Chapter 14
Smartwatch Fall Detection and Emotional Intelligence:
Understanding Adoption and Behaviour of the Elderly in Central Kerala

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ABSTRACT

Smartwatch fall detection is a crucial feature that enables smartwatches to automatically detect falls using built-in sensors such as accelerometers and gyroscopes, which identify sudden changes in movement indicative of a fall. This feature is particularly significant for older adults, as it ensures prompt assistance by sending alerts to predefined contacts or emergency services upon detecting a fall. This study examines the influence of technology adoption on various psychological factors among older adults in Central Kerala. This study in Central Kerala examines how technology adoption impacts psychological factors among older adults. A survey of 511 participants used TAM, STAI, Rosenberg Self-Esteem Scale, and UTAUT2. Results show technology adoption strongly predicts performance expectancy (53.2%) and self-esteem (81.0%), and significantly predicts effort expectancy (35.6%), hedonic motivation (31.2%), and anxiety (57.2%). This highlights technology's significant influence on older adults' psychological well-being.

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INTRODUCTION

Smartwatch fall detection is a feature that allows smartwatches to automatically identify when a wearer experiences a fall. This functionality relies on built-in sensors like accelerometers and gyroscopes, which detect sudden changes in movement indicative of a fall. Once a fall is detected, the smartwatch can send alerts to predefined contacts or emergency services, ensuring prompt assistance for the wearer. This technology holds significant importance for older adults due to several reasons. Firstly, falls are a major cause of injury and mortality in this demographic, making timely intervention crucial for mitigating risks. Smartwatch fall detection promotes independence by providing older adults with a sense of security, knowing that help can be summoned quickly if needed. It also offers peace of mind to both older adults and their caregivers, ensuring that assistance is available even when the wearer cannot call for help themselves. This technology enables early intervention by healthcare professionals, potentially preventing further complications or hospitalizations. Smartwatch fall detection provides continuous monitoring without the need for constant supervision, allowing older adults to maintain their daily activities with confidence. Smartwatch fall detection plays a vital role in enhancing the safety, well-being, and quality of life of older adults by proactively addressing the risks associated with falls. The objective of this study is to investigate the influence of technology adoption on performance expectancy, effort expectancy, hedonic motivation, anxiety, and self-esteem among older adults in central Kerala (Palakkad, Thrissur, Ernakulam, Idukki, and Kottayam).

REVIEW OF LITERATURE

The influence of technology adoption on older adults' performance expectancy, effort expectancy, hedonic motivation, anxiety, and self-esteem in central Kerala is a complex and multifaceted issue. The path from performance expectancy and user satisfaction to IT utilization was positive and significant, indicating that when users expect technology to perform well and are satisfied with their experiences, they are more likely to utilize it (Kim et al., 2007). This relationship underscores the importance of designing technology that meets user expectations and delivers high satisfaction to encourage frequent and effective use. For example, if an older adult finds a health monitoring app reliable and easy to use, they are more likely to integrate it into their daily routine, enhancing their overall health management.

Successful aging affected the technology acceptance model in general, except for the use of technology, suggesting that while older adults may accept and appreciate the benefits of technology conceptually, this does not necessarily translate into frequent usage (Özsungur, 2022). This disconnect can be attributed to various factors such as physical limitations, cognitive barriers, or a lack of perceived necessity. For instance, an elderly individual might acknowledge the usefulness of a fitness tracker but may not use it regularly due to difficulties in operating the device or a lack of interest in tracking their physical activity. Frequent technology use is negatively related to academic performance, highlighting the potential drawbacks of excessive technology engagement (Wentworth & Middleton, 2014). This relationship can be explained by the distraction and time consumption associated with technology use, which can detract from study time and focus. For example, students who spend significant time on social media or gaming might struggle to allocate sufficient time for their studies, leading to poorer academic outcomes. This finding emphasizes the need for balanced technology use and the implementation of strategies to minimize distractions, especially in educational settings. Preservice teachers suffer from stress, depression,