

Chapter 14

A Study on Ethical Issues and Related Solutions for Smart Home Technologies

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ABSTRACT

In today's ever-changing modern world, everyone yearns for a life that scores high on the quality of living (QoL) index. Smart home technologies aim to improve the quality of our lives by leveraging advanced technologies such as the internet of things (IoT) and sensors. The smart home is an automation system that mainly addresses ambient assisted living, energy management, and home security services. It is seen that smart home technologies are not easily accepted especially by the older adults of society. Ethics plays a crucial role in enhancing its wide adoption across the globe. Ethical problems surrounding these technologies have to be minimized to increase its adoption. The solutions proposed towards these ethical issues encompass secured data transfer and general awareness towards smart home technologies. The primary ethical issues surrounding smart home technologies are highlighted, and certain solutions for its wider adoption across all age groups of society are thus recommended.

INTRODUCTION

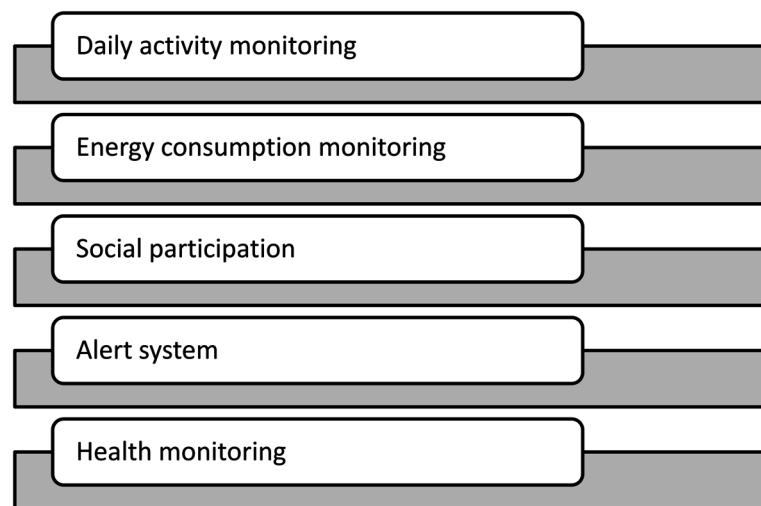
With the proliferation of Information and Communication Technology (ICT), newer emerging technologies such as the Internet of Things (IoT), Cloud Computing platforms, etc. have permeated into the lives of people and contributed to changing their lifestyles completely (Yigitcanlar & Kamruzzaman, 2019; Yigitcanlar et al., 2019a; Yigitcanlar et al., 2019b). Smart Home (SH) is a buzzword in the major media and technical forums nowadays. Older adults account for a good percentage of the total world population. They need special care with respect to their health problems as most of them suffer from chronic illness. If these health issues can be taken care of at home itself, then it will be a lifesaving situation for older adults. The Smart Home enables smart healthcare through ambient assisted living technologies. These technologies help to monitor the activities of the elderly related to physical impairments

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and cognitive impairments and provide tools for enhanced social involvement (Pirzada et al., 2022). Smart Home provides energy management techniques for smart monitoring, billing, and conservation of energy consumption. Renewable energy sources have a great role to play in the area of smart energy conservation techniques. Smart Home aims to provide end-users with smart security services such as alert systems, and burglar alarms to name a few. With the advent of the Internet of Things (IoT), the delivery of Smart Home security services to the end-users has been possible through constant monitoring and communication among the inter-connections. Figure 1 illustrates the different functionalities of Smart Home such as alert system, health monitoring, etc.

Figure 1. Functionalities of the Smart Home



Smart Home technologies are subject to acceptance and adoption issues by the different age groups in society, especially the older adults. Ethical considerations play a major role in this area, which is discussed within this work. Ethical issues like privacy concerns, higher costs, the prior notion of relevant benefits, etc. have been highlighted. The ethical issue of privacy includes some of the common security threats that affect Smart Home technology-based products. Reliability and trust factors help in enhancing the acceptance rate. Here, the unobtrusiveness criterion is the most expected by end-users. Support for schemes to provide Smart Home services to the older population can be given by the government. Social awareness for SH products among the older population has to be developed to prevent hesitation, impatience, and discouragement. These ethical issues have to be minimized as far as possible by following best practices, responsible use by manufacturers and service providers, providing customized solutions to the end-users, and general awareness among end-users.

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