Toward Optimizing Usability in e-Government Healthcare Administration Systems: Lessons Learned from An In-Depth Usability Evaluation Effort

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Introduction: Evidence shows that perceived complexity detracts from successfully adopting e-government healthcare systems. The problems with ease of use, despite the existence of usability guidelines and investment of substantial resources for design and development, are unfortunately still highly persistent and widely prevalent in this domain. Therefore, it becomes crucial to generate and document evidence which can inform and support government healthcare and information technology (IT) professionals in their IT development and adoption efforts. In this context, this study had the following objectives (a) implementing an iterative usability evaluation initiative to identify top usability challenges and improvement opportunities in a real-life e-government system, and (b) providing evidence-based recommendations for effective and efficient usability improvement which can be useful for similar systems adopted elsewhere. **Methods:** We designed and conducted an iterative usability evaluation project for an actively used e-government healthcare system adopted by one of the states in the U.S. In the first iteration, seven usability experts performed an evaluation of compliance to Nielsen's usability heuristics. Secondly, a think-aloud interview was conducted with 23 participants for usability testing. In addition, an online survey based on the questions in the System Usability Scale (SUS) was conducted with 1,800 system users for a quantitative assessment of usability. Finally, a semi-structured focus group interview was conducted to obtain further detailed information regarding usability challenges and improvement opportunities. **Results:** Through heuristic evaluation, the usability challenges were identified as navigation problems, unfamiliar icons, and a complex index page structure. Think aloud interviews identified confusing name conventions, lack of tutorials, and lack of filtering options as the top usability challenges. The survey resulted in a SUS score of 35, which is a very low score for any system indicating that usability problems should receive a high priority. In online surveys, almost 20% participants "strongly disagreed" that learning this system is easy, instructions are understandable, system performs without error or system is comfortable to use. In focus groups, challenges like inexperienced developers, lack of training for the users, and lack of co-ordination between users, developers, and stakeholders were most highlighted as organizational and people challenges with usability improvement. Hiring skilled professionals to resolve top usability challenges and training the system users seem to be the most promising directions. **Conclusions:** This study tackled a real-life usability evaluation project for an e-government healthcare administration system which resulted in evidence regarding the important usability challenges, drawing further attention to this important problem, and resulted in recommendations. Future studies can further focus on the people and organizational challenges of usability improvement in this problem domain.