Chapter 9
Modeling Choice Between Competing Technologies: A Comparison of Mechanisms and Information Integration

Miguel I. Aguirre-Urreta
DePaul University, USA

George M. Marakas
Florida International University, USA

ABSTRACT

Even though there is a rich and extensive literature on the individual adoption of technologies, limited attention has been placed on the choice of one among competing alternatives, which the authors posit as an essential antecedent to the individual acceptance decision that has been considered in the past. In this chapter, they compare two levels at which the choice can be made—expectations and intentions—and then review and contrast four different comparison mechanisms that can integrate the evaluations made at each level as predictive of actual choice. These were investigated by asking business professionals to assess and evaluate technologies for potential adoption within their domain of expertise, and then a second study was conducted to further validate the results thus obtained. The authors also extensively discuss the implications of this research for future work on the processes leading to adoption of information technologies.

INTRODUCTION

Researchers in a variety of disciplines have long held an interest in the mechanisms associated with how individuals make choices. Contexts ranging from consumer purchasing to vacation decisions to selection amongst alternative forms of transportation have focused on the processes by which an individual selects from a set of alternatives. Within the field of information systems research, the decision to adopt a particular technology has been a focus of research for over 20 years. Since the introduction of Davis's

DOI: 10.4018/978-1-5225-5201-7.ch009

seminal work in 1989, literally hundreds of empirical studies, in countless contexts, have employed the technology acceptance model (TAM) as a basis for investigating adoption behavior. This model and its various iterations, including its most recent, the Unified Theory of Acceptance and Usage of Technology (UTAUT; Venkatesh, Morris, Davis and Davis, 2003), position behavioral intention as an antecedent to adoption and use behaviors.

While the UTAUT displays a high degree of explanatory power (Venkatesh et al., 2003; Venkatesh, Thong, & Xu, 2012), its application has focused on contexts where intentions were modeled as a decision to adopt or not adopt a single technology. Such scenarios have served to increase our understanding of the antecedents to adoption behavior, and serve to help explain adoption behaviors by individual members of an organization. To the extent that the constructs in the theory accurately capture perceptions and intentions by individuals towards a particular technology, their use can be extended to contexts where more than one technology is available for adoption. One such context is the evaluation and selection of technologies for organizational adoption.

A foundational knowledge of practice suggests that a decision to adopt a given technology for widespread use by an organization is generally a process of decision points with a step proximate to the final decision involving a group of individuals making comparison of candidate technologies from a refined set, with a mandate to select one of the alternatives for adoption (absent any significant limitations associated with the final choice alternatives) (E. Anderson, 1990; Sherer, 1993). In particular, both managers and end-users are heavily involved in the selection process (Ballantine, Galliers, & Stray, 1996). Therefore, it is likely that the same individual perceptions that affect the decision to adopt by end-users will play a role when those same users evaluate alternative technologies. Scenarios where alternatives must be considered, and weighed with regard to a decision amongst them, logically positions *choice* as a causal outcome to intentions and as a direct antecedent to adoption behavior. As such, if we are to continue extending our understanding of technology adoption beyond the context of individual adoption behavior, we must explore incorporating choice into our modeling of the process, and investigate its relationship to other established constructs within the theory. The incorporation of alternatives into our current theoretical understanding implies that comparisons amongst such alternatives must, therefore, be modeled.

It has long been recognized, though seldom incorporated into empirical research designs, that behavior is ultimately the result of a choice amongst alternatives (Bagozzi & Van Loo, 1991; Sheppard, Hartwick, & Warshaw, 1988). Early on, Ajzen and Fishbein (1969) noted an important limitation of much attitude research, in neglecting to consider that individuals do usually have a choice between alternatives, and that better predictions of behavior would result from the consideration of attitudes toward other potential behaviors. At the most basic level, two alternatives are always present in any behavioral decision: performing the focal behavior, and not performing the focal behavior (Jaccard, 1981). More generally, several alternative behaviors may be possible in any given situation, including the option of not performing any. As stated by Ajzen and Fishbein (1980, p. 41):

.. all behavior involves a choice, be it a choice between performing or not performing a given action or a choice among several qualitatively or quantitatively different action alternatives.

In general, there is considerable agreement amongst researchers on the need to model more than just the alternative of interest in order to increase the prediction of later behavior (Albert, Aschenbrenner, & Schmalhofer, 1989; Davis & Warshaw, 1991; Jaccard, 1981; Jaccard & Blanton, 2004; Van Den Putte, Hoogstraten, & Meertens, 1996; Warshaw & Dröge, 1986). When it comes to the technology acceptance