Interorganizational systems (IOS) adoption requires cooperation and collaboration between trading partners and, therefore, is reliant on the nature of their relationships. There has been some research that investigates relationships and how organizations progress from one level to the next level of adoption. However, these studies do not adequately justify the exclusion of other variables and are not theoretically based. This research extends the Kurnia and Johnston (2000) process model of IOS adoption by incorporating the notion of IOS adoption maturity and also modifies it from a supply chain to a dyadic level so better evaluations of progression can be performed. With this model, the dynamics of IOS adoption maturity can be better examined empirically. [Article copies are available for purchase from InfoSci-on-Demand.com]

**Keywords:** B2B e-commerce; Interorganizational systems (IOS); Interorganizational relationships; IOS adoption; IOS maturity; IOS sophistication

**ABSTRACT**

Interorganizational systems (IOS) adoption requires cooperation and collaboration between trading partners and, therefore, is reliant on the nature of their relationships. There has been some research that investigates relationships and how organizations progress from one level to the next level of adoption. However, these studies do not adequately justify the exclusion of other variables and are not theoretically based. This research extends the Kurnia and Johnston (2000) process model of IOS adoption by incorporating the notion of IOS adoption maturity and also modifies it from a supply chain to a dyadic level so better evaluations of progression can be performed. With this model, the dynamics of IOS adoption maturity can be better examined empirically. [Article copies are available for purchase from InfoSci-on-Demand.com]

**INTRODUCTION**

Interorganizational systems (IOS) are automated information systems, such as electronic data interchange (EDI) and collaborative planning, forecasting, and replenishment (CPFR), that are shared by two or more companies (Cash & Konsynski, 1985). IOS offers trading organizations substantial benefits such as reduced inventory costs; elimination of redundant handling of data entries; improved scheduling, processing, and distribution of goods; and improved information accuracy, to name a few (Mentzer, 2004; Premkumar & Ramamurthy, 1995). IOS has become a strategic weapon for some organizations to obtain competitive advantage and has shifted competition from single firms competing individually to supply chains competing against other supply chains (Birou, Fawcett, & Magnan, 1998; Lambert & Cooper, 2000).

Despite these benefits, many companies face difficulties in adopting these systems
because such implementations are highly reliant on trading partners’ existing relationships, which often are not favorable (Kurnia & Johnston, 2003). IOS adoption requires credible commitment of participating firms to work collaboratively to achieve common objectives and goals. Because of the inherent complexity in IOS adoption, there have been many attempts in the literature to study various aspects of IOS adoption by organizations (Damsgaard & Lyytinen, 1998; Kumar & Van Dissel, 1996; Saeed, Malhotra, & Grover, 2005). Some studies (e.g., Ham & Johnston, 2007; Kumar & Van Dissel; Meier, 1995; Saeed et al.; Webster, 1992) indicate that unfavorable relationships often exist among trading partners, which makes IOS adoption difficult.

Realizing the importance of relationships in IOS adoption, there have been an increasing number of researchers investigating interorganizational (IO) relationships. For example, some studies examine IO relationship factors or aspects that contribute to adoption failures or success (Hart & Saunders, 1997; Ibrahim & Ribbers, 2006; Nagy, 2006). Others classify relationship types based on relationship intimacy and IOS types based on integration, and then match levels of relationship intimacy with the levels of IOS integration (Choudhury, 1997; Shah, Goldstein, & Ward, 2002). More recently, researchers not only examined the interaction between relationship types and IOS types, but also investigated how organizations move from lower levels to higher levels of intimacy in relationships and the integration of IOS types (Ham & Johnston, 2007).

While there are some studies that shed light on how organizations can move or progress from a less sophisticated to a more sophisticated IOS based on relationships, it is difficult to base an empirical investigation on this work. This is because these studies are not theoretically strong and do not include, or justify the exclusion of, other factors such as organizational capabilities to investigate maturity or progression of IOS adoption.

Over the years, various frameworks have been developed within the IOS adoption field. For example, Damsgaard and Lyytinen (1998) examine IOS using micro, meso, and macro levels of analysis; Kumar, Van Dissel, and Bielli (1998) classify IOS studies as technical, economical, or sociopolitical; and Ramanathan and Rose (2003) explain IOS adoption research using stages. While these frameworks help us obtain a general understanding of the field, they do not emphasize the importance of time in the study of IOS adoption.

Kurnia and Johnston (2000), using IOS adoption of efficient consumer response (ECR) as an example, present a process model of IOS adoption that includes a set of factors and also considers the role of time in IOS adoption. Their model has the potential to complement other studies that examine IOS adoption maturity. Their process model suggests that through dynamic interactions among industry and supply chain players, organizations modify their capabilities and technology vision in the course of adoption of a particular IOS. The model suggests broadening the scope of study to include both an individual organization and its interorganizational environment (supply chain and/or industry), and extends the period of study in order to better capture the dynamic interaction among the industry players that occurs during the IOS adoption.

The Kurnia and Johnston process model could be extended to include the notion of progression because IOS adoption maturity is intended to take place over time. However, it would pose a challenge for empirical research since the model proposes the inclusion of an organization and its interorganizational environment as the unit of analysis, which is practically difficult to achieve, and the data produced would be difficult to interpret due to the complexity involved (Kurnia & Johnston, 2000). Therefore, in this article, we modify the Kurnia and Johnston model by reducing its scope from a supply chain to a pair of organizations (dyadic level), and also refine the model to incorporate the idea of maturity of IOS adoption, which is necessary to obtain a complete picture of IOS adoption. It is important to note that even though our model is dyadic, we still consider
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