Understanding age differences in PDA acceptance and performance

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Abstract

The present study addresses two basic determinants of technology utilization: the attitude towards a certain technology and the performance when using it. According to the technology acceptance model (TAM), perceived ease of use and usefulness are assumed to be strong determinants of the actual and successful utilization of technology. However, the relationship between the acceptance of technical devices and their successful utilization (i.e. performance) is not completely understood. In this study, users' attitudes towards technology and their performance when interacting with a computer simulated PDA device were examined. Moreover, the moderating role of individual variables like age, gender, subjective technical confidence, and computer expertise in the relationship between technical performance and acceptance was analyzed. The results showed significant associations between performance and TAM factors. However, this interrelation was much stronger for the older group, especially between performance and the ease of use. The factors computer expertise and technical self-confidence played a minor role. Gender effects on technical self-confidence and TAM factors were identified, although they did not affect performance. Future research should focus on training formats for the older age group, which facilitate a successful interaction with technical devices.
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1. Introduction

Information technology (IT) has proliferated into most professional and private areas in the last decades. There are only a few areas left that are not permeated by IT. A prominent role in this context play mobile communication technologies, e.g. mobile and smart phones, communicators and electronic organizers, which show continuously increasing rates of growth each year (Shiffler, Smulders, Correia, Hale, & Hahn, 2005). Contrary to former times, when the utilization of IT was restricted to a sophisticated user group, nowadays broader user groups have access to IT. Moreover, the utilization of IT is no longer voluntary – its effective use has become an essential requirement in today's working and private life. The organization of professional and private activities, events and transactions heavily depends on the utilization of technical devices and demands the acceptance and application of IT from our society. However, the purchase of technical devices does not guarantee their effective utilization. Users show a broad variety of behaviors when they deal with new devices. They may completely reject them, may only partially use selected functions or they may completely adopt the technology and all functionalities offered. The central question is: What are the underlying factors causing different levels of acceptance and different reactions towards the utilization of technology? From a socio-political, psychological and educational point of view, the investigation of the nature and key factors affecting the utilization behavior of IT is important for both, research and practice.

1.1. Technology acceptance and utilization

Technology acceptance has become a key concept in a broad field of research areas, such as marketing, ergonomics, pedagogic and psychology. It can be described as the approval, favorable reception and ongoing use of newly introduced devices and systems. Regarding the concept of technology acceptance a further distinction between ''attitude-acceptance'' and ''behavior-acceptance'' was established. Attitude-acceptance includes an affective (motivational-emotional) and a cognitive component, which implies a cost-benefit-analysis of system usage. The attitude-acceptance of a user is not directly observable. ''Behavior-acceptance'' refers to the observable part of technology acceptance and describes the adoption of innovations by using them. In other words: acceptance contains an attitude towards a certain behavior and the behavior itself. The issues of technology acceptance, actual utilization and their mutual relationship have been researched from multiple theoretical perspectives, e.g. diffusion of innovation or social psychology.

Melenhorst, Rogers, and Caylor (2001) explain the acceptance and decision to use communication technologies in terms of a cost-benefit analysis. Not all users perceive technology as advantageous and helpful for them. Therefore, users weigh the individually expected benefits and costs (e.g. investment of money and energy, frustration while learning to use the system) before adopting a new technology.

Another approach to explain technology acceptance is the task-technology-fit (TTF) model (Goodhue & Thompson, 1995), which postulates that the acceptance of a system depends on the individual estimation of system performance. In turn, the estimation of system performance is influenced by characteristics of the task (complexity), the technology (functions) and the individual (skills and abilities). More specifically, the TTF model suggests that technology adoption depends on how well the new technology fits into the