Actor–Network Theory and Adoption of E–Commerce in SMEs

Arthur Tatnall
Victoria University, Australia

Stephen Burgess
Victoria University, Australia

INTRODUCTION

Just because e-commerce technologies seems like useful tools that may assist a small to medium enterprise (SME) in doing its business better, it does not necessarily follow that these technologies will be adopted by this business. The implementation of an e-commerce system in an SME necessitates change in the way the business operates, and so should be considered as an innovation and studied using innovation theory.

Electronic commerce (e-commerce) is concerned with how computers, information systems and communications technologies can be used by people to improve the ways in which they do business. As e-commerce necessarily involves interactions of people and technology, any study of how it is used by a small business must be considered in a socio-technical context. Although there is no universal consensus on what constitutes e-commerce, we believe that it contains elements of information systems, business processes and communications technologies. The complexity of studies in e-commerce is due, to a considerable degree, to the interconnected parts played by human actors and by the multitude of non-human entities involved. Small business managers, sales people, staff involved in procurement and warehouse operations, computers, software, Web browsers, Internet service providers (ISP), modems and Web portals are only some of the many heterogeneous components of an e-commerce system.

BACKGROUND

Adoption of E-Commerce by SMEs

In this article we will argue that the decision to adopt, or not to adopt a new technology, has more to do with the interactions and associations of both human and non-human actors involved in the project than with the characteristics of the technology. Information systems are complex socio-technical entities and research into their implementation needs to take account of this complexity, which will only be seen if it is reported in all its “messy reality” (Hughes, 1983). Research into the implementation and operation of these systems needs to take this heterogeneity into account and to find a way to give due regard to both their human and non-human aspects.

One view of the adoption of an electronic commerce innovation by a small business suggests that decisions are made primarily based on their perceptions of the characteristics of the technology concerned. Innovation diffusion (Rogers, 1995) uses this approach, and is based on the following elements: characteristics of the innovation itself, the nature of the communications channels, the passage of time, and the social system. Using this sort of approach, the researcher would probably begin by looking for characteristics of the specific e-commerce technology to be adopted, and the advantages and problems associated with its use. The next step would be to suggest that the adoption, or rejection, of this technology by the small business was due largely to these characteristics. We contend that while there may be some validity in such an approach, it is unlikely to provide the complete explanation, as it would miss other influences due to interpersonal and inter-business interactions, and to the backgrounds of the people involved.

Innovation Translation

We argue that actor-network theory (ANT) has much to offer in a situation like this. A researcher using an actor-network approach to study innovation would concentrate on issues of network formation, investigating the human and non-human actors and the alliances and networks they build up. They would investigate how the strength of these alliances may have enticed the small business to make the adoption or, on the other hand, to have deterred them from doing so (Tatnall, 2000, 2002; Tatnall & Gilding, 1999). While some research approaches to technological innovation treat the social and the technical in entirely