Computers in Human Behavior 31 (2014) 111–117

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

New media and the changing face of information technology use: The importance of task pursuit, social influence, and experience

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ARTICLE INFO

Article history:
Available online 1 November 2013

Keywords:
Social media
Media use
Technology adoption and use
UTAUT

ABSTRACT

The technology adoption and use question has been extensively researched; however, gaining synthesis in the literature has been challenging owing to the myriad of theoretical frameworks and study contexts. A consolidation was surmised by the *Unified Theory of Acceptance and Use of Technology* (UTAUT), although recent studies have yielded new questions as technologies and societies change. We sought to determine whether factors grounded by the UTAUT would be predictive of the use of "new" media. To do this, we conducted a field study of non-work related and discretionary use of "social media" and "smart device" applications. Using linear regression with interactions, we learned that technology use may evolve on a continuum, and that use may depend on the technology itself. Moreover, our research indicated that perhaps age and gender may not play as significant a role in new technology use and adoption as previously reported in the literature. We concluded that each medium is reflected in differential use characteristics and may not be accurately predicted by a unified use concept. Our findings have both research and practical implications.

1. Introduction

A challenge to any study of technology adoption is that technology media and uses are developing incredibly fast and in unimagined ways. For instance, the media landscape has experienced a paradigm shift (Kuhn, 1996) with recent advances in social media, smart phone technologies, global positioning satellite (GPS) tracking, and the blending of actuality (e.g. Google Maps) with virtuality (e.g. Aurasuma) in what is known as augmented reality (McCullagh, 2010). Moreover, there seems to be no finality to the technology use question so long as technologies continue to advance, and people continue to adapt technologies to their purposes, along with being shaped by them (Civin, 1999). To illustrate, the technology acceptance model (Davis, Bagozzi, & Warshaw, 1989), the theory of planned behavior (Ajzen, 1991), and the diffusion of innovations (Rogers, 2003) – have all shown clear signs of disparities resulting from the derivative works about information technology use (Bagozzi, 2007).

To highlight this issue, in the 1990s, research on the technology acceptance model – or *TAM* (Davis et al., 1989) was so intensive that researchers began to refer to it as *TAM fatigue*. Over the intervening years, TAM was criticized for a variety of reasons (c.f. Goodhue, 2007; Straub & Burton-Jones, 2007). For example, Lee, Lee, and Lee (2006) pointed out various insufficiencies in accounting for social influences among the dominant technology adoption and use theories and models, and thus numerous competing theories and models emerged (c.f. Taylor & Todd, 1995). In addition, studies meanwhile had introduced numerous factors into the mix such as feelings and emotions concerning a given technology (Ha, Yoon, & Choi, 2007) including the use of new technologies as a means of sensation seeking stimuli (Dupagne, 1999; Karaiskos, Drossos, Tsianos, Giaglis, & Fouskas, 2011).

In the early 2000s, there was a purported consolidation in the literature (Lee et al., 2006) around the unified theory of acceptance and use of technology – UTAUT (Venkatesh, Morris, Davis, & Davis, 2003), which predicts a single use outcome measure. Nevertheless, research using the UTAUT has to date tended only to examine a single outcome measure for a specific technology (c.f. Zhou, Lub, & Wang, 2010) leaving a fragmented picture of technology use. New technologies such as smart devices and social media, along with changes in technology literacy among the populace demographic, have again raised the technology use question (Brandtzaeg, 2012). In particular, there are indications that the use of new technology may depend on the technology itself (Maass, Klöpper, Michel, & Lohaus, 2011) – raising questions about the agglomeration of technologies into one dependent concept as asserted in the UTAUT.

We encountered this research problem when we were engaged by an insurance provider in the United States to conduct a study of who might be interested in "wellness" products such as diet plans, exercise resources, spa memberships, smoking cessation programs and products, using social media (e.g. Facebook, Twitter, LinkedIn, YouTube, MySpace) and smart device

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http://dx.doi.org/10.1016/j.chb.2013.10.008

applications (e.g. iPhone, iPad, Android) such as diet managers, product and service promotions, and exercise reality imitation and simulations – or "immutations" using augmented reality *apps* (c.f. McCullagh, 2010).

Our overall research goal was to understand what factors would predict who might be most likely to use these new media to share and get product information in a contemporary context, and thus update the literature. To ground our study, as indicated, we utilized the unified theory of acceptance and use of technology or UTAUT (Venkatesh et al., 2003), adapted to fit with non-work related and discretionary technology use. In so doing, we contribute to the literature in at least four important ways: (1) We update the literature on technology use by examining "smart device" technologies and "social media" concurrently thereby contrasting outcome measures, (2) we provoke a "new look" at previously asserted factors associated with discretionary use of these new technology media for commercial purposes using the UTAUT, (3) we challenge the notion that the factors asserted in the UTAUT uniformly predicts a single dependent construct, and (4) although not formally hypothesized, we indicate from post hoc analyses that gender and age may not play significant roles in technology use in certain contexts as has been asserted in the literature.

2. Theory and hypotheses

2.1. Summary of the research problem

Research into technology adoption and use has focused on specific outcome measures such as the use of social media and various technologies including Twitter, Facebook, smart phones and tablets (c.f. Srivastava, 2005) with specific contexts such as to achieve emotional gratification (c.f. Karaiskos et al., 2011) or enhance productivity and revenue (c.f. Shiau & Lou, 2012). A variety of theoretical frameworks and predictors have been posited and tested for these outcomes including the theory of planned behavior (Ajzen, 1991; c.f. Lynne, Casey, Hodges, & Rahmani, 1995) and the elaboration likelihood model (Cacioppo et al., 1986; c.f. Bhattacherjee & Sanford, 2006). There have also been studies (e.g. Thelwall, 2008) that have shown age and gender differences in the use of technologies, including suggestions that females tend to use technology for "social affiliation" in greater proportion than males, and that "younger" people tend to use "new" technologies in greater proportion than "older" people (c.f. Czaja et al., 2006; Gefen & Straub, 1997; Thelwall, Wilkinson, & Uppal, 2010).

To resolve the flux in the milieu, the UTAUT synthesized an eclectic set of models to assert a comprehensive set of factors to globally predict technology use outcomes (hence the term Unified Theory). The UTAUT was originally oriented toward work-related technology adoption and use although subsequent studies have applied the theory to non-work related contexts (c.f. Wu, Tao, & Yang, 2007). The UTAUT maintains that four key constructs define information technology use behavior. These four constructs are (1) performance expectancy, (2) effort expectancy, (3) social influence, and (4) facilitating conditions. For the most part, the theory has generally been supported (Lee et al., 2006; Srivastava, 2005); however, age, gender, and experience have often been proposed as mediators of the relationships (Hislop & Axtell, 2011; Maass et al., 2011) or as direct determinants (Venkatesh & Morris, 2000; Wilder, Mackie, & Cooper, 1985).

Nevertheless, there have been some discrepancies in the literature concerning the use of the UTAUT and various related theoretical factors. For example, research (e.g. Maass et al., 2011) has found differences between technology and information usages in light of emergent "smart" technologies. Thus the issue of technology adoption and use may represent a "moving target" with evolving social and technological advances (Bou-Franch, Lorenzo-Dus, & Blitvich, 2012; Wattal, Schuff, Mandviwalla, & Williams, 2010). Because "there are differences with regard to the different types of media" (Maass et al., 2011, p. 67) and "where a large part of the population is not suited to adopt, utilize, and reap the rewards of new networked societies" (Brandtzaeg, 2012, p. 485), the importance of studying media type as dependent measures is apparent. For example, some studies (Scellato, 2011) have shown that social media tends to be used more for "networking" or "connecting with" others in "non-task" focused ways, whereas smart device applications usage tends to reflect more task-specific focus. When viewed as a whole, it becomes further apparent that there needs to be a contrast in the literature. In other words, a comparative study is needed to help elucidate why so many studies show so many differential outcomes (Ha et al., 2007; Karaiskos et al., 2011; Srivastava, 2005; Wood & Swait, 2002).

2.2. Components and hypotheses

Venkatesh et al. (2003) espoused a validated model synthesizing multiple theories of technology use. As indicated earlier, the UTAUT model consists of four primary factors: (1) performance expectancy from using a technology, (2) effort expectancy involved in using a technology, (3) social influences in the technology use, (4) and facilitating conditions (such as having a supportive environment, or having the requisite enabling technologies). To help justify the need to reexamine the UTAUT in light of new technologies and new research, we present some of the issues with the model along with support for the hypotheses, as follows.

According to Venkatesh et al. (2003) and the UTAUT, performance expectancy is the extent to which one believes that using a technology will help a person to attain gains in the execution of one's job. While our focal issue was not related to job performance, it related to performance in the execution of a goal-directed behavior as an interaction with one's environment (Ajzen, 1991; Bandura, 1977). Performance expectancy therefore is targeted at any task to which one believes a technology will improve one's capability relative to task-time efficiency and effectiveness (Chen, Lee, & Tong, 2008).

A complication, however, arises in that performance expectancy can be ephemeral depending on the psychological state of the technology user (Shahrzad, 2012). For example, if one is under stress to complete a task, performance expectancy becomes a greater force in the assessment of a technology than when one is using a technology casually (Ford, 2012). In other words, a "goal" takes on different meanings when referring to needs for social affiliation versus task pursuit (Scellato, 2011). This condition may help explain why a less stressful user experience such as "connecting with others" through social media may differ in outcome from more stressful experiences, such as being able to find an electronic discount coupon for merchandise while standing in the checkout line of a grocery store (Scellato, 2011; Shahrzad, 2012; Siles, 2012). Such a finding may not be surprising, as it is consistent with research on decision making under stressful and non-stressful conditions (Brooks, 2011; Dinur, 2011; Ford, 2012). In addition, other research (Hillesund, 2010) has shown that people prefer more conventional technologies (even printed materials) over novel ones when the materials or the technologies seem elaborate or complicated.

In terms of our hypothesis then, in general, to extent that one perceives improved performance from using a technology, whether that be to connect with others or to accomplish as task goal, this has been shown to lead toward greater technology use (Loraas and Wolfe; 2006). Furthermore, the UTAUT asserts that performance expectancy will influence technology use in the same way. Consistent with this proposition, while taking into account the discrepancies in the literature and thus our formalization of two outcome measures, we formally state that: