The Potential for Voice-Assistant Technology in Digital and Physical Spaces

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Introduction

In my paper, I will discuss the degree of assistance that voice-assistive technologies currently provide to their users. I will also evaluate how these technologies increase the "usability" of the physical world. Finally, I will make suggestions about the future of voice-assistive technologies. Throughout my research, I will attempt to answer the question: **In what ways can a new conceptual model improve the usability of voice assistants by providing users with a more intuitive support system?**

Methodology

The information in this report was obtained using two different methodologies including a literature review of peer-reviewed journal articles, case studies, credible online sources and by collecting voluntary responses to an online survey. The online survey was created via an online platform called Typeform. The questions in this survey pertained to individual's habits with voice-assistant technology in their personal lives. The 35 participants completed the voluntarily via their personal computers or smartphones. A link to the survey was posted on Facebook as well as emailed to the students who were enrolled in the Spring 2019 semester of Usability and Human Factors in Technical Communication at the University of Minnesota - Twin Cities. The survey was completed only by individuals who were 18 years of age of older. The participants received no instructions regarding how to fill out the questionnaire.

Conclusion

In this age of rapid technological development and advancement, voice assistants have unlimited potential. This potential will not be unlocked if this technology remains confined to its current conceptual model. To be fully integrative, a new, full-body assistant must emerge. This technology should be designed for the user and serve to increase the accessibility of the physical world in addition to the digital sphere. The full-body technology may also serve to function as both an assistant *and* advisory system. This duality would increase the accessibility of technological assistants because it would limit the number of devices users would need to meet their needs. Affordability, multifacetedness, and convenience are at the cornerstone of accessible assistant technology.

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Results and Discussion

After reviewing a selection of ten peer-reviewed articles and academic studies, I was able to identify some common themes in the topic of usability and voice-assistive technologies. Most academics believe that, as they currently exist, voice assistants have exhausted their conceptual model. The next step, the authors contend, must involve a complete reimagining of voice assistants. Voice assistant technologies were designed for outdated platforms; users are more commonly engaging with voice assistants on newer, more advanced technology (See Figure 1). Across all platforms, there are two main categories of voice-assistant technologies. Champin et al (2012) describe these categories as advisor systems and assistant systems. They explain, "...advisors provide information, offer solutions, but are not directly involved in the task. Conversely, the assistants are dedicated to the execution of repetitive tasks" (p. 1067). Everyday uses of voice assistants may undervalue that possibilities of advisory systems (See Figure 2). The survey found that 60% of participants perceive voice assistants as being too unintuitive to efficiently meet the needs of the users (See Figure 3). Users may expect that neither advisory nor assistant systems will be helpful in their completion of a goal. Qidwai and Shakir (2012) expect that a truly intuitive voice assistant would be designed for the user rather than the task. They explain that current voice-assistant technologies, "need some more user-based calibration system as add-on to accommodate for the diversified users and environments of usage" (p. 337). Voice assistants that are currently on the market appear to lack the consideration for the context of their use. They are designed to be able to complete a variety of tasks rather than to be able to meet the needs of a variety of different users.

Selected Resources

Champin, P., Cordier, A., Lavoué, E., Lefevre, M., & Skaf-Molli, H. (2012). User assistance for collaborative knowledge construction. *Proceedings of the 21st International Conference Companion on World Wide Web - WWW 12 C ompanion.*

Qidwai, U., & Shakir, M. (2012). Ubiquitous Arabic voice control device to assist people with disabilities. *2012 4th International Conference on Intelligent and Advanced Systems (ICIAS2012).*

Survey Results

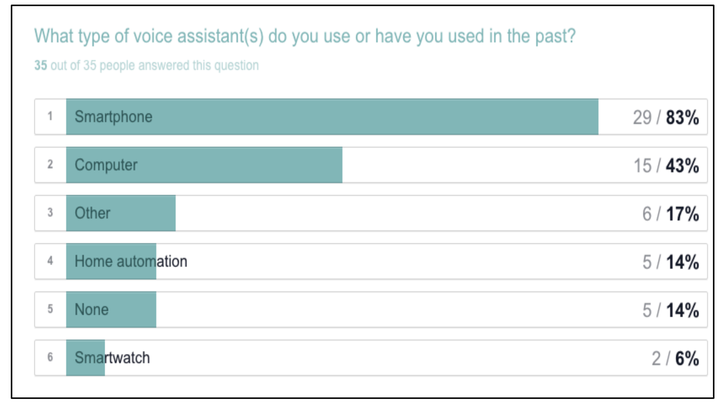

Figure 1. Most people use voice assistants on smartphones, but the voice assistants are commonly designed for computers.

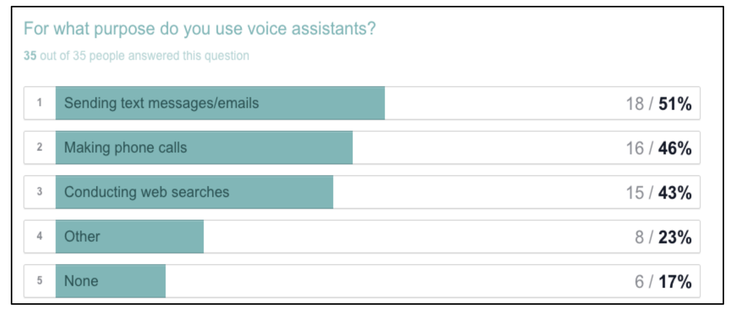

Figure 2. Users tend to rely more on assistant systems rather than advisory systems.

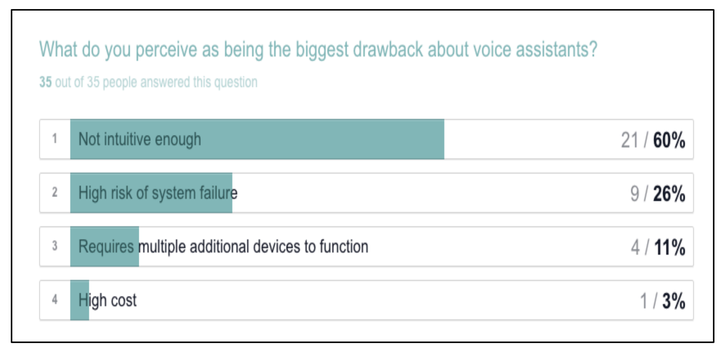

Figure 3. The majority of users perceive voice assistants as being too unintuitive to accommodate their needs.