

Technology Adoption, Expectancy Value and Prediction Models

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INTRODUCTION

During the last few decades, various theoretical developments have been carried out with a view to describing the characteristic and distinct behavioral process that lies under any adoption of technological services and products. These developments are based mainly on the Social Psychology approach.

There are three extensive theories within the field of Social Psychology whose ultimate purpose has been to define the internal psychological factors that explain human behavior: the expectancy-value theory, the cognitive dissonance theory, and the self-perception theory. While the expectancy-value theory has been widely used in the research of adoption and usage of information systems, the other two theories have been less recognized.

Of all expectancy-value theory models, we should draw our attention to the reasoned action model (Ajzen & Fishbein, 1980), because it underlies many of the studies on usage of technology. The planned behavior model (Ajzen, 1985, 1991) represents a reformulation of the reasoned action model, justified by the existence of conducts that, albeit in part, a person cannot voluntarily keep under control. A rough description of both models is presented in this chapter, inasmuch as they served as a basis for the construction of the technology acceptance model (Davis, 1989; Davis, Bagozzi & Warshaw, 1989), known as one of the main models for the technology readiness concept. The technology acceptance model seems to possess a similar or even better explicating power than its predecessors (Davis et al., 1989; Mathieson, 1991; Taylor & Todd, 1995a; Chau & Hu, 2002).

The TAM has also been successfully applied in the health care context in order to examine the suitability of the TAM in explaining physicians' decisions to accept telemedicine technology (Chau & Hu, 2002).

Recently, authors have attempted to apply current models of technology acceptance to the use of Internet technologies and e-commerce. In particular, several authors have selected the TAM in order to characterize individuals' perceptions and intentions toward the use of the Internet (Muthitacharoen & Palvia, 2002; Pavlou, 2003). Due to the technological characteristics of the Internet channel, the TAM should provide a good framework where the specific factors that influence the adoption and usage of e-health technologies can be integrated. Physicians are among the principal users of this technology and have profound influences on its success.

EXPECTANCY-VALUE MODELS

We now proceed with a brief examination of the main expectancy-value models that have served as a theoretical basis for models of use of technology prediction, so we can gain a much better insight of the latter.

The Reasoned Action Model

The reasoned action model (Ajzen & Fishbein, 1980), whose ultimate aim is the prediction and understanding of human behavior determinants, argues that the latter is mostly under the subject's control and, as a consequence, can be forecast by observing the declaration individuals make of their intentions to carry out or not to carry out a particular type of conduct. Also,

the behavioral intention directly depends on two factors: a personal one or an attitude toward behavior that represents the individual's either positive or negative evaluation of whether an action should or should not be done; and a social factor or subjective norm that is the personal awareness of social pressures that force us to take that course of action.

Attitudes can be explained by considering the information the individuals possess that shapes their beliefs in the consequences when a certain conduct becomes real. Attitudes do not depend solely on beliefs but also on the evaluation people make about each of those behavioral beliefs. Therefore, the drive of each belief (degree of certainty that upholds it) is boosted by the negative or positive intensity of the outcome of the conduct. The sum of all products results in an attitude.

Subjective norms can be indirectly assessed from two main components: first, the informative basis of individuals, which establishes normative beliefs, that is to say, beliefs about how other people or institutions (referees) judge how an individual should behave; second, the subject's motivation to observe the referees' directives. Like it happens with attitudes, each normative belief is boosted by the motivation to follow that opinion. The subjective norm is obtained from the sum of all these products.

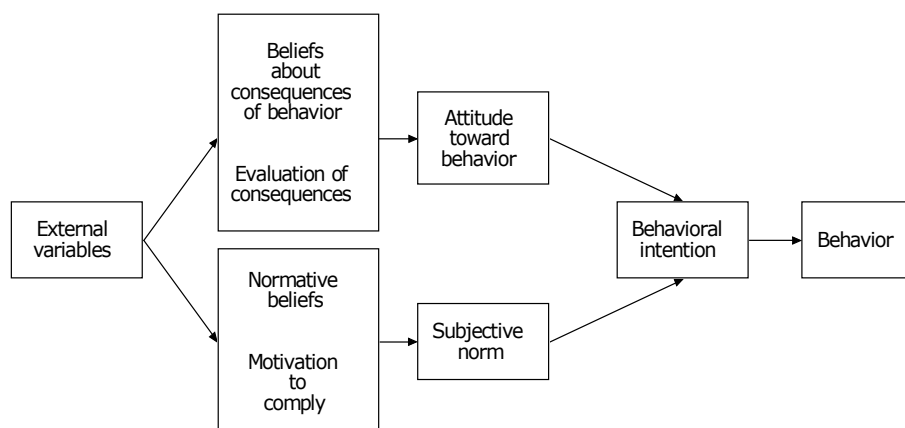
In this model, we can see a display of another series of external variables or stimulus conditions that affect relationships between intentions and behavior by means of their direct influence on beliefs in the consequences of conduct and in normative beliefs (see Figure 1).

Azjen and Madden (1986) introduced some nuances into the reasoned action model by pointing out that previous experience, attitudes, and subjective norm can influence one another; attitudes can influence behavior both indirectly through behavioral intention and also directly; subjective norm can only have an indirect effect on behavior; and previous experience can influence conduct indirectly as well as directly. The results of this investigation also show that the relation between intention and behavior is not as intense as it should be to make trustworthy predictions. Thus, "intentions only forecast behaviors not requiring either special abilities or skills, extraordinary opportunities, nor the other people's cooperation (Morales, Rebolloso & Moya, 1996, pp. 563–564).

The Planned Behavior Model

Azjen (1985, 1991) reformulated the aforementioned reasoned action model, thus originating the planned behavior model (see Figure 2). The difference between both models lies in the fact that the latter introduces the perceived behavioral control element to improve the behavioral intention forecast. The introduction of this intention-determining factor is justified by the existence of conducts, which at least in part cannot be kept under the voluntary control of the individuals. That is to say, irrespective of a likely favorable attitude toward a certain behavior and the strong pressure that individuals receive around them urging them to do it, their intention will

Figure 1. Reasoned action model



Source: Adapted from Ajzen and Fishbein (1980)

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