Chapter 12
Exploring the Social Model of Smart Home Devices:
An In-Depth Analysis of Social Impact and Security Issues

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ABSTRACT

The field of exploring social models of smart home appliances aims to understand how these technologies interact with mobility and security issues, highlighting their broader social implications. This research has emerged due to the ubiquity of smart home devices and the need to comprehend their social impact. It focuses on the interplay between technology and its effects on equity and privacy concerns, aiming to develop policies that prioritize users over technology providers, while ensuring the protection of both smart home technologies and user privacy. The main challenge is understanding the integrated social safety functionality of these

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appliances. By examining the relationships between different countries, the research seeks to address differences through an approach that includes cultural norms, technological infrastructure, legal expertise, and user education. This anticipates a shift in smart home research towards a holistic approach, considering complex interactions. The goal is to provide insights for developing flexible and socially responsive smart home technologies.

1. INTRODUCTION

The integration of Smart Home Devices (SHDs) has permeated throughout the modern household, prompting an era transformation that has irrevocably altered the framework of domestic living, (Khan, Salah, & Al-Fuqaha, 2018). Figure 1 represents a smart home environment. With smart thermostats, security devices, and lighting systems now commonplace in residences throughout the country, the complex implications that these technologies have for societal dynamics have increasingly attracted the public's interest. This paper is designed to investigate the complex interplay of the social impact of SHDs and the resultant rise in security concerns. It is undeniable that SHDs promise a vastly improved quality of life, increased accessibility and environmental sustainability, (Jin *et al.,* 2014). However, the unprecedented level of connectivity they bring directly contradicts this infinite improvement in that it raises crucial questions about user privacy and data security .For example, consider recent studies that specifically highlight instances of privacy invasion unauthorized access and potential vulnerabilities within the specific IoT ecosystem – all of which demand a detailed analysis of the double-edged sword that is SHDs, (Atami & Al-Namanny, 2021). When we talk about changes, not just simple ones, they bring more than just ease. Getting SHDs into our homes can change the way families work. They bring new ways to talk to each other and get along. Helpful tech tools also aim to welcome everyone. They help make home a place for people with many needs. But it goes beyond that. Smart home upgrades save resources. This means less energy use and a smaller footprint on our Earth, (Dillahunt, Mankoff, & Paulos, 2019). As these devices steadily work their way into the fabric of everyday lives — for both individual users and families — it's critical to understand both the broader societal implications and the potential risks. Drawing insights from recent literature, as well as from conducting a case study or two, and synthesizing user perceptions, this research is intended to offer a comprehensive and timely snapshot of the rapidly shifting landscape for these devices.

In addressing the convergence of their social impact and security implications, the findings have significant relevance for both end-user constituencies and a broader ecosystem of policymakers and industry stakeholders. As smart home technologies