



# Proposed Study of End-User Perceptions Regarding Tablet PCs

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## ABSTRACT

*Tablet PCs were first introduced in 1989. Since then, their use has been limited to niche markets. Recently, they demonstrate the potential to replace notebooks, or even desktop computers, as the computing platform of choice. Reviews in the popular literature are generally supportive ((Arar 2001), (Freed et al. 2002), (McLeod 2003), (Metz 2003), (Villano 2003)). Our study uses Expectancy Theory to examine end-users' perceptions of and motivation to use Tablet PCs. Applicants to a Veterinary College in the southeastern United States, who are required to use Tablet PCs in their program of study, will complete a judgment modeling exercise included in the standard application package for the academic year 2004-2005. Results from our study will increase understanding of new technology adoption and successful implementation of Tablet PCs in the workplace.*

## INTRODUCTION

Until recently, seamless integration of computing devices faced obstacles related to lack of mobility, lack of processing power, or use of form factors mostly suitable for simple text-based applications. Desktop PCs can fulfill most end-user computing requirements but lack mobility. Notebook computers are portable but must be supported on a work surface for input with keyboard and mouse. Spontaneous use is restricted by limited battery life and by the need to boot up the device. Personal Digital Assistants are instantly available but lack processing power and screen size. Truly mobile computing requires a combination of sufficient screen size, instant availability, sufficient processing power, connectivity, and usability independent of body position. This is the promise of the Tablet PC.

## EXPECTANCY THEORY

Expectancy Theory (ET) (Vroom 1964) explains human behavior as a combination of attaching a subjective value to an action and the subjective evaluation of the probability that the value will be realized. People decide if the result is attractive, and then whether to spend the effort necessary to realize the benefits. ET uses two related models. The first model, the Valence Model, measures overall attractiveness as the summation of the products of attractiveness of individual outcomes and their associated probabilities of realization. This relationship can be expressed as  $V_j = \sum_{k=1}^n (V_k I_{jk})$ , where  $V_j$  is overall attractiveness,  $V_k$  is attractiveness of outcome  $k$ , and  $I_{jk}$  is the probability of realization. Multiple regression represents the relative importance of individual outcomes as beta coefficients in the equation. Significant differences

between values of the beta coefficients indicate that one outcome is more important than another. Significance of the Valence Model demonstrates the ability to help explain overall attractiveness.

In our study, respondents will rate the level of attractiveness for all combinations of potential Tablet PC benefits in three areas derived from an inventory of individual end-user features mentioned in case histories at Microsoft's Tablet PC promotion web site (Microsoft 2003). The potential benefits have been grouped together to form three distinct sets of benefits: mobility, flexibility of use, and potential for collaboration. An example of a mobility feature is the ability to make notes while standing or walking, without having to support the device to type. Using the electronic pen is an example of flexibility of use, and collaborative drawing on "whiteboards" is an example of a collaboration facility. Tablet PCs share some features with traditional notebook PCs, and benefits of Tablet PCs will be presented to respondents as the absence or presence of additional benefits of Tablet PCs over notebooks. For instance, both notebooks and Tablet PCs have built-in wireless networking. The advantage of the Tablet PC is the ability to use the device for accessing the Internet while standing, without the need to type URLs.

The second model, the Force Model, measures motivation to use. For each combination, overall attractiveness from the Valence Model is multiplied by a probability that a certain level of effort will result in successful use. This relationship can be expressed as  $F_i = \sum_{j=1}^n (E_{ij} V_j)$ , where  $F_i$  is motivational force,  $V_j$  is overall attractiveness from the Valence Model, and  $E_{ij}$  is the probability of success. Simple regression analysis is used with reported level of effort for use as the dependent variable. The product of attractiveness and probability (10% or 90%) of success is the independent variable. The beta coefficient in the regression equation represents motivation. Significance of the model indicates the ability of the Force Model to help explain motivation to use.

## RESEARCH OBJECTIVES

Our general research question is: "Which benefits of Tablet PCs are the most important to end-users?" From this question, we generate the following hypotheses:

$H_1$ : increased mobility positively influences overall attractiveness of Tablet PCs.

$H_2$ : increased flexibility in use positively influences overall attractiveness of Tablet PCs.

*H<sub>3</sub>: increased collaboration features positively influence overall attractiveness of Tablet PCs.*

*H<sub>4</sub>: respondents will value mobility, flexibility and collaboration differently.*

*H<sub>5</sub>: the Valence Model can help explain overall attractiveness of Tablet PCs.*

*H<sub>6</sub>: increased probability of successful use positively influences intention to use Tablet PCs.*

*H<sub>7</sub>: the Force Model can help explain motivation to use Tablet PCs.*

## RESEARCH DESIGN

Applicants to a College of Veterinary Medicine are appropriate subjects, given that they are entering into an environment characterized by extreme demands with regard to productivity, efficiency and completeness. Many have work experience and all will participate in collaborative groups. The “anywhere, anyplace” use of the Tablet PC, coupled with the collaboration features, covers all relevant differences with traditional notebooks.

A hardcopy survey will be included in the College’s application packet. Respondents will read a brief explanation about the nature and capabilities of Tablet PCs and complete 10 rating forms with different combinations of benefits. The first two act as a “warm-up,” and the last

eight represent all three-factor combinations. The survey has been pilot tested, and pilot testers completed the survey in about 20 minutes.

## CONCLUSION

Results from our study, to be presented at the conference, will contribute to the understanding of the adoption of new technology in general, and Tablet PCs in particular. Additionally, the results will help give direction to successful implementation of Tablet PCs in the workplace.

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