Chapter VIII

Mapping the Diffusion of the Internet Technology Cluster: An Examination of Irish SMEs

James Griffin, Tipperary Institute, Ireland

Abstract

This chapter adopts a ‘technology cluster’ perspective in examining Internet usage within SMEs, analyzing Internet usage in terms of three distinct Internet technology groupings. Specific attention is paid to identifying and categorizing the diffusion pattern of website development among the SME sector on the basis of the theory of mimetic IT adoption patterns. Two potential hybrid diffusion patterns are identified, and their implications for policy makers and development agencies in the SME sector are discussed.

Introduction

Electronic commerce (e-commerce) has been recognized as a source of fundamental, pan-sectoral change to the conduct of business (Malone, Yates, & Benjamin, 1989; Quelch & Klein, 1996; Benjamin & Wigand, 1995). Chan and Swatman (2000) use the term, ‘a new
paradigm for doing business’. Other authors have gone further, viewing modern IT developments as the latter part of a period starting in the mid-1970s that represents a transition to nothing less than a new phase of capitalist development (Amin, 1994). Benjamin, Rockhart, Scott Morton, and Wyman (1983) also suggest that the world economy has been fundamentally altered by the globalization of competition, which has largely been caused by the declining cost and consequent increasing spread of IT developments.

The resulting shift in business practices as businesses attempt to exploit these new opportunities will necessitate wide-scale adoption of new processes and technologies. Elliot and Loebbecke (2000) suggest that this requires new thinking on how organizations adopt innovations and the revision of theoretical models of adoption. Bamfield (1994) identifies innovation theory as an appropriate framework for understanding IT adoption processes. La Rovere (1998) concurs, stating that the diffusion of innovations in information technology (IT) is becoming an increasingly important area of study.

Furthermore, any overview of recent Internet-related literature will identify that the issue of mapping diffusion patterns is being increasingly effected by the range and variety of technologies that are drawn into the e-business platform. In terms of understanding the nature of Internet usage and diffusion within SMEs, it is necessary therefore to measure individually the extent to which the different elements—of what essentially comprise an Internet Technology Cluster—are used among adopting firms.

This necessitates a definition of the different elements of the Internet Technology Cluster. This can be accomplished through the analysis of past surveys and technical articles written in the field of Internet research. Three basic elements are identifiable. Firstly, several studies have identified e-mail as the most common Internet application used in business (Howe, 2001; Everett, 1998; Feher & Towell, 1997).

Secondly, many of the most common Internet technologies and applications center around the Internet browser. Graphics, audio, HTML, and HTTP technologies are all involved in the presentation of websites to the viewer via the browser, while research and communications applications such as search engines, newsgroups, and discussion groups and online journals are viewed via the browser (Enterprise Ireland, 2001; Bina & Andresson, 2001; Winder, 1995; Turban, Lee, King, & Chung, 1999; Engle, 1998; NCSA, 1997; Ellsworth, 1995). These elements can be combined together under the banner of Internet browser usages.

Finally, more complex technologies based around back-end activities and remote access to Internet services (through FTP, WAP, and Telnet) can be grouped together to give an indication of the extent of usage of more advanced Internet applications.

**Examining IT/IS Diffusion Pattern Theory**

The usefulness of adopting an Internet Technology Cluster approach is in its application to the mapping of Internet diffusion patterns among firm populations. Let us take a moment to review some particularly relevant concepts in diffusion theory. Abrahamson
Challenges for Adoption of e-Procurement: An SME Perspective
www.igi-global.com/chapter/challenges-adoption-procurement/76049?camid=4v1a