



# The role of institutional pressures and organizational culture in the firm's intention to adopt internet-enabled supply chain management systems

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## ABSTRACT

Drawing upon organizational culture and institutional theory, this study investigates how institutional pressures motivate the firm to adopt Internet-enabled Supply Chain Management systems (eSCM) and how such effects are moderated by organizational culture. The results of a survey of 131 firms suggest that the dimensions of institutional pressures (i.e., normative, mimetic, and coercive pressures) have differential effects on eSCM adoption intention. While mimetic pressures are not related to eSCM adoption intention, normative and coercive pressures are positively associated with eSCM adoption intention. In addition, organizational culture (i.e., flexibility orientation and control orientation) plays different roles in the relationships between these three dimensions of institutional pressures and eSCM adoption intention. While flexibility orientation negatively moderates the effects of coercive pressures and positively moderates the effects of mimetic pressures, control orientation positively moderates the effects of coercive and normative pressures and negatively moderates the effects of mimetic pressures. Implications and suggestions for future research are provided.

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## 1. Introduction

The diffusion of Internet-enabled systems allows firms to streamline and integrate the supply chain with a more applied and easier to implement format (Boyer and Hult, 2005; Boyer and Olson, 2002; Olson and Boyer, 2003). Research suggests that such diffusion enables the widest possible arc of supply chain integration, transforming an ideal practice into an operational reality (Frohlich and Westbrook, 2001). Specifically, Internet-enabled systems, such as Internet-enabled Supply Chain Management systems (eSCM), offer firms platforms to enhance communication, coordination, and collaboration across organizational boundaries at operational, tactical, and strategic levels. These Internet-enabled systems resolve the tradeoffs between low cost, rich content, real-time data, and broad channel deployment for traditional methods, such as Electronic Data Interchange (EDI)

(Frohlich, 2002; Frohlich and Westbrook, 2001; Rai et al., 2006; Subramani, 2004). As such, the adoption of Internet-enabled systems is regarded as an essential element of supply chain operational strategy in the current market (Boyer and Hult, 2005; Frohlich, 2002; Frohlich and Westbrook, 2001). However, many firms are still struggling with the development of Internet-enabled systems (Olson and Boyer, 2003). The high uncertainties related to network effects and interdependence are of great concern and impede firms from adopting these systems (Teo et al., 2003; Zhu et al., 2006). Low rates of eSCM adoption across a firm's supply chain may cause critical failure of the supply chain and erode the competitive position of the firm (Ke et al., 2009; Teo et al., 2003; Zhang et al., 2009). Therefore, research on the antecedents of eSCM adoption is of great significance and interest.

In prior research, scholars have applied Transaction Cost Economics (TCE) (e.g., Mukherjee et al., 2000; Young-Ybarra and Wiersma, 1999) to identify the drivers for a firm's adoption of innovations. Gulati (1995) comments that such analysis focuses primarily on the firm's existing competencies and static efficiency, but neglects the uncertainties involved in innovation adoption. In addition, TCE is criticized for being "under socialized" as it ignores the effects of the environment (Granovetter, 1985). The fact is that, when firms are seeking efficiency, they are under institutional constraints including various social expectations and norms that may be in conflict with efficiency (Roberts and Greenwood, 1997).

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Hence, researchers should go beyond TCE to extend the current understanding of innovation adoption.

Scholars increasingly tout institutional theory as an important perspective for studies on inter-organizational innovation adoption (e.g., Heugens and Lander, 2009; Ketokivi and Schroeder, 2004; Rogers et al., 2007; Teo et al., 2003). They argue that institutional pressures emanating from the environment and transmitted through operational channels can strongly affect firm predisposition toward innovation adoption. Rogers et al. (2007) further contend that “arguments from institutional theory can contribute to a better understanding of the social context of OM [operations management] and supply chain management strategies” (p. 569). Also, Zhu et al. (2006) and Teo et al. (2003) suggest that Internet-enabled supply chain innovations are driven more by institutional rationale than technical reasoning. Yet, the findings of previous studies on how institutional factors affect a firm’s adoption of an innovation have been mixed. For example, while some studies find the significant influences of perceived coercive pressures (e.g., Khalifa and Davison, 2006; Teo et al., 2003), others show that they are insignificant (e.g., Liang et al., 2007; Son and Benbasat, 2007). Thus, scholars are calling for more research to investigate the potential moderators in the process of a firm’s experiencing, interpreting, and managing institutional pressures (Heugens and Lander, 2009).

Exploring the moderating effect of organizational culture may help resolve the inconsistency in previous studies (Hewett et al., 2002). On the one hand, organizational culture is found to be a key factor influencing supply chain management practices and innovative information systems adoption (e.g., Khazanchi et al., 2007; Lant and Mezas, 1992; Leidner and Kayworth, 2006; Leisen et al., 2002; McAfee et al., 2002; McDermott and Stock, 1999; Mello and Stank, 2005; Mentzer et al., 2001; Stock et al., 2007; Zammuto and O’Connor, 1992). For example, Leidner and Kayworth (2006) argue that a firm is more likely to adopt an information system if the values embedded in the system fit its organizational culture. On the other hand, a firm exerts discretion by following its own rules and values rather than passively submitting to conventions prevailing in its organizational field (Greening and Gray, 1994). The organizational field refers to “those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products” (DiMaggio and Powell, 1983, p. 148). Thus, institutional pressures and organizational culture may work together and interact with each other to affect innovation adoption. For instance, firms may react differently to the same levels of perceived institutional pressures to adopt eSCM due to the differences in their organizational cultures. However, to date, no research has empirically investigated the effects of institutional factors on eSCM adoption and the interaction effect of institutional pressures and organizational culture. Such a void leaves a significant gap between theoretical and empirical research.

In the current research, we intend to address this shortfall by empirically assessing the confluence of institutional pressures and organizational culture on a firm’s intention to adopt eSCM with data collected from China-based firms. In essence, it does not do a firm any good if it is the only organization adopting eSCM. The success of eSCM relies on the adoption by the focal firm’s supply chain partners and the diffusion of such systems in the industry. Moreover, to seek legitimacy, the managers may refer to the organizational field for guidance when deciding whether to adopt eSCM (Teo et al., 2003). Meanwhile, given that organizational culture is a relatively stable element of a firm, it affects how the firm assimilates and values information acquired from the field and subsequently affects the firm’s responses to the expectations and requirements imposed by the field (Berthon et al., 2001;

Deshpandé et al., 1993; Leisen et al., 2002). Therefore, we propose that, while both institutional and cultural factors may affect a firm’s predisposition toward eSCM adoption, the direct effect comes from institutional pressures and organizational culture moderates the underlying process of such effects.

## 2. Conceptual framework and hypotheses development

Internet-enabled Supply Chain Management systems (eSCM) are the technical enabler of the orchestration of value chain operations across firm boundaries (Chwelos et al., 2001; Subramani, 2004). Scholars regard them as a generic cure for many supply chain operational issues (e.g., Boyer and Hult, 2005; Boyer and Olson, 2002; Frohlich, 2002; Frohlich and Westbrook, 2002; Lee and Whang, 2004; Rai et al., 2006). Frohlich (2002), for example, posits that these Internet-enabled systems allow stronger customer and supplier integration as they avoid the tradeoffs among low cost, rich content, real-time data, and broad channel deployment. Indeed, eSCM have a range of features for information sharing, joint decision making, and business process integration. Specifically, they allow channel partners to share rich content information such as inventory and new product ideas in real-time, enable global training aids and technical knowledge sharing, and thus facilitate the generation of synergistic effects with relatively low cost (Ke et al., 2009). Consequently, eSCM, such as SAP, Oracle and IBM e-business, have been introduced to firms as powerful strategic weapons for supply chain management (Ke et al., 2009).

Reaping the benefits of eSCM poses great challenges, especially given that a firm cannot adopt them independently of other firms in the field (Teo et al., 2003). The open and interactive nature of eSCM creates uncertainties related to network effects and involves reciprocal interdependence (Das et al., 2006; Teo et al., 2003; Zhu et al., 2006). To adopt eSCM, the firm needs to move from a conventional, arms-length relationship with its channel members to a specific, long-term business partnership, which inevitably leads to high interdependence (Morash and Clinton, 1998). Due to the differences in partners’ goals, knowledge about the resources, and means used to achieve a mission, such highly interdependent relationship is plagued with uncertainties that may result in partners’ opportunistic behaviors, performance uncertainties, and strategic rigidity within the channel (Harrigan, 1985). Moreover, benefits from eSCM may be distributed unevenly and skewed in favor of the powerful party (Riggins and Mukhopadhyay, 1994; Subramani, 2004), who may reap benefits at the expense of its partners (Clemons et al., 1993; Subramani, 2004). Hence the results of eSCM adoption are highly unpredictable (Barney, 2007; Ke et al., 2009).

Due to these uncertainties, managers have to deal with large amounts of ambiguous information related to eSCM adoption (George et al., 2006). To deal with the information processing challenge, they refer to the organizational field for guidance rather than just focusing on efficiency optimization or technological issues (Teo et al., 2003), just as with the adoption of Enterprise Resource Planning (ERP) systems. In the early stage of ERP adoption, firms faced many uncertainties related to the adoption consequences. Rather than expending resources on investigating the possible economic gains or technical feasibility of adopting ERP, most firms simply submitted to institutional pressures and hopped on the big bandwagon of adoption. This phenomenon reflects the power of the organizational field as proposed by institutional theory (DiMaggio and Powell, 1983; Zucker, 1987).

In the extant literature, only a few OM studies investigate the effects of institutional factors on firms’ innovation adoption (e.g., John et al., 2001; Ketokivi and Schroeder, 2004; Rogers et al., 2007; Zsidisin et al., 2005). Also, it is established in the information

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