Chapter 3

IT Standards Adoption and Diffusion Models

INTRODUCTION

The motivation behind this research is to identify the factors that impact the adoption of data-exchange standards, such as STEP. Research into the adoption of STEP and other standards produced by ISO/TC184/SC4, which is the ISO technical committee responsible for the development of STEP, is very limited. Currently there are only two specific empirical studies (Dreverman, 2005; Meister, 2004) that shed light on the factors associated with the adoption of ISO/TC184/SC4 (referred to as SC4 for the remainder of the chapter) standards like STEP. This means that practitioners devoted to the ongoing development and use of these standards, and academics, still lack a significant body of evidence regarding the factors and barriers critical to their adoption.

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Chapter 2 explained how research into standards adoption is important in ensuring the socio-economic benefits of standardization are fully realised. This is particularly true for IT standards, which are the cornerstone for the burgeoning IT sector. In addition, Chapter 2 gave insight into the IT standards research domain as a whole. West (2003) revealed that there is still a significant lack of direct standards related research within the IS community and went on to identify IT standards adoption as a domain that still required research. Therefore, what Chapter 2 has shown is that this research is not only filling a gap within the STEP and SC4 communities, but is also making a contribution the wider body of knowledge surrounding IT standards adoption research.

In light of this, the aim of this chapter is twofold, the first is to provide a more detailed review of the literature surrounding IT standards adoption, and the second is to develop two models that capture the factors and barriers critical to the adoption of data-exchange standards. The objective is to provide additional context and background for the research and to present evidence and support from the literature for the preliminary conceptual models that guided this research. The first section of the chapter gives an overview of the meanings and definitions associated with words like ‘adoption’ and ‘diffusion’ and correlates that with the innovation and adopter centric approaches taken in this research. The second and third sections then give a detailed background behind the development of the two models. The preliminary models developed in this chapter are viewed as a ‘first cut’ of the research domain as described by Miles and Hubermann (1994). The validity and relative importance of the identified factors will be assessed in Chapter Five and Six. The concluding section gives a summary of the chapter and introduces the standards and organization that will be used to test and verify these models.

ADOPTION AND DIFFUSION TERMINOLOGY

The terms adoption and diffusion are often used interchangeably in IT standards research. Some authors make a distinction between the two terms (Prescott & Cogner, 1995; Nelson & Shaw, 2003), but most authors, such as Chen (2003), tend to discuss the issues surrounding adoption and diffusion without making any clear distinction of the meanings of the two terms, leaving the readers to make assumptions about the intended meaning of the words. In light of this it was considered necessary to make a clear distinction between the meanings associated with the words ‘adoption’ and ‘diffusion’.

The Compact Oxford English dictionary defines diffusion as ‘the action or process of becoming spread over a wide area’ (AskOxford.com, 2005). However, this meaning varies across different application areas. For example, within physical
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