The Amazon Echo: A Usability Study

Donald Ventrice, Nathan W. Walters, John Capps, Shivani J. Patel, Scott R. Winter, & Stephen Rice

Embry-Riddle Aeronautical University
Department of Human Factors and Behavioral Neurobiology
College of Arts and Science

Abstract

Background: The Amazon Echo is a home assistant device which allows people to interact verbally with online software tools or smart home devices and electronics. The purpose of this study was to test the usability of the device by conducting a variety of user-centered analyses. Method: Researchers performed a usability heuristics evaluation to gain an understanding of the system’s features and functions from a top-down perspective. An Out of Box Experience (OBE) was conducted to capture users’ attitude of the device. Next, several tasks were performed which represent users’ everyday interactions with these devices. Participants then completed the system usability scale (SUS) to rate their experience. Results: Time on task was measured to analyze quantitative data and participants were asked to rate the difficulty of each task. Preliminary results indicate a setup time of approximately five minutes. Microsoft product reaction cards were used to capture initial and post-trial reactions to the device. Easy to use and efficient are two common terms appearing in the participant’s explanation of their feeling towards using the device. Conclusions: By collecting this information, our research team can paint an entire picture explaining benefits and flaws encountered by users and experts alike.

Results

- Average Setup Time - 5:17
- System Usability Scale - Perceived Ease of Use - Above Average
  - Median - 75.5 (SD = 9.91)
- Push Notification feature was difficult for users to interpret
- Can not be performed via voice command
- Does not provide feedback for task completion
- No expectation where feature is located

Adjective List

- "Certain lingo is confusing, such as Skills"
- "I don’t even know where to begin with Push Notification"
- "Setup process is a breeze. Step by step"

Quotes

- "Certain lingo is confusing, such as Skills"
- "I don’t even know where to begin with Push Notification"
- "Setup process is a breeze. Step by step"

Future Research

- Compare Echo against other smart home devices
  - Google Home
  - Apple Homepod
- Test usability of connecting smart devices
  - TP Link - Connects electronics to Echo