



# **E-Business Assimilation in China's International Trade Firms: The Technology-Organization- Environment Framework**

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## **ABSTRACT**

*Despite the importance of international trade firms in China's economic development, there is only limited empirical evidence about how these firms assimilate Internet-based e-business in global supply chain operations. Using the Technology-Organization-Environment framework, this study investigates technological, organizational, and environmental factors which determine e-business assimilation in these firms. Based on survey data collected from 307 international trade firms in the Beijing area, we found that environmental uncertainty was negatively associated with e-business assimilation, while a firm's internal IT capability, relative advantage of e-business, learning orientation, and inter-organizational dependence were positive determinants of e-business assimilation. The effect of a firm's ownership type was also significant. Environmental uncertainty was the most important inhibitor, and IT capability and inter-organizational dependence were the most salient enablers of e-business assimilation.*

**Keywords:** *China, E-Business Assimilation, Environmental Uncertainty, Inter-Organizational Dependence, IT Capability, Learning Orientation, Ownership, Partial Least Squares Technology-Organization-Environment Framework, Trading, Relative Advantage,*

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## **INTRODUCTION**

China has become one of the world's top three international trade countries in recent years, together with the United States and Germany

(MoC, 2007; US Commercial Service, 2005; US Department of State, 2007; WTO, 2007). The practice of international trade in China is different from that in developed countries. Export and import businesses in China are conducted exclusively by international trade firms which are granted trade rights by the Chinese

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government. Firms without licenses are not allowed to export and/or import goods and services. Therefore, international trade companies have been the middle men in the global supply chain relationship between foreign companies and Chinese domestic firms. In the past, only a few state-owned companies, such as those affiliated with the Ministry of Foreign Trade, were allowed to conduct international trade business. Since China joined the World Trade Organization (WTO) in December 2001, the Chinese government has eased restrictions on exports and imports. Various new policies have been implemented so that both domestic and foreign companies in China can trade directly—as long as they are licensed by the government (US Department of State, 2007). Both domestic and foreign Chinese firms no longer need to go through intermediary trade firms.

The Chinese international trade industry has been the most innovative industry in China for implementing information technology (IT) and information systems (IS). The industry has maintained the highest adoption rate of Internet technologies in China for some time (Guo & Chen, 2005). The China Ocean Shipping Company (COSCO) was the first Chinese company to adopt commercial computers in business operations (McFarlan & Rockart, 2004; McFarlan, Chen & Lane, 2005). In recent decades, the Chinese government provided significant support for deploying IT/IS in China's international trade industry. For example, the government initiated the "Golden Customs" project in 1993, which mandated that international trade firms inter-network with Chinese Customs via electronic data interchange (EDI). In 1998, the State Economic and Trade Commission, and the Ministry of Information Industry, jointly started the "Golden Trade" project, which provided general directions and guidelines for developing a national information infrastructure to promote online trading for the international trade industry. Since then, many infrastructures and platforms have been established to help the industry to do e-business. Following the previous definition of e-business (Zhu & Kraemer, 2005; Zhu, Kraemer, Xu

& Dedrick, 2004), we define e-business as conducting business activities—such as sales, customer services, logistics, information sharing and coordination—on the Internet in order to connect to worldwide marketplaces and the global supply chain.

Although e-business empowered by Internet technologies is widely diffused in the global supply chain (Kirkman, 2002), there is only limited empirical research showing how Chinese firms have implemented e-business. Our current understanding of the international trade industry has been limited to either case studies (McFarlan & Rockart, 2004; McFarlan et al., 2005), or segmented analyses from a small scale survey (Guo & Chen, 2005). There are concerns that IT/IS adoption in these Chinese firms may be superficial, and that these firms may not be able to implement IT/IS to a deeper level, due to various internal and external challenges (Guo & Chen, 2005; McFarlan & Rockart, 2004).

Broadly speaking, how e-business is assimilated in Chinese firms remains a myth and is yet to be revealed. Except for limited empirical evidence (e.g., Dasgupta, Agarwal, Ioannidis & Gopalakrishnan, 1999; Molla & Licker, 2005a, 2005b; Xu, Zhu & Gibbs, 2004; Zhu et al., 2004), how e-business is conducted in developing countries is not well-examined. Unlike developed countries which have established e-business infrastructures, China and other developing countries do not have mature institutions and infrastructures supporting e-business operations (Tan & Ouyang, 2002). These countries also have some unique characteristics which are worth investigation. Therefore, we suggest that it will be interesting to examine whether theories which originated in the context of mature markets and developed countries can be applied in developing countries, despite different economic and regulatory environments (Dasgupta et al., 1999; Zhu & Kraemer, 2005).

To investigate e-business implementation in Chinese firms, we have conducted a large scale survey of international trade companies in the Beijing area. This article reports the find-

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