Innovation Translation and E-Commerce in SMEs

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INTRODUCTION

Adoption of a new technology cannot be automatically assumed. The implementation of an e-commerce system in a small to medium enterprise (SME) necessitates change in the way the business operates, and so should be considered as an innovation and studied using innovation theory. In this article we 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 nonhuman actors involved in the project than with the characteristics of the technology.

As e-commerce necessarily involves interactions of people and technology, any study of how it is used by SMEs must be considered in a socio-technical context for its true complexity to be revealed (Tatnall & Burgess, 2005). This complexity is due, to a considerable degree, to the interconnected parts played by human actors and by the multitude of nonhuman entities involved: small business managers, sales people, procurement staff, computers, software, Web browsers, Internet service providers, modems and Web portals are only some of the many heterogeneous components of an e-commerce system. In this article we will argue that the complexity of these systems is best seen and understood by taking this heterogeneity into account and finding a way to give due regard to both human and nonhuman aspects. The implementation of an e-commerce system in an SME necessitates change in the way the business operates and we contend that this is best studied in the light of innovation theory. In this article we examine how innovation translation, informed by actor-network theory, can be usefully applied in analysis of the adoption, or nonadoption, of e-commerce. We illustrate this in two Australian case studies.

ACTOR-NETWORK THEORY

One view of the adoption of electronic commerce by an SME 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 a 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. 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 interbusiness interactions, and to the background of the people involved. We further suggest that this is particularly the case in SMEs, where the more formal adoption procedures generally used in larger companies often do not apply.

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 nonhuman 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, 2002; Tatnall & Gilding 1999). Although some research approaches to technological innovation treat the social and the technical in entirely different ways, actor-network theory proposes instead a socio-technical account in which neither social nor technical positions are privileged.

In our experience it is often the case that when a small business is considering a technological innovation it is interested in *only some aspects* of this innovation and not others (Tatnall 2002; Tatnall & Burgess, 2002). In actor-network terms it needs to *translate* (Callon, 1986) this piece of technology into a form where it can be adopted, which may mean choosing some elements of the technology and leaving out others. What results is that the innovation finally adopted is not the innovation in its original form, but a translation of it into a form that is suitable for use by the recipient small business (Tatnall, 2002).

Unlike the more formal procedures used by larger organisations, in many instances a small business propri-

etor will adopt e-commerce because a friend is using it, or because they know a competitor is using it, or because a son or daughter learned about it at school (Burgess, 2002; Tatnall, 2002). The nature of each small business, the interbusiness interactions in which they engage, and the backgrounds and interests of particular individuals in each are also likely to have an important affect that would, most likely, have been ignored by the essentialist approach offered by innovation diffusion. Actor-network theory, in examining alliances and networks of human and nonhuman actors, provides a good foundation from which small business adoption and use of e-commerce can be researched. The ANT approach will be further amplified in the case studies that follow, particularly in respect of the identification of actors and networks (Tatnall, 2005).

THE CASE STUDIES

Each of the case studies that follow will include a discussion, under the umbrella of actor-network theory, of the approach taken by each of these SMEs to the adoption, or nonadoption, of e-commerce. In each case, data for the study was obtained through a series of semistructured interviews (2001, 2002) with the proprietors and personnel of the businesses involved. The data was then subjected to an ANT analysis in which actors and networks were identified and interactions were traced. The approach used in ANT to identify and trace networks is to "follow the actors" (Latour, 1996, p. 10) and investigate the leads each new actor suggests. This means that it is primarily the actors themselves, and not the researcher, that determine the direction taken by the investigation.

Adoption of the Bizewest Portal by a Storage and Transport Company

Company Background

In June 2000 the Western Region Economic Development Organisation (WREDO), in Melbourne, Australia, received a government grant for a project to set up a B-B portal (Pliaskin & Tatnall, 2005). This innovative project was to create a horizontal portal, *Bizewest*, which would enable the whole range of small to medium enterprises in Melbourne's west to engage in an increased number of e-commerce transactions with each other. An important aspect of the development was youth involvement, and students from local high schools who were studying information technology related subjects, were to be given the opportunity to consult with SMEs on a one-to-one basis in the development of their Web pages for the portal. Bizewest became operational in June 2001.

The business to be considered here is a medium-sized Melbourne company with about 50 employees that stores frozen food and transports it to supermarkets and other locations around the country. An interview with the general manager, who is also owner of the business, was conducted soon after his company adopted the Bizewest portal. When asked whether the company had already begun to make use of B-B e-commerce, he replied that they "do a little bit of it at the moment," and went on to describe how the company had only recently got all the computers in their office networked, and how this meant that they could now link all their staff to the portal.

Description of E-Commerce in the Company

Clients of the business include both small and large companies from many parts of the world, and it has dealt online with some of the larger ones now for over two years. In one case the firm is directly online with their client's stock so that they can facilitate all their freezing work. The general manager has found, however, that many companies are slow coming online and suggests this is because they are not really sure what systems to use. The general manager has been involved with the local industry group for over 12 years and was no stranger to innovation and change. When approached by WREDO to be involved in the Bizewest project he indicated that he would. When asked if he had any specific expectations for Bizewest, he said that he did not, but that he thought it was "a really good idea." He indicated that he thought it was great for the region in giving local businesses a chance to work with one another. When asked about the benefits he saw in adopting the portal he stated these in terms of time savings and better service.

A major reason that the company adopted the portal was the hope that it would provide a better opportunity to deal with people in the local region. The general manager thinks that it is going to provide many benefits for everybody, not just his company, and this is important to him. He thinks that use of the portal will change his business by enabling it to use people in the local region, and that "working together for the benefit of everybody" will be advantageous for the region. Another factor that prompted the adoption of the portal was being able to involve school students in creating the company's web pages. With a long interest in the community and in education, the general manager saw this as important.

ANT Analysis of the E-Commerce Adoption

It is clear from the study that the transport company has "not really been into computers," and has only recently