Exploring IT Adoption Process in Shanghai Firms: An Empirical Study

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ABSTRACT

The study develops an integrated model to examine factors, particularly government factors, which influence IT adoption in Chinese firms. By analyzing the survey data from 1540 firms across 14 industries and across various ownerships in Shanghai, the study contributes several insights into firms’ IT usage. First of all, this study sheds light on the IT adoption in Chinese firms and validates the general route from IT infrastructure construction to value realization. Second, the findings suggest that government actions influence firms’ IT infrastructure development and IT management decision. However, there is no evidence showing the government impact on firms’ IT usage. The study also provides valuable IT adoption implications to firms in China, particularly to those in the modern cities like Shanghai.

Keywords: government; informatization; process-model; TOE framework

INTRODUCTION

With the development of information technology (IT), more and more Chinese firms have invested heavily in IT to catch up with the “age of information economy” since the 1990s. The nationwide IT adoption phase is called the informatization process in China. However, as a developing country, China is still in the initial period of informatization. Most firms are configuring IT infrastructures and applying functional IS as a part of their business. A blank report from Chinalabs (ChinaLabs, 2004) showed that out of 1000 surveyed firms, only 3.7% of them achieved mature IT usage.

To better understand the IT adoption process in Chinese firms and its relevant factors, an integrated research model based on a process-oriented model (Soh & Markus, 1995) and technology-organization-environment (TOE) framework (Tornatzky & Fleischer, 1990) was developed. With survey data from 1540 firms across 14 industrial fields and various
ownerships, the study provides general and insightful managerial implications to Chinese firms and valuable practical suggestions to Chinese government by exploring the following research issues: how firms adopt IT and gain value by using IT, and what technological, organizational, and environmental factors are important factors to deploy IT in Chinese developed cities like Shanghai.

Focusing on measuring Shanghai’s government initiatives can largely reduce the potential interference of different influences on policy execution by various local governments and enhance observation of the government’s role. To make the results generalizable, firms either with headquarter or branches registered in Shanghai were included in the sample.

LITERATURE REVIEW
In management science and information system literature, many studies have explored the factors that influence IT adoption. The research relating to this study can be categorized into three streams. Of them, two streams form the theoretical backbone of the model developed in this study. One is the process-oriented model (Soh & Markus, 1995), which is used to explain the process from IT usage to value creation. The other is technology-organization-environment framework (Tornatzky & Fleisher, 1990), which is used to identify technological, organizational, and environmental factors that affect IT diffusion in organizations. Another stream contains empirical studies that analyze environmental factors in China informatization. Here, more government activities as a unique environmental factor are concentrated on. These streams provide evidence of environment constructs, especially government related factors in the model.

PROCESS-ORIENTED MODEL
The process-oriented model is a framework to explain how IT is a value-added process (Soh & Markus, 1995). With the help of this model, firms can identify IT impacts on their business and make correct decisions on IT-enabled management improvement (Barua, Kriebel, & Mukhopadhyay, 1995; Hammer & Champy, 1993). According to prior research (e.g., Cooper & Zmud, 1990; DeLone & McLean, 1992; DeLone & McLean, 2003), the process briefly includes the following phases: appropriate resources are deployed to build up IT infrastructure, then IT applications are developed and adopted by firms, and finally IT value is created and realized. On this topic, Barua et al. (1995) analyzed how an intermediate process of usage linked IT and its impact on firm performance. Soh and Markus (1995) developed a conceptual framework to describe the causal relationship among IT investment, IT assets, IT impacts, and firm performance. Following Soh and Markus’ logic, Zhu and Xu (2004) further developed an e-business value creation model consisting of three stages: investment, usage, and value. In this article, the model utilizes IT infrastructure enabled by IT investment, IT usage, and IT value.

TECHNOLOGY-ORGANIZATION-ENVIRONMENT FRAMEWORK (TOE)
Technology-organization-environment (TOE) framework is developed initially by Tornatzky and Fleisher (1990) to study the adoption of general technological innovations in organizations. TOE framework is suitable to identify factors shaping innovation adoption (Xu, Zhu, & Gibbs, 2004) and provides a reliable theoretical basis for this article.

TOE framework figures three aspects that influence the process of technology diffusion in organizations: technological context, organizational context, and environmental context. Technological context refers to technologies that are relevant to firms. Organizational context generally refers to organizational characteristics, such as size, scope, and other resources available within a firm. Environmental context is the macro-circumstances in which a firm conducts its business. Environmental factors include industry, competitors, government relations, and so forth.
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