EXPLORING THE IMPACT OF INSTITUTIONAL DISTANCE ON CROSS-BORDER IOS ADOPTION AND ASSIMILATION

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Abstract

We set out in this study to analyse the impact of institutional distance on the cross-border interorganizational system (IOS) adoption and assimilation. This study begins with an introduction of two crucial constructs, i.e. institutional distance and interdependence, and then distinguishes IOS adoption from IOS assimilation. These static portraits are the basis by which we explore the relationship between institutional distance and IOS adoption and assimilation. Subsequently we present a theoretical model of the three dimensions of institutional distance’s impact on cross border IOS adoption and IOS assimilation and explore the interplay between organizational interdependence and institutional distances (i.e. regulatory distance, normative distance and cognitive distance) on the adoption and assimilation of cross-border IOS. Finally, we discuss the potential contributions and limitations of the study, as well as ideas about related future research. Throughout the study, we use the institutional theory as a means of integrating discussion and survey approach is chosen to collect data and empirically test the model in future research. The potential theoretical contributions are mainly made to institutional theory and international interorganizational system application. Meanwhile this study provides explanations of why the cross border IOS adoption and assimilation in certain countries outperform those of other countries.

Keywords: institutional distance, cross-border IOS, IOS adoption, IOS assimilation, interdependence.
1 INTRODUCTION

Organizations increasingly engage in interorganizational system (IOS) adoption and assimilation to transcend organizational boundaries via electronic linkages with its trading partners (Eom 2005). They believe adoption and assimilation of IOS will bring along their competitive advantage for purposes of synergy and efficiency (Dyer 1997; Majchrzak et al. 2000). They use IOS to facilitate the information exchange between them and promote the interorganizational corporation, e.g. outsourcing and alliance.

IOS adoption and assimilation are important for all types of organizations, and they are more crucial when the adopting and assimilating organizations are in different countries, as their superior knowledge can be utilized in different organizations worldwide (Bartlett et al. 1997). We focus on the cross-border IOS because of the key role it performs in the global economy and its interface with multiple institutional environments. Nowadays organizations increasingly engaged in cross-border cooperation and intend to utilize IOS to promote interorganizational coordination. However, questions remain on whether to adopt cross-border IOS or not and how to assimilate it. Many organizations fail along the way of cross-border IOS implementation due to institutional-specific reasons. In some cases, organization faces much more supervisory pressures from institutional environment than its partners may fail to meet the requirement which finally results in cross-border IOS failure (Hsu et al. 2014). Thus, the impact mechanism of institutional differences on cross-border IOS implementation is clearly a practical problem that should be solved urgently in the practice of organizational information management.

Studies on IOS implementation have long been the interests of information systems (IS) researchers. Roger’s innovation diffusion theory is the dominant approach to identify the factors that influence IOS implementation (Huang et al. 2008; Robey et al. 2008; Wu et al. 2010) and the post-implementation performance (Chang et al. 2010; Fichman et al. 1999; Sutanto et al. 2013). Meanwhile, other researchers focus on the social and relational impact of IOS implementation and investigate it from the perspectives of transaction cost theory (Grover et al. 2007; Hertwig 2012) and network effect theory (Zhu et al. 2006). They individually posit various economic, organizational and environmental factors influence the implementation of IOS. However, cross-border IOS adoption and assimilation are materially different from domestic IOS adoption and assimilation because the differences in each country’s institutional environment will modify the adoption and assimilation process (Galang 2012). This study is based on the premise that the IOS adoption and assimilation do not occur in a social vacuum, particularly between firms situated in different institutional environments. Such a complex institutional environment presents influential challenges to IOS adoption and assimilation. Hence it is critical to apply institutional theory to cross-border IOS implementation (Xu et al. 2002).

In IS field, quite a few researchers have examined the role of institutional environment on organizations’ adoption or assimilation of IOS (Chwelos et al. 2001; Hsu et al. 2012; Liang et al. 2007; Teo et al. 2003). It argues that organizational practices, such as adopting and assimilating cross border IOS, may become readily accepted as legitimate and rational means to attain organizational goals (Meyer et al. 1977) or be regarded as inconsistent with the institutional environment. Specifically many studies posit that institutional pressure will positively influence the IOS adoption and assimilation(Liang et al. 2007; Teo et al. 2003). Institutional researchers posit that organizations face pressures to conform to these shared notions of appropriate forms and behaviours, since violating them may call into question the organization’s legitimacy and thus affect its ability to secure resources and social support (Dimaggio et al. 1983; Teo et al. 2003; Tolbert 1985).

However, in light of institutional pressure, we can only concentrate on the institutional factors of one single organization and overlook the cross-border differences and interorganizational relationships in the context of cross-border IOS implementation. Since cross-border IOS adoption and assimilation require
coordination between at least two different countries, cross-border differences are fairly salient and noteworthy in this context. Hence in this study we propose the institutional distance perspective (Kostova 1999) as an alternative way to address this issue. Specifically, we use institutional approach to examine the extent to which institutional distances influence cross-border IOS adoption and assimilation, leading to the first research question: To what extent do institutional distances influence cross-border IOS adoption and assimilation?

Second, what are the differences between the influence mechanisms of institutional distances on cross-border IOS adoption and assimilation? Researchers largely focus on the decision process of adoption and overlook the managerial internalization process of assimilation (Chwelos et al. 2001; Huang et al. 2008). And there is little literature give prominence to their distinctive differences. Meanwhile, the noticeable fact that many organizations failed to internalize IOS with their management routine or even abandoned IOS after adoption reminds us of the practical importance of understanding IOS post-implementation. Furthermore, as IOS adoption and assimilation have different coordination needs between organizations, interorganizational relationship becomes worthy of attention. Thus we bring organizational interdependency to this study to capture the interplay between interorganizational relationship and institutional distances. By addressing this question, our study provides a comprehensive understanding of the cross-border adoption and assimilation of IOS, which would be highly valuable for both researchers and practitioners.

Besides, a review of institutional literature reveals that empirical studies of institutional distance are scarce (Yang et al. 2012). Hence this study is not confined to the level of theoretical development but also aims to provide empirical evidences to our understanding of institutional distance.

In this study we draw on institutional theory and develop a theoretical model to explain how cross-border IOS adoption and assimilation are influenced by institutional distance between these organizations. Specifically, we are interested in exploring the interplay between organizational interdependence and institutional distances on the adoption and assimilation of cross-border IOS.

2 THEORETICAL BACKGROUND

2.1 Institutional distance

As an important lens to understand institutional environment’s influence on organizational actions, institutional theory has been applied to study organizations’ managerial behaviours affected by social structures, including the adoption and assimilation of information system. It indicates that, in order to survive, organizations must conform to the social structures in the institutional environment to earn legitimacy (Dimaggio et al. 1983; Meyer et al. 1977).

The institutional environment, as suggested by Scott (1995), can be categorized into three “pillars”: regulatory, normative and cognitive. The regulatory pillar pertains to the existing laws and rules in a particular national environment that promote certain types of behaviours and restrict others. The normative pillar focuses on normative systems—that is, the beliefs, values and norms that define desirable goals and expected behaviours to achieve them in a particular national environment (Kostova 1999; Scott 1995; Yang et al. 2012). The cognitive pillar reflects the cognitive categories that will affect the way people notice, categorize, and interpret stimuli from the environment in a particular country. Grounded on Scott (1995) institutional framework, Kostova (1999) uses three-dimensional construct institutional profile to capture the characteristics of a nation’s institutional environment. On one hand, organizational behaviour is shaped by its institutional profile. On the other hand, organizations tend to incorporate legitimate organizational behaviour that is consistent with their institutional profiles (Dimaggio et al. 1983; Meyer et al. 1977).
However, when it comes to interorganizational coordination that crossing different institutional profiles, inconsistencies or even conflicts may arise (Kostova et al. 1999). The greater the differences between the institutional profiles of the organizations’ countries, the greater the likelihood of misfit occurs between the interorganizational coordination and these organizations’ institutional environments (Kostova 1999). Hence Kostova (1999) introduces the notion of institutional distance which is defined as the difference between the institutional profiles of two countries to capture the dissimilarity of different institutional environments. Consistent with the three pillars, institutional distance can be categorized into three dimensions: regulatory distance, normative distance and cognitive distance. Here the regulatory distance reflects dissimilarity of the existing laws and rules between two countries. It will create coercive isomorphism pressures (i.e. formal pressure from other organizations (Dimaggio et al. 1983)) for adoption of social patterns (Kostova et al. 2002). The normative distance reflects dissimilarity of the values, beliefs, norms, and assumptions about human nature and human behaviour between two countries. It will create normative isomorphic pressures (i.e. conformance to normative standards (Dimaggio et al. 1983)) to make organizations conform to institutional practices. The cognitive distance reflects dissimilarity of the schemas, frames and inferential sets which people use to select and interpret information between two countries (Kostova 1999). It will capture the differences between the national symbols, stereotypes and so on (Eden et al. 2004; Kostova 1999).

Institutional distance has been used to explain multinational enterprise behaviour in host countries (Kostova et al. 1999), foreign direct investment by the multinational enterprise (Xu et al. 2002), the costs of doing business abroad (Eden et al. 2004) and organizational governance strategies (Yang et al. 2012). In this paper we extend the treatment of institutional distance to the realm of cross border IOS adoption and assimilation to acquire a more comprehensive understanding.

2.2 Interdependence

Resource dependency theory proposes that every organizations needs external resources to survive and this leads to interdependence (Pfeffer 1978). For purpose of managing interdependency, organizations form coalitions and coordination of all kinds (Hillman et al. 2009; Pfeffer 1978), including implement IOS. According to institutional theory, organizations tend to become interorganizational legitimacy in the presence of interdependence and one of the strategies to achieve such interorganizational legitimacy is the implementation of IOS (DiMaggio et al. 1991; Grover et al. 2007; Kostova 1999; Meyer et al. 1977).

Therefore, this study uses interdependence to capture the interorganizational relationship in the adoption and assimilation of cross-border IOS. This focus on interdependence is consistent with Kambil et al. (1994) assertion that IOS is a reflection of a pattern of interdependence relationships between organizations. Furthermore, Rockart et al. (2012) suggests that to managing interdependence is one of the critical motivation for organizations to conduct IT-enabled actions such as the implementation of IOS.

Here interdependence is defined as the extent to which organizations rely on, and are contingent on, the support of each other for providing major resources, including technology, capital, and managerial expertise (Kostova 1999; Kumar et al. 1996). Thus the higher their interdependence, the more organizations rely on each other for coordination performance as well as for access to scarce resources. Consequently, actions of one organization are likely to affect those of the other organization in the interorganizational coordination as well as the problems and pressures. If the interdependence between organizations increases, the level of commitment to the relationship by both parties will increase (Dwyer et al. 1987; Kumar et al. 1996) which will affect their pursuit of interorganizational legitimacy.
2.3 Cross-border IOS adoption and assimilation

IOS adoption and assimilation are both strategic organizational practice (Kostova 1999) which reflect the core competencies of the firm and to provide a distinct source of competitive advantage that differentiated the firms from their competitors. But it is important to note that IOS implementation contains two stages: adoption and assimilation. Zmud (1982) portrays adoption as the “organizational mandate for change,” while Fichman et al. (1999) and Purvis et al. (2001) define assimilation as the point when an innovation becomes embedded within organizational activities.

Besides IOS adoption does not automatically result in IOS assimilation. Purvis et al. (2001) explicitly indicate that assimilation relates to post-adoption, wherein organizations have to contend with the mutual adaption of both technology and context. It is possible that, although IOS is formally implemented and adapted, it is only sparsely deployed among adopting organizations or even fail to be thoroughly deployed among many adopting organizations.

Here we define the cross-border IOS adoption as the organizational mandate for IOS implement while define cross-border IOS assimilation as the extent to which the use of cross-border IOS becomes an integral part of the organizational processes (Grover et al. 2007; Purvis et al. 2001). It is important to notice that within the context of this study, the analyze unit is the IOS adoption or IOS assimilation between pairs of countries rather than the IOS adoption or IOS assimilation of a specific firm.

3 RESEARCH MODEL AND HYPOTHESES

As depicted in Figure 1, we propose that regulatory, normative, and cognitive distances will negatively influence cross-border IOS adoption while normative and cognitive distances will negatively influence cross-border IOS assimilation. Furthermore, interdependence will weaken the negative impact on cross-border IOS adoption while strengthen those negative impact on cross-border IOS assimilation.

![Research Model](image-url)
3.1 Institutional distance

Cross-border IOS adoption and assimilation can be regarded as a form of organization practice transfer. Successful transfer of such organizational practices from one organization to another organization depends on the distance between them: the larger the distance, the more difficult the transfer (Kostova 1999). If institutional distance affects IOS legitimacy in organizations’ national environments and the realization of organizational practices’ transfer, then it should also be a key determinant of cross-border IOS adoption and assimilation. When the institutional distance between organizations’ institutional environments is large, social structures of their environments are quite different which lead to different standards for legitimacy. Hence large institutional distance triggers the conflicting demands for external legitimacy in organizations. Organizational actions such as adoption of cross-border IOS may be perceived as legitimate in one national institutional environment but not in another. Thus the interorganizational coordination process of cross-border IOS adoption will be impeded.

Furthermore, the greater the institutional distance between the organizations, the greater the likelihood will be that there will be a misfit between the IOS and the institutional environment, which, in turn, may result in difficulties or even failure of the IOS adoption and assimilation. In this case, even though organizations have reached a consensus to adopt the cross-border IOS, the difficulties caused by large institutional distance will become obstacle to realize the expected benefits of IOS.

Constrained by different regulatory restriction, organizations from different normative systems will have different interpretations of the IOS, which will lead to different response towards it. Hence we suggest that cross-border IOS adoption and assimilation will be affected by institutional distance between the organizations’ different national environments. Due to the different component of institutions they reflect and different implementation procedures they involve, we posit that different institutional distance will have different impacts on the adoption and assimilation of cross-border IOS.

Regulatory distance is the most relevant in the technology input phase because it determines the “rules of the game”, which, once established, constrain the resources that can be deployed in the organizations (Xu et al. 2002). Since the implementation of IOS requires mutual investments of sufficient resources, whether to adopt cross-border IOS or not is largely determined by organizations’ disposable resources. Unbalance disposable resources can greatly affect the organizations’ decision of IOS adoption.

If the regulatory distance between the organizations is large which leads to disposable resource imbalance, it is highly unlikely they will engage in adopting cross-border IOS. But if organizations, which are in possession of necessary resources, have already adopted cross-border IOS, it is highly unlikely that different external resource constraints determined by regulatory distance can restraint the post-adoption assimilation. Therefore, we posit the following hypothesis:

H1: Regulatory distance between the countries of the organizations in which IOS is implemented will be negatively related to the adoption of cross-border IOS.

In terms of the normative distance, scholars have found that IOS, in order to be adopted successfully and finally be assimilated in the international context, have to be consistent with and take into account the different assumptions and value systems of the national cultures of those organizations (Schneider 1988). Such consistency will promote the acceptance of cross-border IOS at the adoption stage as well as the internalization of it at the assimilation stage. Besides, social norms influence the legitimacy of the organizational practices employed and normative distance has direct bearing on organizational practices (Xu et al. 2002) as it depict organizations’ goals and objectives. If the normative distance is large, the likelihood of inconsistent organizational goals and objectives increases. Adoption and assimilation of cross-border may not become their mutual goal. Therefore normative distance is relevant both in the adoption phase and assimilation phase. Thus:
H2: Normative distance between the countries of the organizations in which IOS is implemented will be negatively related to the adoption of cross-border IOS.

H3: Normative distance between the countries of the organizations in which IOS is implemented will be negatively related to the assimilation of cross-border IOS.

Cognitive distance is the most applicable to reflect the institutional environment, since it is associated with symbols that are most likely linked to the identity of IOS (Xu et al. 2002). If the cognitive distance between the organizations is high, organizations likely will be reluctant to engage in IOS adoption and assimilation, for they probably will have difficulties understanding and interpreting it correctly.

Besides, cognitive distance also affects the learning processes (Kostova 1999). According to Kostova (1999), organizations may have different interpretations based on their different cognitive institution and such interpretative differences will become salient if the cognitive distance increase. That is to say, if the cognitive distance between the organizations is small, it would be relatively easy for them to understand and interpret the system. Hence, it is much easier to adopt and assimilate IOS when it is consistent with the prevalent social schemas than when it is inconsistent with them. This leads to the following hypotheses:

H4: Cognitive distance between the countries of the organizations in which IOS is implemented will be negatively related to the adoption of cross-border IOS.

H5: Cognitive distance between the countries of the organizations in which IOS is implemented will be negatively related to the assimilation of cross-border IOS.

3.2 Moderating Effects of Interdependence

Interdependence can promotes interorganizational coordination (Grover et al. 2007; Thompson 1967) and that is the main reason why organizations increasingly move towards managing interdependence by implementing integrated IOS (Rockart et al. 2012). Also interdependence between organizations increase organization’s commitment by both parties (Dwyer et al. 1987). The larger the interdependence between organizations, the more they will comply and cooperate with each other (Zucker 1987) to achieve interorganizational legitimacy. When interdependence between organizations is high, organizations will tend to comply to the adoption decision of its partner even when their institutional environments are quite different. In this case, even their institutional distance is large, organizations will still commit to the adoption of cross-border IOS and willing to put in efforts to coordinate with each other. Hence we hypothesize that:

H6: Interdependence will weaken the negative impact of regulatory distance on cross-border IOS adoption.

H7: Interdependence will weaken the negative impact of normative distance on cross-border IOS adoption.

H8: Interdependence will weaken the negative impact of cognitive distance on cross-border IOS adoption.

However, once the cross-border IOS is implemented, organizations have to conduct mutual organizational adjustment to promote the assimilation process. Organizations have to adjust organizational actions in various interacting aspects as well as deploy their own resources respectively. Under this circumstance interdependence between organizations increases the complexity of organizational adjustments and the likelihood that institutional differences between the organizations are surfaced (Dwyer et al. 1987; Kumar et al. 1996; Lusch et al. 1996; Thompson 1967). Then the assimilation complexities increase as well as the possibility of organizational difficulties and conflicts (Kumar et al. 1996). Here we posit:

H9: Interdependence will strengthen the negative impact of normative distance on cross-border IOS assimilation.
**H10: Interdependence will strengthen the negative impact of cognitive distance on cross-border IOS assimilation.**

### 3.3 Control Variables

Since larger organizations are more likely to adopt and assimilate cross-border IOS, we use firm size as a control variable (Chatterjee et al. 2013). Besides, prior literature has shown that transaction history is crucial to the interorganizational relationship (Gundlach et al. 1993). So we include partners’ number of years in business together to indicate the transaction history.

**4 METHODOLOGY**

#### 4.1 Research design

Since theory development progresses to empirical testing (Chwelos et al. 2001), survey approach is chosen to collect data and empirically test the model (Yang et al. 2012). The sampling frame is compiled from 500 firms listed in China’s Top Foreign Trade Enterprises released by Ministry of Commerce of PRC. Three criteria are established to select qualified firms. First, the company must be neither foreign owned nor joint venture, and its senior managers must be native Chinese. Second, the company must have an overseas business partner. Third, the companies have already implemented IOS with the specific partner for over three months in keeping with our desire to capture assimilation state of IOS. For each qualified firm, two senior managers are selected as key informants. They are first contacted by telephone and questionnaires are then mailed to them. They are asked to select an overseas partner first, with which their firm conducted the greatest volume of business and then answer the survey questions according to their relationships with the chosen partner.

Construct measurement of institutional distance, interdependence, cross-border IOS adoption and assimilation will be adopted and adapted from existing validated scales (Hsu et al. 2012; Liang et al. 2007; Lusch et al. 1996; Yang et al. 2012).

#### 4.2 Data analysis

Partial least squares (PLS) is selected to evaluate the proposed model and hypotheses. First, PLS is suitable for assessing theories in the early stages of development (Fornell et al. 1982) and have not been tested extensively (Teo et al. 2003). Second, our model has formative constructs and reflective constructs which can be readily handled by PLS. Third, PLS is best suited for testing complex relationships by avoiding inadmissible solutions and factor indeterminacy (Pavlou et al. 2007).

**5 POTENTIAL CONTRIBUTIONS AND FUTURE WORK**

This study serves as an initial attempt to investigate the interacting relationship between interdependence and institutional distances on cross-border IOS adoption and assimilation. The potential theoretical contributions of this study are mainly made to institutional theory and international interorganizational system application. We apply the institutional theory framework to a cross-border setting and introduce the construct of institutional distance to the context of cross-border IOS adoption and assimilation.

This study has potential practical implications as well. It provides explanations of why the cross border IOS adoption and assimilation in certain countries outperform those of other countries. It could be used to
derive recommendations for overcoming some implement problems. On the other hand, cross-border IOS must be matched with institutional distance to that country in order to enhance competitive advantages.

However, this study has some limitations. It presents a relatively simplified picture of the complex phenomenon of cross-border IOS adoption and assimilation. In the future research, we can take the organizational diversity into account to develop further understanding of the mechanisms of how institutional distance could influence cross-border IOS adoption and assimilation. Moreover, we can go beyond them and probe into the influences of institutional distance on more value-generating organizational behaviors, e.g. interorganizational innovation. Addressing this problem in addition to our research model will add to our understanding to the importance of institutional distance.

ACKNOWLEDGEMENT

The work described in this article was supported by a grant from the National Natural Science Foundation of China (Project No. IND3701).

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