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Incorporating Personality into UTAUT: Individual Differences and User Acceptance of IT

Aditya Sharma
Emory University

Alex Citurs
Emory University

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Aditya Sharma
Emory University
Aditya_sharma@bus.emory.edu

Alex Citurs
Emory University
Alex_citurs@bus.emory.edu

ABSTRACT

This paper addresses a gap in individual adoption literature by incorporating the effect of individual differences on IT adoption and use decisions. The research model builds on the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). The proposed model incorporates the five dimensions of personality (Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness to Experience – commonly referred to as the Big-5 in Organizational Behavior literature as potential moderators of the relationship between core UTAUT constructs: performance expectancy, effort expectancy, social influence, facilitating conditions and the dependant variables: (behavioral intent to adopt and use behavior). Hypotheses are developed for each of the relationships that are expected to be impacted by the moderators. An outline of the methodology and discussion of the implications of the findings are presented.

Keywords

IT, adoption, use, acceptance, individual differences, personality.

INTRODUCTION

Besides subjective perception based drivers of adoption and use of technology, another critical aspect of individual technology acceptance is the difference among individuals. The relationship between key drivers of adoption and adoption intent is often moderated by individual differences such as age, gender and experience (Venkatesh and Morris 2000).

While Venkatesh and Davis (2000) call for examining contingency factors that moderate the effect of subjective perceptions on behavioral intentions, little attention thus far has been given to differences between individual traits. This study uses Venkatesh et al.'s (2003) recently published unified theory of acceptance and use of technology model (UTAUT) as basis and extends it to test the moderating effect of personality factors on the core independent and dependant constructs.

This paper applies the Big-5 taxonomy (Barrick & Mount, 1991), widely used in Organizational Behavior personality literature as a measure of individual differences, to the adoption of IT by individuals. More specifically this paper addresses a literature gap in individual adoption of IT and suggests personality dimensions as potential moderators of the relationship between key drivers of adoption and the intent to adopt/use IT.

LITERATURE REVIEW

IS Literature on Individual Adoption

A critical sub-research stream in adoption and use of IT by individuals is where intention and/or usage are used as the dependent variable. Some prominent models in this sub-stream are: Technology acceptance model (TAM) (Davis, 1989) based on theory of reasoned action (TRA) (Fishbein and Ajzen, 1975), innovation diffusion model (Moore and Benbasat, 1991) built on innovation diffusion theory (IDT) (Rogers, 1995), theory of planned behavior (TPB) (Ajzen, 1991), combined model (Taylor and Todd, 1995) that integrated TPB and TAM, and computer utilization model (Compeau and Higgins, 1995) drawn from social cognitive theory (SCT) (Bandura, 1986).

The unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) was formulated by integrating some elements of earlier models. This model was shown to outperform all earlier models and formed the base model of this study. The model's four independent constructs are performance expectancy, effort expectancy, social influence and facilitating conditions (defined in Table 1). Behavioral intent - the intent to adopt the technology and use behavior - the actual use of the technology are the dependent constructs while gender, age, experience and voluntariness moderate relationships between core constructs and dependant variables.

Independent Constructs - UTAUT (Venkatesh et al., 2003)	Definitions
Performance Expectancy	Degree to which an individual believes that using the system will help job performance.
Effort Expectancy	Degree of ease associated with system use.
Social Influence	Degree to which an individual perceives that important others believe that he/she use the system.
Facilitating Conditions	Degree to which an individual believes that organizational and technical infrastructure exists to support system use.

Table 1. Definitions independent constructs UTAUT model

Personality Literature and Big-5

Accumulated prior research evidence suggests that virtually all personality measures and specific traits can be reduced /categorized under the 5-factor model of personality (called the Big-5) (Barrick & Mount, 1991). These 5 constructs, defined in Table 2, have been found to have a genetic basis, are generalizable across most cultures and remain fairly stable over time (Costa & McCrae, 1988).

Big-5 – Personality Dimensions	Definitions as represented by traits (Barrick and Mount, 1991; Judge and Bono, 2000; Moon 2001 ; Judge et al. 1999)
Extraversion	Tendency to be outgoing, assertive, active and excitement seeking.
Agreeableness	Tendencies to be kind, gentle, trusting and trustworthy
Conscientiousness	Tendency to be thorough, responsible, organized, hardworking, achievement oriented and persevering
Neuroticism	Tendency to be anxious, fearful, depressed, and moody
Openness to Experience	Tendency to be creative, imaginative, non conforming, experimentative, perceptive, and thoughtful

Table 2. Definitional traits of personality dimensions

RESEARCH MODEL AND HYPOTHESES

This study extends Venkatesh et al's (2003) UTAUT model by proposing that the Big-5 personality factors are relationship moderators in the model as shown in Figure 1 and whose impacts are outlined in Table 3. For each Big-5 factor in the following subsections, a definition, its moderator relevance, and associated hypotheses are discussed.

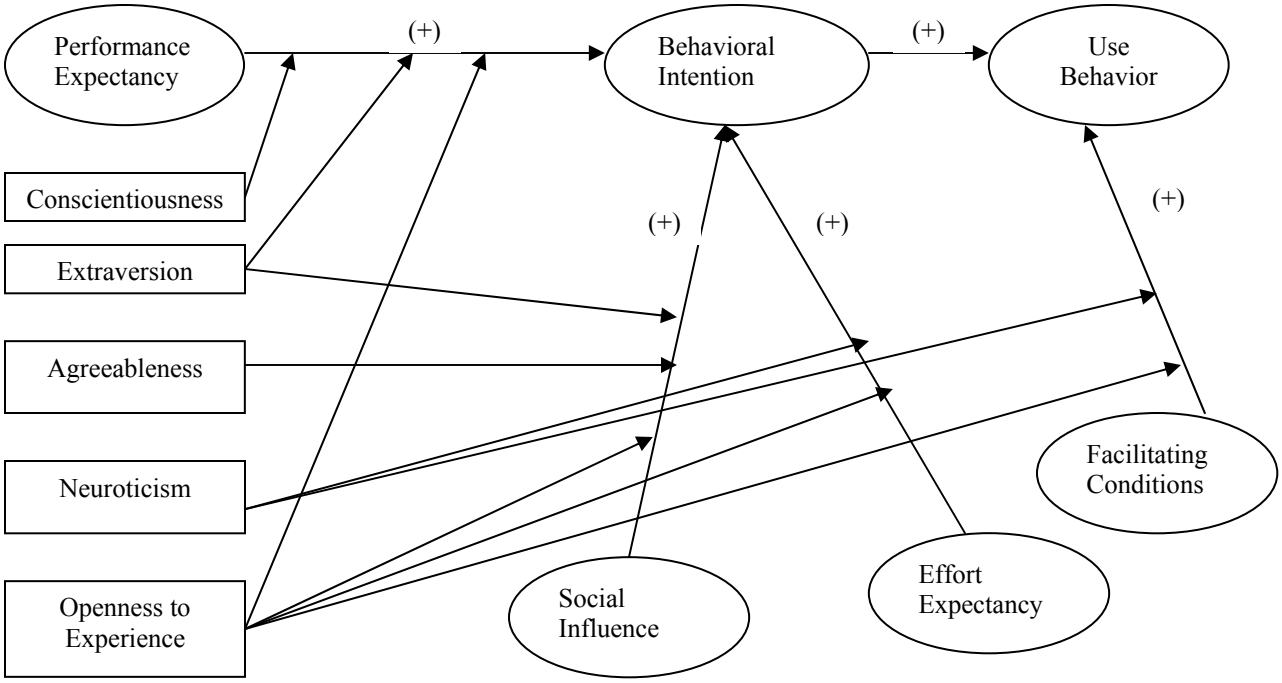

Figure 1. Research Model

Extraversion

Hogan (1986) interprets extraversion as consisting of two components, ambition (initiative, ambition, and impetuous) and sociability (sociable, exhibitionist, and expressive). Extraverts tend to be socially oriented and outgoing, but are also dominant and ambitious (Judge et al., 1999). These characterizations would suggest highly extraverted individuals place greater importance on gains in performance given their inherently stronger drive for success than less extraverted individuals. Given their sociable tendencies, perceived image concerns, the effect of social influence is likely to be very important.

H1A: Extraversion will moderate the relationship between performance expectancy and behavioral intent with a stronger effect of performance expectancy for higher extraversion levels.

H1B: Extraversion will moderate the relationship between social influence and behavioral intent with a stronger effect of social influence for higher extraversion levels.

Agreeableness

Agreeable persons are cooperative (trusting and caring) as well as likeable (good-natured, cheerful, and gentle) (Judge et al., 1999). Traits associated with this dimension include courteousness, flexibility, trust, cooperation, soft-heartedness, and social conformity (Fiske, 1949). This suggests that more agreeable people are more socially conforming and therefore the effect of social influence stronger.

H2: Agreeableness will moderate the relationship between social influence and behavioral intent with a stronger effect of social Influence on behavioral intent for more agreeable individuals.

Conscientiousness

Conscientiousness relates to an individual's degree of self-control and for achievement, order, and persistence. According to Barrick and Mount (1991), it's the Big-5 factor that best correlates with job performance. Examining these traits it's logical to infer that more conscientious people are more likely to strive for success (Moon 2001) and performance expectancy would be more important for them. Individuals with higher conscientiousness levels are likely to place greater importance on performance and would have a stronger relationship between performance expectancy and behavioral intent.

H3: Conscientiousness will moderate the relationship between performance expectancy and behavioral intent with a stronger effect of performance expectancy for more conscientious individuals.

Anticipated Effect → / Personality Dimensions ↓	Performance Expectancy on Behavioral Intention	Effort Expectancy on Behavioral Intention	Social Influence on Behavioral Intention	Facilitating Conditions on Use Behavior
Extraversion	Stronger effect with greater extraversion based on ambitiousness and drive for success (in prior literature)	***	Stronger effect with greater extraversion based on sociable trait of extraverts (in prior literature)	***
Agreeableness	***	***	Stronger effect with greater agreeableness based on the social conformity trait (in prior literature)	***
Conscientiousness	Stronger effect with greater conscientiousness based on its definition and relationship with job performance (in prior studies)	***	***	***
Neuroticism	***	Stronger effect with greater neuroticism based on lower self-esteem and lower self-efficacy of neurotics (in prior literature)	***	Stronger effect as effort expectancy interactions with neuroticism
Openness to Experience	Weaker effect with greater openness to experience based on experimentation inclination	Weaker effect with greater openness to experience based on experimentation disposition, higher self-confidence and mental ability	Weaker effect with greater openness to experience based on inclination to experiment and not - conform	Weaker effect with similar basis as effort expectancy interacts with openness to experience

*** No or minimal moderation effect anticipated based on there being no prior studies and lack of significant definitional relevance

Table 3. Interaction of personality dimensions in UTAUT model

Neuroticism

Individuals who score high on neuroticism measures lack self-confidence and self-esteem. Common traits associated with neuroticism include being anxious, depressed, angry, embarrassed, emotional, worried, and insecure (Barrick and Mount, 1991). More neurotic people are likely to have lower self-belief, lower self-efficacy to perform tasks, and higher levels of anxiety all of which point towards greater support needs (Venkatesh and Davis 1996). This suggests individuals with high neuroticism levels would place greater importance on effort required to use the system and the support received from the organization in using it. Hence, effort expectancy and facilitating conditions are likely to be more salient.

H4A: Neuroticism will moderate the relationship between effort expectancy and behavioral intent with a stronger effect of effort expectancy for more neurotic individuals.

H4B: Neuroticism will moderate the relationship between facilitating conditions and use with a stronger effect of facilitating conditions for more neurotic individuals.

Openness to Experience

Openness to Experience is characterized by intellectance (philosophical and intellectual) and unconventionality (imaginative, autonomous, and nonconforming) (Judge et al., 1999). Traits commonly associated with this dimension include being imaginative, cultured, curious, original, broad-minded, intelligent, and artistically sensitive (Barrick and Mount, 1991). Openness to Experience is the only Big-5 trait to display appreciable correlations with intelligence (Judge and Bono 2000).

As greater effort expectancy is strongly correlated with weaker cognition and lower computer self-efficacy (Venkatesh and Davis, 1996), the amount of perceived effort or effort expectancy is not likely to be an important factor for higher cognitive ability and self-confident individuals. Non-conformers (Judge et al., 1999) are more creative, more inclined to experimentation/unconventional and exhibit greater intellectual and mental ability. Thus, such individuals make their own choices and are less influenced. Given their experimental nature, immediate performance expectancy is less likely to be an important factor in adopting new technologies and the presence or the lack of organizational and technical support for a new system will not be an important use determinant for them. Thus:

H5A: Openness to Experience will moderate the relationships between independent constructs (performance expectancy, effort expectancy and social influence) and behavioral intent to adopt such that the effect of each independent construct on behavioral intent is weaker for higher levels of openness to experience.

H5B: Openness to Experience will moderate the relationship between facilitating conditions and usage with a weaker effect of facilitating conditions on usage for individuals with higher levels of openness to experience.

RESEARCH METHODOLOGY OUTLINE

The presented model would be tested using a survey of individuals in multiple organizations who have been introduced to a new technology at their workplace. The questionnaire would be created from items validated in prior studies and adapted to the technology being examined. The items selected to measure the core constructs would be determined by conducting a pilot study utilizing UTAUT model items (Venkatesh et al., 2003). The personality measures for the individuals would be selected from pilot study using 50 International Personality Pool (2001) items. Based upon loadings and iterations, a two-part survey to measure independent constructs and personality dimensions would be distributed.

Data collected would be tested for discriminant and convergent validity and reliability through items correlations and factor construct loadings. Reliability would be estimated via Cronbach-Alpha coefficient. Each hypothesis would be tested using Partial Least-Squares technique for evidence supporting the proposed moderation effects.

DISCUSSION AND CONCLUSION

Previous IS individual adoption models have never tested individual differences/ personality as moderators. The use of Big-5 personality dimensions as moderators in individual adoption of IT is innovative and potentially promises interesting results. If presented model hypotheses or other relationships emerge significant during data analysis, it would further improve our understanding of the role individual differences have in adoption and use of IT. From an organizational perspective, support of the presented hypotheses would suggest which constructs to focus on to encourage adoption and use for individual employees.

This study addresses a key gap in the literature by studying IT adoption by individuals from a personality perspective, which is one of the ways to characterize individual differences. The study of moderating effects of personality dimensions may suggest that individual differences across the personality dimensions are important in IT adoption and use. A better understanding of individual differences and how they impact adoption intent and use behavior would help focus efforts in improving successful IT adoption and use.

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