



An Action Design Research to Facilitate the Adoption of Personal Health Records: The Case of Digital Allergy Cards

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ABSTRACT

Adoption and user perceptions are dominant on personal health records literature and have led to a better understanding of what individuals' behaviors and perceptions are about the adoption of personal health records. However, these insights are descriptive and are not actionable to allow creating personal health records that will overcome the adoption problems identified by users. This study uses action design research to provide actionable knowledge regarding user perceptions and adoption and their application in the case of the digital allergy card. To achieve this, the authors conducted interviews with patients and physicians as part of the evaluation of the digital allergy card mock-up and the first prototype. As results, they provided some research proposals regarding the benefits of, levers for, and barriers to adoption of the digital allergy card that can be tested for several other personal health records.

KEYWORDS

Action Design Research, Adoption, Business Process Model, Digital Allergy Card, Drug Allergy Information, Mock-Ups, Personal Health Records

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INTRODUCTION

Personal health records (PHRs) can facilitate patient management and ensure patient safety throughout the care process (Sherer, 2014). Among the benefits often cited are the completeness, accessibility, reliability, and timeliness of health information, as well as the capacity for self-monitoring (Chaudhry et al., 2006), which has been evaluated as one of the determining factors for the well-being of chronically ill patients. More concretely, PHRs whose access is controlled by patients can be connected or not to the hospitals' electronic medical records (EMRs) (Roehrs et al., 2017). PHRs are designed and implemented to collect, process, store, secure, and share patient health information, as well as involve patients in their own care.

Research on PHRs varies and concerns various themes, such as design, functional, technical, and clinical evaluation, and adoption (Andrikopoulou et al., 2020; Cafazzo et al., 2012). The topic of adoption is dominant in the literature on medical informatics and information systems on PHRs (Greenhalgh et al., 2010; Studeny & Coustasse, 2014; Wiljer et al., 2008). Most authors have explained the adoption of PHRs using various theories and models (Laugesen & Hassanein, 2017; Vezyridis & Timmons, 2015; Whetstone & Goldsmith, 2009). The most widely used models are the Technology of Acceptance Model (TAM) and the Unified Theory for the Acceptance and Use of Technology (UTAUT), with the variables of perceived usefulness, perceived ease of use, social influence, and facilitating conditions (Blut et al., 2021; Whetstone & Goldsmith, 2009). These models have been enriched by several technological and individual factors. Among these factors, we can often find the issue of privacy, e-health literacy, health conditions, and personality traits (Li et al., 2014; Noblin et al., 2012; Xu et al., 2016). The link between these factors and the intention to use technology has been shown through quantitative studies by administering questionnaires and analyzing the data through structural equation modeling. This approach highlights the positive or negative aspects and the strong or weak impacts of these links.

All of these studies provide different levels of understanding of the determinants of adoption and users' perception of PHRs (Archer & Cocosila, 2014; Gagnon et al., 2016). According to several authors, the results of these studies should guide in the design of apps that overcome the problems they predict (Hevner et al., 2004). However, the use of those models and users' perceptions are limited to supporting the decisions taken by practitioners and providing actionable knowledge—that is, knowledge that can not only contribute to our understanding of the phenomenon itself but also “generate useful knowledge with the goal of building a better future” (Markus & Mentzer, 2014) for practitioners. This is in line with numerous recent calls in IS to develop relevant knowledge for practice (Avison et al., 2018; Baskerville & Wood-Harper, 1996; Davison et al., 2004; Jabagi et al., 2016; Markus et al., 2002). Indeed, actionable knowledge needs an understanding of the context and of users' needs and perceptions of the challenges that can be solved by a PHR, as well as intervention in a concrete case to assess and improve this knowledge.

A specific kind of PHR related to a specific context is the digital allergy card (DAC). Because the current drug allergy information process is not optimal for the transmission of the right information at the right time, the European Academy of Allergology and Clinical Immunology (EAACI) has proposed the implementation of allergy apps (Brockow et al., 2016; Khalil et al., 2011; Villamañán et al., 2011). Therefore, the goal of a DAC is to ensure patient safety by making allergy information available to make the optimal therapeutic decision. Indeed, problems with allergy information can cause serious harm, especially drug allergies, which require special attention from physicians—mostly family practitioners—when they write a prescription (Dworzynski et al., 2014; Villamañán et al., 2011). These problems can be either underdiagnosis (Ferner & McGettigan, 2020)—or overdiagnosis (Ferner & McGettigan, 2020).

Our paper follows the evidence-based information systems approach (Wainwright et al., 2018), with the aim of providing concrete evidence to enable the adoption of the DAC PHR. The objective of this paper is to provide actionable knowledge based on action design research (ADR). This method

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