The Role of Perceived Risk in Consumer Acceptance of Health-Related Technologies

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Introduction

Background

- The proposed model incorporates a conceptualization of elements from the Health Belief Model (HBM), namely perceived risk, into the Technology Acceptance Model (TAM) (Rosenstock, 1974; Bauer, 1960; Davis, 1989).
- Inconsistencies exist in the definitions and measurement of the dimensions of perceived risk in the literature (Brewer, 2007)
- Studies involving pre-prototype testing (i.e., a vignette describing the technology) have found that adoption can be adequately predicted without requiring the user to interact with the actual technology or even a prototype model (Davis & Venkatesh, 2004).

Research Objectives

1. To incorporate constructs from the perceived risk literature into the Technology Acceptance Model (TAM)
2. To explore the dimensions of perceived risk which are relevant in a health care context
3. To test the associations among the variables present in the HealthTAM

Methods

Sample

- National online panel of individuals with diabetes (n=409) completed a cross-sectional, Internet-based, self-administered survey

Vignette

- The research subjects were asked to read a vignette that described a future technology designed to allow individuals with diabetes to monitor blood sugar levels without the use of lancets or the need to draw blood
- Each time an interaction with the device was described in the vignette, the device was carefully compared to a blood-based glucose testing device to reduce the ambiguity of using the device

Methods

Table 1 – HealthTAM Constructs

Construct	Definition
Perceived usefulness	the degree to which a person believes that using a particular system would enhance his or her performance
Perceived ease of use	the degree to which a person believes that using a particular system would be free of effort
Perceived risk	the degree to which a person believes that adopting a particular system will result in negative outcomes
Attitude	an individual's positive or negative evaluation of performing a behavior

Measures

Perceived Risk

- Perceived risk in health behavior literature has largely ignored the conceptualization of risk from the marketing literature
- Conceptualization of perceived risk in the marketing literature provides a more inclusive explanation of the overall risk perception that occurs in decisions making

Technology Acceptance Model (TAM)

- The relationships between the original TAM constructs were retained to determine how they would perform in a health context.

Construct Measurement

- Each of the multi-item constructs were measured using 7-point numerical rating scales, where 1-strongly disagree and 7-strongly agree. The scales were modified from the measures provided by Davis (1989), Davis & Venkatesh (2004) and Stone & Gronhaug (1993)

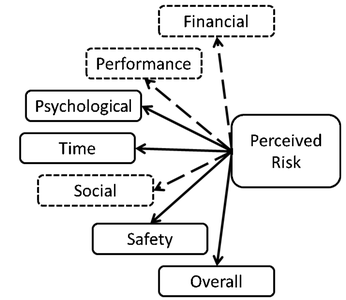
Analysis

Structural Equation Model

- Andersen and Gerbing's (1988) two-step structural equation modeling approach was used to examine the relationships in the HealthTAM model
  - –Measurement model (Hair, 2006 and Bollen, 1989)
  - –Structural model (Bollen, 1989)
- Adjusted for common methods bias (Podsakoff, 2003)
- Reported fit indices (χ^2, CFI, and RMSEA) were selected based on recommendations of Jaccard and Wan (1996)

Results

Figure 1: Dimensions of perceived risk



Measurement Model Specification

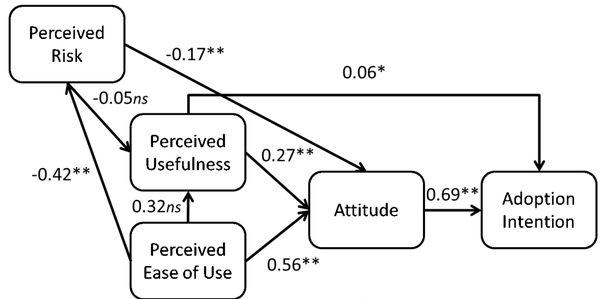
Perceived Risk

- Following procedures outlined by Hair (2006) and Bollen (1989), three dimensions of perceived risk were removed from the measurement model
  - –Social risk, performance risk, and financial risk

Structural Model Results

- After accounting for common methods variance, the final research model resulted in an adequate fit considering the complexity of the model (Schumacker & Lomax, 2004; Hu & Bentler, 1999)

Figure 2: Structural Model Results – Standardized Regression Coefficients†



†After adjusting for common methods variance

Results

HealthTAM Relationships

- After adjusting for common methods variance, both **perceived usefulness** and **perceived ease of use** were found to have positive relationships with **attitude**; however, the relationship between the two constructs was found to be non-significant.
- As hypothesized, **perceived ease of use** was found to be negatively related to **perceived risk**. In addition, **perceived risk** was found to be negatively related to **attitude**, but not to **perceived usefulness**.

Conclusions

Unexpected Relationships

- One might expect **perceived usefulness** and **perceived ease of use** to perform uncharacteristically if the individuals were not able to make the connection between the vignette and a tactile experience.
- Zeithaml (1981) found that as the **intangibility** of a product increases, the more difficult risk assessments become, which might explain the nonsignificant relationship between **perceived risk** and **perceived usefulness** (β=⁻0.05, p=0.693).

Study Contributions

- Incorporated elements of perceived risk into the technology acceptance model (TAM)
- Identified perceived risk dimensions relevant to health
- First known application of the TAM in a consumer sample of individuals with a specific health condition

Acknowledgements

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