Chapter XXIV
Stakeholder Participation in Investigating the Impact of E–Commerce Upon the Value Chain

Richard Taylor
Manchester Metropolitan University, UK

ABSTRACT

This chapter discusses qualitative and quantitative approaches to informing and validating ABMs. Research is introduced which addresses the question of how new e-commerce technology is leading to the restructuring of value chains. A case study was undertaken within a major international organisation, focusing on exploring those issues identified as interesting and important by a small stakeholder group working in the company and actively participating in the research. A central theme of this chapter is the interaction and relationship with stakeholders during the project, regarding the development of the ABM. The chapter concludes that a multi-methodological approach is appropriate to simulation-based projects, and identifies stakeholder participation as being useful in several ways, in particular because it facilitates model validation.

INTRODUCTION

This chapter presents work which is both multi-method, uniting qualitative and quantitative approaches with agent-based modelling, and highly stakeholder-orientated, involving senior industry managers at different stages of the project. Whilst the latter point is going to be the main focus of this chapter, the first point remains important, particularly where it concerns stakeholder validation.
A detailed case study was undertaken within the power and automation division of a major international organisation. The research question concerns the nature of the impact that electronic commerce (or e-commerce, for short) technology is having upon the manufacturer, the downstream supply system, and the nature of relationships with distribution partners. The case study was carried out in 2001-2003 during a period of business process reengineering (BPR). The transformation programme was intended to develop “e-business” capability by integrating existing e-commerce systems with a new Internet-based electronic mall system specifically designed to improve links with customers. More precisely, it was thought that the transformation would improve information flow, customer service, and internal efficiency at the organisation. The paper describes managers’ perceptions of the impacts of these changes upon the business and the implications for their traditional supply chain partners: the distributors.

Value chains and inter-organisational systems (IOS) have been shown to be a fruitful area for the application of agent-based techniques (Parunak & Vanderbok, 1998; Moss, Edmonds et al., 2000; Fioretti, 2001). The approach is well suited because the systems under investigation have certain properties (involvement of many heterogeneous actors, high interaction, decentralization, and communication infrastructure) that are typical of systems developed and studied by researchers in this field. Continuing along this line of investigation, the current work considers the introduction of a new ICT and models its impact upon the value chain. The research will be shown to illustrate that quantitative and qualitative methods can be usefully combined in formulating the model and that participation can help to target the objectives of simulation projects.

LITERATURE REVIEW

Essential to the creation and operation of supply systems is the provision of effective information flow between the various business processes: A frequent concern is that some of the links are not as good as others in this respect. Aimed at improving these networking aspects, one new information and communications technology (ICT) which appears to be impacting the supply chain is the Internet. The development of the Internet shows potential as a flexible “transportation layer” for a new generation of e-commerce applications.

Internet-based e-commerce was foreshadowed by earlier applications developed using Electronic Data Interchange (EDI) protocols for linking together large departments, providing propriety platforms for high-volume business data, in secure, yet relatively inflexible arrangements. Nowadays the Internet is seen as bringing a new set of characteristics to the e-commerce domain and there has been a take-off of interest in the technology. There has been a rapid commercialisation of the Internet as a new channel for providing product information and availability, marketing, ordering systems and order tracking, and powerful tools for handling customer-relations management.

Research has identified new organisational and market forms, and new opportunities and risks (Timmers, 1999; Turban, et al., 1999; Berryman, et al., 2000), as well as suggesting industries in which e-commerce may have a large impact, e.g., financial markets (Bakos et al., 2000), tourism and leisure (Chircu & Kauffman, 2000; McCubbrey, 1999), or car dealerships (Watson & McKeown, 1999; Marshall, et al., 2000). Notably, these are mainly the services industries involving a concentration of information processing activities which may be automated, decentralised, open to other potential improvements, or subject to competition from Internet-only companies, the so called “cybermediaries” (Jin & Robey, 1999).