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Can Cognitive Style Predict Adoption of an Emerging Technology?

A Study of Cognitive Style and Its Influence on the Perception of a New Technology

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ABSTRACT

Understanding how individuals recognize an emerging technology can have a profound impact on how successfully the technology is adopted. The authors look into how people with different cognitive styles interpret a new technology and arrive at different beliefs of the same technology, which influences the recognition and acceptance of the technology. An experiment was conducted to test whether an individual's cognitive style impacts their beliefs and intention to use RFID, an emerging technology. The study suggests that a person's cognitive style does influence how he/she perceives the usefulness and ease of the technology, as well as his/her attitude and intention to use it. People with introversion, thinking and judging cognitive styles tend to perceive higher ease of use of RFID than those with extroversion, feeling and perceiving cognitive styles. Also, judging types are more likely to better perceive higher usefulness of RFID. The authors also provide discussion on the managerial and theoretical implications of our findings.

KEYWORDS

Case Method, Cognition, Cognitive Style, Emerging Technology, MBTI, Myers-Briggs Type Indicator, Technology Acceptance Model, Technology Awareness

INTRODUCTION

Facing swiftly changing business environments, it becomes critical for firms to be ahead in identifying and deploying new technologies that can potentially impact them. Thus, today's firms need innovators who identify new technology and bring it into an organization more than ever. One key issue in the management of innovation and technology is how to make individuals appreciate and pay attention to new ideas, needs, opportunities, and technologies so that they can be early adopters of the innovation. Before doing so, we first need to better understand how differently individuals recognize technology. In fact, people vary widely in their ability to recognize new technology and understanding why there is such difference is increasingly important. Unfortunately, this question has not received adequate attention commensurate to its significance in the information systems field (Chen, 2014; Marangunic and Granic, 2015).

Understanding how technology is accepted has been a central concern for both information system researchers and practitioners, so there is a rich body of research examining the determinants of

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technology acceptance. Especially, Davis' technology acceptance model (TAM) is most widely used to understand an individual's acceptance of a technology, (King and He, 2006). TAM explains one's use of a technology by using two beliefs: perceived usefulness and ease of use (Davis, 1989). Those two individual beliefs are, in turn, influenced by the effects of various antecedents (Davis et al., 1989, Agarwal and Prasad, 1999). Researchers have investigated how such antecedents as age (Burton-Jones and Hubona, 2005), experience (Oh et al., 2003), gender (Venkatesh and Morris, 2000), personality (Agarwal and Prasad, 1999, Devaraj et al., 2008, Svendsen et al., 2013), self-efficacy (Davis and Venkatesh, 1996) influence technology acceptance. However, there are few studies investigating the influence of an individual's cognitive style on forming their beliefs and intention to use the technology (Davern et al., 2012; Lee et al., 2003; Marangunic and Granic, 2015).

In fact, people have inherent preferences when it comes to process information, and those innate preferences are known as cognitive styles. Cognitive styles are stable mental structures that people favor when they perceive and evaluate information (Jung, 1923), and they can explain why people perceive and interpret the same idea, service, or technology differently and form divergent opinions about it. That is, individual differences in cognitive styles and technology acceptance are closely related (Zmud, 1979), and sound research into the psychological characteristics of IT users can generate high potential payoff (Benbasat and Barki, 2007, Marangunic and Granic, 2015, Taylor and Benbasat, 1980). However, the lack of attention to individual differences such as psychological aspect is particularly surprising (Agarwal and Prasad, 1999, Benbasat and Barki, 2007).

Thus, this study extends TAM literature by looking into the impact of cognitive styles on technology acceptance, more specifically technology awareness. We attempt to gain insights into how people with different cognitive styles interpret a new technology and arrive at different beliefs of the same technology, which influences the acceptance of the technology. By conducting an experiment, we tested whether an individual's cognitive style impacts their beliefs and intention to use the technology. As we expected, the results suggest cognitive styles indeed matter to technology acceptance. The rest of the paper is organized as follows. First, we review relevant literature. This is followed by a discussion of research model and hypotheses. Finally, we conclude with a discussion of the practical and theoretical contributions of the paper.

THEORETICAL FRAMEWORKS AND HYPOTHESES

TAM and Cognitive Styles

TAM suggests that one's behavioral intention to use a technology is mainly determined by two beliefs: perceived usefulness and ease of use (Davis, 1989), and they are influenced by such antecedents as demographic or individual traits (Ajzen and Fishbein, 1980, Davis et al., 1989). Researchers have examined antecedents such as age, experience, gender, personality, personal innovativeness, or self-efficacy (Devaraj et al., 2008, Lee et al., 2003, Morris et al., 2005;). However, there is little understanding how individuals' preference on information processing influences belief formation (Marangunic and Granic, 2015). Individuals' beliefs about the value of a technology are the outcomes of information-processing through their cognitive style (Blaylock and Rees, 1984). In fact, individuals gather and synthesize information about a new technology, and that information processing crystallize into personal beliefs about the technology (Agarwal and Prasad, 1999). That is, the beliefs are the outcomes of information-processing, and individuals' cognitive style is related to those beliefs because it deals with individuals' perception and judgment about new information (Blaylock and Rees, 1984).

Cognitive Style

An individual, faced with decision-making situations, shows relatively repetitive patterns for solving them (Benbasat and Taylor, 1978). Individual differences in their behavior are the logical consequences of a few basic, observable differences in mental functioning (Myers and Myers, 1980). These fixed