

## Chapter 4

# Understanding the Progressive Nature of Inter–Organizational Systems (IOS) Adoption

**Mazen Ali**

*The University of Bahrain, Kingdom of Bahrain*

**Sherah Kurnia**

*The University of Melbourne, Australia*

**Robert B. Johnston**

*University College Dublin, Ireland*

### ABSTRACT

*Inter-organizational Systems (IOS) cannot be adopted by any organizations in isolation from their trading partner. Their adoption requires cooperation and collaboration between trading partners and, therefore, is reliant on the nature of relationships between the parties involved. For organizations to progress in their IOS adoption, improvement in relationships between trading partners is required before they can adopt a more sophisticated IOS. In addition, through IOS adoption, trading partners can actually improve their relationships overtime. 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 clearly define the concepts of relationship, IOS adoption and IOS adoption maturity. Furthermore, they do not adequately justify the exclusion of other variables in defining the relevant concepts 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 reducing the scope from a supply chain to a dyadic level to enable better evaluations of IOS adoption progression. We argue that with the proposed model, the dynamics of IOS adoption maturity can be better examined empirically.*

DOI: 10.4018/978-1-4666-2625-6.ch004

## INTRODUCTION

Inter-organizational Systems (IOS) are automated information systems, which are shared by two or more companies (Cash and Konsynski, 1985). Examples of IOS include Electronic Data Interchange (EDI) and Collaborative Planning, Forecasting and Replenishment (CPFR). Many organizations adopt IOS to improve their supply chain management. IOS offer 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 (Premkumar and Ramamurthy, 1995; Mentzer, 2004). IOS have become a strategic weapon for some organizations to obtain competitive advantage and have shifted competition from single firms competing individually to supply chains competing against other supply chains (Birou, Fawcett and Magnan, 1998; Lambert and 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 and 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 organisations (Kumar and Van Dissel, 1996; Damsgaard and Lyytinen, 1998; Saeed, Malhotra and Grover, 2005). Some studies (see for example, (Webster, 1992; Meier, 1995; Kumar and Van Dissel, 1996; Saeed et al., 2005; Ham and Johnston, 2007) indicate that unfavourable 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 studies investigating Interorganizational (IO) relationships. For example, some studies

examine IO relationship factors or aspects that contribute to adoption failures or success (Hart and Saunders, 1997; Ibrahim and Ribbers, 2006; Nagy, 2006), while 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 and Ward, 2002; Redonodo et al, 2009). More recently, researchers do not only examine the interaction between relationship types and IOS types but also investigate how organizations move from lower levels to higher levels of intimacy of relationship and integration of IOS types (Ham and 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 level of analysis, Kumar et al. (1998) classify IOS studies as technical, economical or socio-political, Ramanathan and Rose (2003) explain the IOS adoption research in the form of stages. While these frameworks help us obtain a general understanding of the field, they do not emphasise 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/supply chain players, organizations

19 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/understanding-progressive-nature-inter-organizational/73328](http://www.igi-global.com/chapter/understanding-progressive-nature-inter-organizational/73328)

## Related Content

---

### Managing Risk in Supply Chain: A Model for the Classification of Potential Threats to Efficient Supply Chain Operation

H.P. Borgman and Wilfred Rachan (2009). *International Journal of Information Systems and Supply Chain Management* (pp. 50-66).

[www.irma-international.org/article/managing-risk-supply-chain/4006](http://www.irma-international.org/article/managing-risk-supply-chain/4006)

### Modeling Accuracy of Promised Ship Date and IT Costs in a Supply Chain

Young M. Lee (2010). *Innovations in Supply Chain Management for Information Systems: Novel Approaches* (pp. 1-15).

[www.irma-international.org/chapter/modeling-accuracy-promised-ship-date/38431](http://www.irma-international.org/chapter/modeling-accuracy-promised-ship-date/38431)

### An Empirical Analysis of Shandong Power Grid Operational Efficiency Based on DEA-Malmquist

Liqing Zhu and Xueli Zhan (2018). *International Journal of Information Systems and Supply Chain Management* (pp. 1-13).

[www.irma-international.org/article/an-empirical-analysis-of-shandong-power-grid-operational-efficiency-based-on-dea-malmquist/193660](http://www.irma-international.org/article/an-empirical-analysis-of-shandong-power-grid-operational-efficiency-based-on-dea-malmquist/193660)

### Integrating Mathematical and Simulation Approach for Optimizing Production and Distribution Planning With Lateral Transshipment in a Supply Chain

Jirasak Jiand Navee Chiadamrong (2022). *International Journal of Information Systems and Supply Chain Management* (pp. 1-30).

[www.irma-international.org/article/integrating-mathematical-and-simulation-approach-for-optimizing-production-and-distribution-planning-with-lateral-transshipment-in-a-supply-chain/282736](http://www.irma-international.org/article/integrating-mathematical-and-simulation-approach-for-optimizing-production-and-distribution-planning-with-lateral-transshipment-in-a-supply-chain/282736)

### Big Data Analytics: Service and Manufacturing Industries Perspectives

Nachiappan Subramanian, Muhammad D. Abdulrahman, Hing Kai Chan and Kun Ning (2017). *Supply Chain Management in the Big Data Era* (pp. 13-23).

[www.irma-international.org/chapter/big-data-analytics/171280](http://www.irma-international.org/chapter/big-data-analytics/171280)