# 40 WHEN COUNTERFACTUAL THINKING MEETS THE TECHNOLOGY ACCEPTANCE MODEL: An Investigation

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**Abstract** *Technology offers great benefits to employees. This study draws from the theory of the technology acceptance model (TAM) and counterfactual thinking theory and posits anticipated emotion to be an important intermediate variable between adoption intention and exogenous factors (i.e., perceived usefulness and perceived ease of use). The proposed model lays the foundation for a richer understanding of employee's adoption of technology.*

**Keywords** Technology acceptance model, counterfactual thinking

## 1 INTRODUCTION

A fundamental understanding of factors affecting user adoption of information technology related business applications is of great importance to Information Systems researchers and practitioners. While much extant research focuses on identifying factors leading to higher propensity for technology adoption, we posit that identifying the determinants requires a model that takes into account the judgments associated with the technological evaluation. Toward this goal, we seek to synergize extant studies in technology adoption and counterfactual thinking to propose an alternative examination of the technology adoption model.

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## 2 TECHNOLOGY ACCEPTANCE MODEL

The technology acceptance model (TAM), the most commonly referenced model, posits that perceived usefulness and perceived ease of use together determine an individual's attitude toward adopting and using a certain technology (Davis 1989). According to TAM, attitude drives usage intentions, and such intentions, in turn, drive realized adoption and usage behavior. TAM also posits a direct link from perceived usefulness as reflection of perceived task performance consequences of using (or not using) the system to intention and behavior, bypassing attitude. Subsequent research has expanded TAM in multiple directions. In general, the model has been shown to have good predictive validity for the use of several information technologies (Adams et al. 1992).

## 3 COUNTERFACTUAL THINKING

The counterfactual thinking principle posits that when a user makes a decision, he will mentally simulate what would happen if choosing one option and compare it to what otherwise might have happened if choosing the foregone option (Kahneman and Tversky 1982). Based on these simulations, one can decide whether the outcomes of different choices would be able to prevent something from happening (e.g., negative emotions), or to prompt the occurrence of other things (e.g., positive emotions). From this perspective, a basic understanding can be derived: users would attempt to reduce anticipated negative emotions (e.g., regret) and increase anticipated positive emotions (e.g., satisfaction) (Medvec et al. 1995).

## 4 PROPOSED RESEARCH MODEL

This study proposes that an individual's propensity to adopt a technology can be affected by perceived usefulness, perceived ease of use, and anticipated emotions (Figure 1).

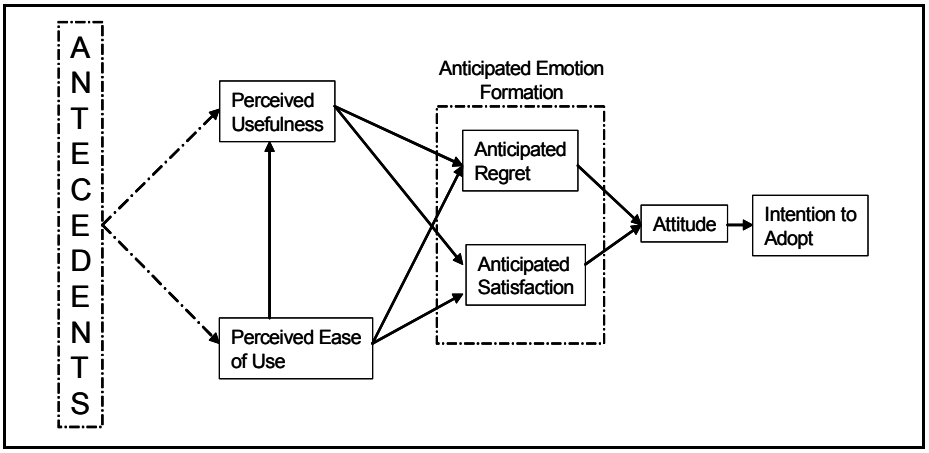


***Figure 1.*** **Research Model**

**Anticipated Regret**: Regret is "a negative, cognitively based emotion that we experience when realizing or imagining that our present situation would have been better had we acted differently" (Zeelenberg 1999, p. 94). Regret theory conceives that a decision maker is aware that he will feel regretful if he makes a wrong choice (Bell 1982) and, hence, he will take into account this anticipated regret when deciding. When individuals evaluate outcomes, they compare what they have received with what they would have received had they made a different choice. If a different choice would have led to a better outcome, then the person will feel regret about the decisions. Conversely, if a different choice would have led to a worse outcome, then less regret results. Regret aroused through decisional choice should motivate a user to engage in a regret-minimizing coping strategy to reduce the possibility in forgoing an optimum choice. With this in mind, one is likely to evaluate the magnitude of anticipated regrets resulting from different choices prior to drawing a conclusion. Applying this to our research context, it is postulated that the higher the anticipated regret of using a technology, the lower the attitude toward adoption and, hence, the lower the intention to adopt.

**Anticipated Satisfaction**: Compared to regret, satisfaction focuses on the comparison between expected and actual performance (Tsiros and Mittal 2000). Satisfaction is not the opposite emotion of regret. For instance, it is observed that while a runner-up in a competition is satisfied with the fact that he won a metal, he would also report regret for not being first (Tsiros and Mittal 2000).

Satisfaction is not merely an emotion itself, but also is formed from the evaluation of certain experience. The expectation-disconfirmation paradigm suggests that satisfaction perception is processed through predefined steps during which users form expectations toward the outcomes, evaluate the actual performance and compare performance, with the expectations, resulting in either positive or negative disconfirmations (McKinney et al 2002). Thus, satisfaction is more of a hybrid of cognition-emotion (Oliver 1997), that is, neither the cognitive processing nor the emotional perception resulting from previous experience or expectation and current conditions should be neglected during the satisfaction formation process. Applying this to our research context in which anticipated satisfaction is conjectured by comparing current expectation with possible future outcomes of adopting a technology, it is hypothesized that the higher the anticipated satisfaction, the higher the attitude toward adoption and, hence, the higher the intention to adopt.

**Perceived Usefulness**: "Usefulness" refers to the individual's perception that using the technology will enhance or improve his/her performance (Davis 1989). Applying this definition to this study, usefulness reflects a user's perceptions that technology enhances the outcome of his/her experience. These perceptions should positively influence anticipated satisfaction and negatively influence anticipated regret. Should using a technology meet the expectation with which judgments are formed prior to adoption decision, a user will judge that technology positively. In other words, if the initial judgment of technology is positive (i.e., useful), then one would anticipate higher satisfaction and lower regret from using it.

**Perceived Ease of Use**: "Ease of use" refers to the individual's perception that using the technology will be free of effort (Davis 1989). Whereas usefulness refers to a user's perceptions regarding the outcome of a technology usage experience, ease of use refers to the perceptions regarding the process leading to the final usage outcome.

According to TAM, ease of use has a dual effect, direct as well as indirect through usefulness, on a user's intention to adopt. The direct effect is explained by the fact that the user attempts to minimize effort in his/her behaviors when making a decision. Applying this to our research context, we postulate that the easier and more effortless it is to engage in a task (i.e., higher perceived ease of use), the less likely one would be to anticipate regret. By investing less effort in learning to use a technology effectively, the user would not experience greater disappointment, which can trigger regret feelings when the outcome does not turn out as expected, but greater satisfaction when superior outcomes are yielded.

# 5 DISCUSSION

To develop an in-depth understanding of employees' intention to adopt a technology, this research takes a specific perspective by arguing that between intentions to adopt and constructs of perceived usefulness and perceived ease of use in the TAM model, there is anticipated emotion. The posited model, by incorporating anticipated emotion formation prior to making an adoption decision, may be able to better reflect the mental evaluation and assessment of the technology available. The research model proposed is of great importance because it helps organizations to make adequate strategic, technological, and marketing decisions to increase a user's propensity to adopt. Although we based our model on a combination of prior psychological studies in identifying anticipated satisfaction and anticipated regret, there can always be other emotional factors influencing a user's intention to adopt. However, we are confident that two pertinent emotional factors are discussed.

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