Housekeeping Robots as a Solution for Aging in Place? An Analysis of User Needs and Technology Applications of Smart Housing for the Elderly in Taiwan C. Yang, K. Y. Lu, P. J. Shih. *Gerontechnology 25*(s)

Purpose Population aging significantly impacts national development. Over the past decade, international organizations have increasingly focused on the relationship between the elderly population and housing. For instance, the World Health Organization (WHO) highlighted the importance of housing safety and quality for elderly people's health in its 2018 Housing and Health Guidelines. Similarly, the OECD (2025) report, Cities for All Ages, introduced the concept of "age-friendly cities," discussing how to integrate senior housing into the broader urban system. Additionally, the International Telecommunication Union (ITU) emphasizes using ICT to support telemedicine and home monitoring to achieve the goal of aging in place. There is a mutual relationship between the needs of older adults and their housing environments. Seniors' needs shape the form of housing, while the housing environment affects their ability to age healthily. Therefore, this study argues that "housing" is the most critical field for the older people's daily lives. However, previous research has often lacked a focus on specific national contexts and real user experiences regarding the application of ICT and new technologies in housing. **Method** This study adopts a Mixed Methods Research approach. It uses survey data from the Institute for Information Industry (III) in Taiwan, targeting individuals aged 50 and above. Based on stratified sampling across different cities, 1,059 valid questionnaires were collected. Additionally, interviews were conducted with smart home service providers and senior-care robot manufacturers to analyze the envisioned need and applications of "Smart Housing" in Taiwan from both demand and supply sides. Key findings are summarized in Table 1. **Results and Discussion** Five dimensions of "Smart Housing" were categorized in this study: Healthcare, Residential Safety, Autonomous Activity, Social Entertainment, and Convenience & Comfort. The results present three main findings: First, regarding technology needs for 2030, the survey reveals that 64.1% of respondents prioritize hazard warning systems for safety, followed by 53.4% for housekeeping robots for convenience, and 52.4% for telemedicine systems for healthcare. Additionally, 51.4% identify lifelong learning technology for social entertainment, and 48.5% cite bathing support machines for autonomous activity. These findings suggest that "home cleaning" and "home care" are the primary expectations for smart housing in Taiwan. Second, beyond simply controlling appliances remotely, there is a significant rise in interest in "housekeeping robots" and similar devices, which are becoming core elements of future smart housing. Third, from the industry perspective, service providers and manufacturers believe that besides technology, the seniors' Willingness to Pay (WTP) and government policy support are the key factors that determine whether smart housing can successfully expand in the market. In conclusion, as smart technology becomes part of daily life, it offers a viable solution for future aging. While telemedicine and robots show great promise, successfully introducing these technologies requires a healthy market environment. Specifically, finding ways to increase the users' Willingness to Pay remains a crucial challenge for future development.

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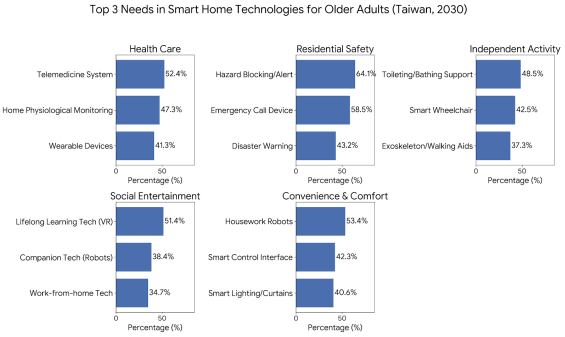

Figure 1. Five Dimensions of 2030 Smart Housing Needs for the Elderly in Taiwan