Success and Failure in Building Electronic Infrastructures in the Air Cargo Industry: A Comparison of The Netherlands and Hong Kong SAR

LEARNING OBJECTIVES

Students will

a) Learn about factors that influence the success or failure of interorganizational systems
b) Learn about the multiplicity of interests that need to be aligned when designing and implementing interorganizational systems
c) Learn different approaches to design and implement interorganizational systems
d) Learn a specific example of very complex business processes in the air cargo industry

OVERVIEW OF ISSUES

Reasons behind the failure and success of large-scale information systems projects continue to intrigue. In particular in the airline industry very successful passenger reservation systems have been built which have totally changed the competitive arena of the industry. On the cargo side however attempts to implement large-scale community systems have largely failed across the globe. Air cargo parties are becoming increasingly aware of the importance of IT and, increasingly, they understand the value that IOS could provide for the total value chain performance. However, whereas in other sectors IOSs have been very successful, there are only fragmented examples of successful global systems in the air cargo community and the penetration of IOS in the air cargo industry is by no means pervasive. This case describes the genesis and evolution of two IOSs in the air cargo community and provides information that let students to analyze what led one to be a success and one to be a failure. The two cases are from the Netherlands and Hong Kong SAR. The case emphasizes the complex, institutional and technical choices by the initiators of the system in terms of their competitive implications that were the main causes for the systems' fate. The case thus argues that it was the institutional factors involved in the relationships of the stakeholders that led to the opposite manifestations of the two initiatives and not the available technology nor a lack of talent in producing sufficiently good systems. The case therefore lends itself to advocate that also non-technological factors should be taken into account when designing and implementing interorganizational information systems.

OVERVIEW OF CASE

One way to help students identify the important factors that differentiate the Traxon initiative from Reuters' is to ask the students to describe for each system 1) initiators and owners, 2) initiators' main interests, 3) customers, 4) dynamics of value chain, 5) market dynamics, 6) initial market share, 7) key functionality provided, and finally 8) outcome. The resulting table is shown in Table 1.

CASE EPILOGUE

Summing up the reasons behind the failures and successes in these two cases the complex, interdependent institutional and technical choices by the initiators of the systems in terms of their competitive implications were the main causes for the systems' success or failure. The social structure in this business network and the dynamics of this particular market should adequately be represented in the design of these systems since they have the potential to upset delicate power structures and information distribution.

The Dutch system was designed to a large extent to exploit the new technology to its fullest potential deriving benefits from the reduction in market intransparency, this led to failure. In Hong Kong the system was less technological ambitious but instead designed to maintain and enforce existing structures and the keep the intransparency intact, this led to success.

Table 1: Main differences between Reuters and Traxon

	Traxon	Reuters
Initiators & owners	Internal party: Four major airlines	External party: News agency
Initiators' main interest	Make air cargo processes more efficient and coordinated	Collect rents
Customers	Freight forwarders and airlines	Forwarders, airlines and truck companies
Dynamics of chain	Preserves existing chain	Attempts to by-pass intermediaries
Market dynamics	Preserves market intransparency	Attempts to reduce intransparency
Initial market share	Local stronghold plus three partner airlines' combined cargo capacity	Zero
Key Functionality provided	Checking and booking	Price comparison
Outcome	De facto monopoly	System abandoned

By summer 2000 Traxon was under a lot of pressure from non-share holder airlines and IT literate freight forwarders. The airlines were depleting the monopoly setting up e-services on the Internet for IT literate freight forwarders. For example did many non-shareholder airlines start to offer a free "track and trace" services on the world-wide-web. In the Traxon system this was something that the freight forwarders had to pay for. The response to this from Traxon was reluctant but necessary. They abolished payment for track and trace facilities altogether. In short the situation in the summer of 2000 was that Traxon's business model eroded as fast as the popularity of the Internet grew.
Traxon could seek counter this erosion and become more active in the market like so many of their new competitors on the Internet. However Traxon's owners did not want to support a general movement of the air cargo towards a commodity market, therefore Traxon was not allowed to operate freely and it was not allowed to bring into jeopardy the position of its shareholders.

TEACHING GUIDE

How Class Sessions May Proceed

Depending on the time available the class session might discuss the following issues

a) The air cargo community, its enormous growth, and its relation to international trade and the global economy
b) The air cargo community and the distribution of roles and power between the players
c) Impact of Traxon/Reuter and similar systems on the constellation of competitive forces in an industry
d) Factors that are important when introducing an inter-organizational system
e) The role of third parties in the provision of "common good systems" for some business sector (see (Damsgaard and Lyytinen, 2001)). For example could HAFFA (Hong Kong Association of Freight Forwarding Agents) or some other common industry association (e.g. IATA) have been a player or even a provider of a "neutral" interorganizational system?

f) How to perform a systems analysis and design for interorganizational systems as compared to intra-organizational systems?
g) The prospects of an electronic market in the air cargo industry
h) Case summary and key lessons

Suggested Assignment Questions

1. **Describe a future scenario where Internet interconnects all airlines and freight forwarders and thus they do not have to rely on Traxons system for interconnection.**
2. **How does the world wide web affect the Traxon's business model**
3. **Find and describe on the Internet portals that offer or seek to offer similar services as Traxon**

SELECTED REFERENCES

Bakos, J. Y. (1991) Information Links and Electronic Marketplaces: The Role of Interorganizational Information Systems in Vertical Markets. Journal of Management Information Systems, 8(2), 31-52.

Besen, S. M., & Farrell, J. (1994). Choosing How To Compete: Strategies and Tactics in Standardization. Journal of Economic Perspectives, 8(2), 117-131.

Christiaanse, E., & Huigen, J. (1995). Institutional dimensions in information technology implementation in complex network settings. European Journal of Information Systems, 6, 77-85.

Christiaanse E. and Kumar K. (2000) " ICT Enabled Co-ordination of Dynamic Supply Webs", International. Journal of Physical Distribution and Logistics Management 30:3/4; pp. 268-285.

Christiaanse, E. and Zimmerman, R. J. (1999) "Electronic Channels: The KLM Cargo CyberPets case", Journal of Information Technology, (14), pp. 123-135.

Clemons E.K. and Row M., (1991) Information Technology at Rosenbluth Travel: Competitive Advantage in a Rapidly Growing Global Service Company, Journal of Management Information Systems, 8, 2.

Copeland, D. and J. Mckenney (1988), "Airline Reservation Systems: Lessons from History", MIS Quarterly, September, pp. 353-370

Damsgaard, J. (1998). Electronic Markets in Hong Kong's Air Cargo Community. In: Schmid, Beat F.; Selz, Dorian; Sing, Regine: EM - International Journal of Electronic Markets 8(3):46-49

Damsgaard, Jan and Lyytinen, Kalle (1998). Contours of Electronic Data Interchange in Finland: Overcoming technological barriers and collaborating to make it happen. The Journal of Strategic Information Systems. Volume 7, pp. 275-297.

Damsgaard, Jan and Lyytinen, Kalle (2001). Building Electronic Trading Infrastructure: A private or public responsibility. Journal of Organizational Computing and Electronic Commerce 11(2):131-151.

Huigen, J. (1993) "Information and communication technology in the context of policy networks", Technology in Society, vol. 15, pp. 327-338.

Katz, M. L., & Shapiro, C. (1994). Systems Competition and Network Effects. Journal of Economic Perspectives, 8(2), 93-115.

Markus, M. L. (1983). Power, Politics and MIS Implementation, Communications of the ACM, 26, 430-444.

McCarthy, D. (1986) "Airfreight forwarders", Transportation Quarterly, 97-108

Robey, D., Smith, L. A., & Vijayasarathy, L. R. (1993). Perceptions of Conflict and Success in Information Systems Development Projects. Journal of Management Information Systems, 10(1), 123-139.

Shaw, S. (1985) Airline Marketing and Management, Pittman, London.

Short, J. E., and. Venkatraman N. (1992), "Beyond Business Process Redesign: Redefining Baxter's Business Network," Sloan Management Review, Pp. 7-21.

McKenney, J. (1995). Waves of change. Boston: Harvard Business School Press.

Oliva, T. A. (1994). Technological Choice under Conditions of Changing Network Externality. The Journal of High Technology Management Research, 5(2), 279-298.

Wrigley, C. D., Wagenaar, R. W., & Clarke, R. A. (1994). Electronic Data Interchange in International trade: frameworks for the strategic analysis of ocean port communities. Journal of Strategic Information Systems, 3(3), 211-234.

Zaheer A. and Venkatraman N. (1994) "Determinants of Electronic Integration in the Insurance Industry: An Empirical Test" Management Science, 40(5) 549-567.