impact on organizational performance. We use survey data from 152 Chinese manufacturing firms and their B2B e-business systems participants to test our theoretical hypotheses and proposed model. The findings suggest that both systems development and systems usage have significant and positive impacts on e-business service capability, which in turn leads to greater IT-enabled collaborative advantage. This finding could be translated into the important role of a firm's application capability of e-business on e-business success. It is concluded that the application capability of e-business acts as one of the main mechanisms through which the e-business investment leads to greater e-business success. We also find that IT-enabled collaborative advantage, compared with e-business service capability, has a more significant and greater impact on organizational performance. This study extends prior e-business success research by opening up the 'black box' between a firm's e-business investment and its e-business success, and by distinguishing the relative impacts of e-business service capability versus IT-enabled collaborative advantage on organizational performance. Another contribution of this study is that the effect of context factors (firm size, industry, and system duration) in developing country on our proposed model.

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## 1. Introduction

Internet characterized by open standard, public network, and broad connectivity [1], has made many traditional firms, particularly manufacturing firms, simultaneously increase sales and reduce operational costs by a strategic use of B2B e-business [2]. Moreover, B2B e-business technology can provide an efficient support for sharing information and knowledge and integrating business processes between supply chain partners [3]. Therefore, more and more traditional firms invest a lot of money in

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deploying e-business in internal value chain and external supply chain activities to significantly improve their performance. Extant research has made two important observations in the context of this steady. On the one hand, most research shows that although e-business are increasing in popularity, they are difficult to manage, and that firms generally fail with B2B e-business [1,4,5]. The gap between substantial firm spending on IT, particularly on Internet-related technologies, and the widespread perception about the lack of value from B2B e-business, has triggered a wave of debate over the new “IT value paradox” [1]. On the other hand, recent work also shows that not all firms suffer from low e-business success rates, and that some firms are much more successful at managing e-business or creating IT business value than other firms [6–8]. Firms such as Cisco Systems, Dell, General Electric, Lenovo, or Haier are examples of firms that belong to the former category. Empirical results show that IT investment lead to different e-business effectiveness and that e-business success has positive and significant impact on organizational performance. However, there are two gaps in theoretical and empirical studies: the first is why firms with same or similar IT investment achieve different performances in e-business success; the second is whether different dimensions of e-business success have different effects on organizational performance.

Earlier work on this topic suggested that investing more IT funds helped firms achieve greater overall e-business success. But later work showed that IT investment, as an important and necessary IT resource, could not directly improve e-business success, but it helped firms develop e-business systems capability and have greater e-business success. Latest work further explored the mechanisms through which e-business systems capability improves e-business success and organizational performance, and found that high-order organizational capability in large part depended on e-business systems capability, perhaps played a far more important role in explaining firms' overall e-business success.

This work highlights the importance of an IT resource-based view (RBV) [9–11] and an IT process-oriented perspective [6,12] in explaining e-business success. However, both failed to provide a convincing answer to above-mentioned questions. However, any one-sided focusing on internal or external factors is a biased approach. Combining the RBV and IT process-oriented perspective, this study suggests that high e-business success and improved organizational performance ultimately depend on a firm's *application capability of e-business*, which enables firms to leverage e-business investment and enjoy IT-enabled collaborative advantage with their business partners.

This study investigates the linkages among application capability of e-business, e-business service capability, IT-enabled collaborative advantage, and organizational performance. Key research questions that motivate our work are: What constitutes an application capability of e-business at the firm level? How are these constructs related to e-business success in terms of e-business service capability and IT-enabled collaborative advantage? Do the e-business service capability and the IT-enabled collaborative advantage have different impacts on organizational performance?

To answer these questions, the rest of the paper is organized as follows. We first understood the critical stages influencing firm-level e-business success, and then conceptualized the notion of application capability of e-business and developed a series of hypotheses regarding its relationship with a firm's e-business success. We also discussed the relationship between two dimensions of e-business success, and how they explains overall firm-level organizational performance. We tested the model and hypotheses with. To test the model and hypotheses, in the following sections we provide information about the empirical data from 152 Chinese manufacturing firms and presented their analyses. Following this, we discussed our results and implication and reviewed the limitations and contribution of this work.

## 2. Theory and hypotheses

### 2.1. Application capability of e-business

In light of the growing prevalence of B2B e-business and the generally low success that firms usually achieve with them, a firm can enjoy a significant competitive advantage over its peers or rivals if it can achieve greater overall e-business success. Hence, the academics have become extremely interested in understanding factors that explain how firms have greater e-business success. Insights which address this question have been provided by research on information technology capability or e-business competence over the last decade. Employing the resource-based view, Bharadwaj [13] extended the traditional notion of organizational capabilities to a firm's IT function, proposed and defined the concept of IT capability which suggested the importance of deploying IT-based resources and other complementary resources. Bharadwaj [13] considered IT capability to be an organizational capability, however, Ravichandran and Lertwongsatien [14] defined IT capability as functional capabilities in the core IT functional areas such as IS planning, systems development, IS support and operations. Eikebrokk and Olsen [15] addressed IT capability in e-business settings, their “e-business competency” is important to achieve e-business success. While a variety of IT capabilities have been identified to be critical to acquire high quality IT assets, Zhu [11] limited their focus of e-commerce capability to e-commerce functions, such as information, transaction, customization, and backend integration. Barua et al. [16] gave more focus to IT impacts. They conceptualized IT capability as a firm's capability to address specific problems resulting from lack of information access, information asymmetry, and uncertainty. The alternative perspectives afforded by these sources have, not surprisingly, yielded different understanding of the notion of IT capability. Furthermore, most categories and measures of IT capability had an intraorganizational focus [15]. Drawing from IT process- and variation-perspective, we distinguish two types of capabilities related to IT, namely *application capability of e-business* and *e-business service capability*, and identify interorganizational capability factors. The e-business service capability is a reflection of IT impact and similar to Zhu's [11] “e-commerce capability” and Barua et al.'s [16] “online information capability”. Unlikely, the application capability of e-business is developed and used to generate IT impact, and to some extent similar to Eikebrokk and Olsen's [15] “e-business competency” in

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