

Older adults' perceptions of smart home benefits and barriers

In general, for successful adoption, consumers' perceptions of the benefits associated with using a new technology need to outweigh their perceptions of risks and barriers. For older adults, who are historically late adopters but are increasingly looking to adopt new technologies, the balance between benefit and risk can be complex. Based on a recent master's thesis research conducted as a part of the C3 Consortium program, this research note discusses the benefits (+) and barriers (-) of smart home technology as identified by older adults following exposure to a simulated smart home setting.

Benefits

- + **Aging in place:** Older adults believed that the most important benefit of smart homes was their capacity to support independent aging in place. One participant reported that "elder housing and living in a group freak me out" and that, after 30 years of living alone, it had become hard to imagine another living arrangement.
- + **Health support and monitoring:** Due to physical and cognitive decline, many older adults regularly require medical assistance and health monitoring. Participants discussed the importance of smart home automation in the context of their health. Medication reminders and fall detection were the most commonly discussed features. Some participants who lived alone shared personal stories of having been in an emergency and not being able to receive timely help due to a lack of monitoring.
- + **Sense of safety:** Participants who currently use home security systems reported that their existing systems provide a sense of safety, both to themselves and to their loved ones. Participants conceptualized home safety systems as more than just a burglar alarm, with features like passive monitoring and alerts for environmental emergencies such as gas leaks or fire hazards.
- + **Convenience:** Participants believed that they would benefit from automating "inconvenient" and repetitive household tasks such as turning the lights on/off and opening/closing window blinds. They noted that automation of these tasks would be convenient for all people, regardless of age-related factors, and increase productivity by saving time and effort for higher-priority tasks. Participants also recalled moments during which they had wished to have smart lights and thermostats, particularly to avoid being interrupted during other more important tasks to make manual adjustments.
- + **Energy management:** Some participants mentioned benefits of smart energy management systems. Participants believed that these systems can conserve energy and also lead to significant financial savings.

Barriers

- **Learning curve:** All participants expressed concerns around the steep learning curve associated with setting up, using, and maintaining technologies. One common pain point was keeping up with the variance in setup routines, interfaces, and features across different brands and even versions of devices. Additionally, participants shared concerns around their ability to implement or adjust their smart homes to work according to the routines, needs, and preferences of others in their home.
- **Lack of reliability and consistency:** Participants expressed worries regarding consequences of technologies failing to perform, especially for systems supporting safety-critical tasks (e.g., alert systems for gas leaks, fire hazards, home safety). Many noted their limited ability to troubleshoot, anticipating that even simple technical issues would cause them discomfort.
- **Cost:** Participants perceived current smart home technology to be expensive, noting that potential costs beyond purchase, such as those associated with installation and maintenance, added to their financial burden. The financial burden was particularly concerning for those who were retired without stable income.
- **Privacy and data security risks:** During and after the simulation, some participants expressed concerns around their privacy. For example, one participant shared her existing concerns around usage of her data by established platforms such as ancestry.com, and found the "monitoring" of in-home activities to be even more concerning. Additionally, participants who did not express privacy concerns themselves discussed the privacy concerns held by other residents in their homes.

Implications:

Highlighting benefits and mitigating concerns

Developers, retailers, and distributors should convey how their products can benefit older adults by catering to their unique needs. Creating an immersive experience for older adults, such as a simulated smart home space in a real-world setting as in the present study, can demonstrate the ways in which various technologies could improve their lifestyle.

In addition to highlighting the benefits, steps should be taken to mitigate older consumers' concerns around new technologies. For example, offering continuous, high-quality, accessible customer support can provide older consumers with a sense of relief, security, and trust; alleviating their concerns around learning how to set up, use, or troubleshoot products.