Chapter 4.1
An Empirical Assessment of Technology Adoption as a Choice between Alternatives

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ABSTRACT

Technology adoption by individuals has traditionally been regarded by information systems researchers as a choice between adoption and non-adoption of a single technology. With the current diversity of technology alternatives, the adoption decision may be more accurately specified as a choice between competing alternative technologies. The research question may no longer be simply whether technology is adopted, but rather which technology is adopted. The authors illustrate this with a simplified model of choice between two competing technologies, where the second technology is an enhanced version of the first. Their theoretical model is based on Expectancy Theory (ET). Results indicate that system characteristics can be successfully captured in the Valence Model of ET, and effort expectancy in the Force Model. Future research can expand on these results by including more factors in the Valence Model, and by comparing more than two alternative technologies.

INTRODUCTION

Technology adoption research has been one of the main topics in Information Systems research. As Information Systems and their position in society have changed, the focus and methods of research studying their adoption have changed. Understanding these decisions has become paramount. Previous technology adoption research has focused on identification of factors that influence individuals' decisions to adopt a technology or not. This has resulted in an impressive body of literature that describes influences of system factors, social factors, facilitating factors, and personal factors. With the current pervasiveness of technology, the adoption decision process may no longer be a choice between adopting a technology or not, but a decision of which technology should be selected. This is illustrated by the shift from desktop computers to laptop computers. In recent years, mobile professionals have adopted laptop and handheld computers for record keeping, billing, research, reference, reporting, documentation, collaboration, and countless other activities. In June 2005, the sale of laptops surpassed the sale of desktop computers for the first time (CBS Broadcasting Inc., 2005). Indeed, feature-laden models are now termed "desktop replacements." A second example is the development of the Tablet PC, which presented a unique opportunity for mobile use (Coursey, 2003; Einhorn, Greene, & Kunii, 2004). Laptops require support on a work surface (such as a desk, table, or lap) to enable input with the keyboard or mouse, whereas Tablet PCs and other devices do not. Users may consider using these technologies as alternatives to traditional laptop computers because of their relative advantages. Using a computer in mobile work environments requires a combination of sufficient screen size, instant availability, sufficient processing power, proper software, connectivity, and the capability of use regardless of body position. This was the promise of the Tablet PC (Howard, 2005). Personal Digital Assistants (PDAs) and web-enabled cell phones can be used while standing and are instantly available, but lack processing power, business software, sufficient screen size, and keyboards. Tablet PCs have seen adoption in selected areas, such as healthcare and education, which indicates that the special features of Tablet PCs are compelling for some users, but not for all mobile computer users. In summary, users today are likely to choose among four major alternatives in mobile computing: regular notebooks, Tablet PCs, PDAs, and web-enabled cell phones.

In our research we present an empirical study in which pre-professionals with a high need for mobile computing compare two alternatives in a relatively simple model. This study illustrates the principle of technology adoption as a comparison between alternatives, as opposed to an adoption decision. We compare positive differences between two alternatives, the regular notebook and the Tablet PC, with the Tablet PC possessing a set of enhancements that may make them more attractive to mobile professionals. Applicants to a veterinary college in the southeastern United States, required to use laptop computers or Tablet PCs in their program of study, provided answers to survey questions designed to investigate the research question. First, they viewed a live demonstration of three sets of selected Tablet PC features. After familiarization with the potential benefits, they reported their perceived attraction to all possible combinations of the three feature sets. The results of this study are relevant to decision makers within businesses or institutions contemplating adoption of Tablet PCs, to mobile computer users who are considering a choice between Tablet PCs and traditional laptop computers, and most of all, IS researchers who may wish to study technology adoption as a choice between competing technology alternatives rather than isolated adoption decisions for single technologies.

The next section presents a discussion of the development of technology adoption based on seven sentinel publications. We follow with a discussion of Expectancy Theory as a vehicle for

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