

## **Effectiveness of E-Learning Module in Teaching Smartphone Applications Designed for the Elderly**

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### **Abstract**

In India, there is a substantial number of smartphone users, with the elderly population increasingly adopting this technology. This study explores the effectiveness of an e-learning module designed to teach elderly individuals how to use smartphone applications tailored to their needs. The primary objective is to assess the awareness and usage of smartphone applications among the elderly, as well as to develop and evaluate an e-learning module that enhances their capability to use these applications. The study also aims to determine the effectiveness of the module across different demographic segments of the elderly population. A purposive sampling method was used to select 81 elderly participants from Vadodara city. Data were collected using a structured questionnaire, and analysis was conducted with statistical software, primarily Microsoft Excel. A comprehensive e-learning module was developed and validated by experts to facilitate the learning process for the elderly. The findings revealed that most participants were retired, in good health, and used Android smartphones for more than two hours daily, predominantly accessing the internet via mobile data. While smartphones were commonly used for social media, video calling, and entertainment, few participants utilized applications specifically designed for their age group. Most expressed interest in learning about new applications through the e-learning module. The module proved effective in improving participants' knowledge and usage of smartphone applications, with consistent results across different age groups, occupational statuses, and health conditions. However, light users of smartphones benefited more from the module than moderate users.

**Keywords:** *Smartphone, applications, elderly, e-learning module.*

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## Introduction

Smartphones have revolutionized various facets of human life, including communication, education, and personal development. In India, the proliferation of smartphones has extended across all demographics, including the elderly population. Although the rapid global adoption of smartphones has included older adults, the pace has been slower for this group due to several barriers. This demographic shift presents both challenges and opportunities, particularly in enhancing the elderly's engagement with technology to improve their quality of life. Older adults often face difficulties in adopting new technologies because of physical, cognitive, and psychological barriers. These include diminished eyesight and dexterity, difficulty in learning unfamiliar technologies, and psychological resistance caused by fear of failure or lack of confidence. Nevertheless, the potential benefits of smartphone applications for this demographic are substantial - ranging from improved social connectivity to better health management and greater access to information.

Smartphones can foster social connections, provide access to health and wellness resources, and offer entertainment as well as lifelong learning opportunities. In response, several smartphone applications have been specifically designed for elderly users. These applications address a wide range of needs, including cognitive stimulation, safety, security, interpersonal connections, healthcare, and the development of new interests. They serve as valuable tools that enhance psychological well-being and enable seniors to participate more actively in their communities. However, despite their willingness to embrace technology, older adults often struggle with complex smartphone interfaces. Usability becomes crucial, as seniors may face distinct challenges that require tailored solutions. Senior-specific applications therefore incorporate special features to meet their needs in areas such as shopping, travel, education, health, physical activity, and security. For this reason, it is imperative to provide targeted instruction to seniors on how to use such applications effectively. While many mobile apps are available, the present study selected a few that are both useful and easy for the elderly to understand. This study aims to bridge the gap by developing and assessing an e-learning module to teach elderly individuals how to use smartphone applications.

## Objectives

The study's primary objectives are threefold:

1. To assess the awareness and usage patterns of smartphone applications among the elderly.

2. To develop an e-learning module that effectively teaches elderly individuals how to use these applications.

3. To evaluate the effectiveness of the e-learning module in improving the digital literacy of elderly users with respect to their age, smartphone usage, health status, and occupational status.

### **Review of Literature**

The literature review covers several key areas:

1. Digital Literacy and the Elderly: Studies indicate that digital literacy among the elderly is crucial for social inclusion and access to information. However, many elderly individuals lack the necessary skills to use digital technologies effectively.

2. E-learning for the Elderly: E-learning has been recognized as a valuable tool for adult education. Tailored e-learning modules can address the specific needs and limitations of elderly learners, providing them with flexible and accessible means of acquiring new skills.

3. Smartphone Applications for the Elderly: There is a growing market for smartphone applications designed specifically for elderly users. These include health monitoring tools, communication aids, and social media platforms tailored to their needs.

### **Methodology**

The study employs a mixed-method approach, combining quantitative and qualitative research techniques. Purposive sampling was used to select 81 elderly participants from Vadodara city. Data were collected through structured questionnaires and analyzed using Microsoft Excel. The development of the e-learning module involved several stages, including content creation, expert validation, and pilot testing.

### **Sampling and Data Collection**

Participants were selected based on specific criteria: they had to be aged 60 or above, use a smartphone, and be willing to participate in the study. The questionnaire covered various aspects, including demographic information, health status, current smartphone usage patterns, interest in learning new applications, and feedback on the e-learning module.

## **E-learning Module Development**

The e-learning module was designed to be user-friendly and accessible, considering the physical and cognitive limitations of the elderly. It included video tutorials, interactive exercises, and assessments to reinforce learning. The content focused on commonly used applications such as social media, health monitoring apps, and communication tools.

## **Validation and Testing**

A panel of experts in gerontology, education, and technology validated the module. Pilot testing was then conducted with a small group of elderly users to refine the content and ensure usability. Feedback from the pilot test was used to make adjustments before full-scale implementation.

## **Findings**

The study's findings are categorized into four main areas: demographic and health status of participants, current smartphone usage patterns, interest in the e-learning module, and the module's effectiveness.

### **Demographics and Health Status**

Most participants were retired, in relatively good health, and used Android smartphones for more than two hours daily. The majority accessed the internet via mobile data rather than Wi-Fi, reflecting the broader trend of mobile internet usage in India.

### **Smartphone Usage Patterns**

A considerable number of elderly participants had been using smartphones for more than two hours daily for over four years. They commonly used smartphones for social media, video calling, and entertainment. However, few utilized applications specifically designed for the elderly, such as health monitoring apps or services tailored to age-related needs. This gap highlights the importance of targeted education to encourage the use of beneficial applications.

### **Interest in the E-learning Module**

A large majority of participants expressed interest in learning about new applications through the e-learning module. Interest was particularly strong among those who felt their current knowledge was insufficient. This enthusiasm indicates a latent demand for educational resources tailored to elderly learners.

### **Effectiveness of the E-learning Module**

The module improved participants' knowledge and usage of smartphone applications. Pre- and post-test assessments showed significant improvements in digital literacy. Participants appreciated the module's design, which included clear instructions, interactive elements, and practical exercises. After completing the module, they reported greater willingness to use elderly-specific applications related to entertainment, social interaction, and health.

### **Impact of Demographic Variables**

The effectiveness of the e-learning module was consistent across different age groups, occupational statuses, and health conditions. However, light users of smartphones benefited more from the module than moderate users, suggesting that those with less prior experience gained the most from structured learning. Similar findings have been reported in earlier research. Zhao et al. (2020) designed a smartphone operation manual for elderly participants. After 20 weeks, the intervention group showed significant improvements in smartphone usage competency (except health applications) and overall quality of life compared to the control group. Similarly, Lu, Wen, and Chang (2017) developed an assessment of smartphone usage competence and a training programme for the elderly. Their results indicated significant improvement in competencies after training, though some items remained difficult for participants to comprehend. These studies, along with the present findings, highlight the value of structured training in improving smartphone literacy among older adults.

### **Discussion**

The study underscores the potential of e-learning modules to enhance the digital literacy of elderly individuals. The positive reception and demonstrated effectiveness of the module emphasize the importance of developing educational tools tailored to the specific needs of older learners. Continuous support and encouragement are essential to help the elderly embrace new technologies, thereby improving their quality of life and keeping them connected with the world around them.

## Challenges and Limitations

Several challenges were encountered during the study, including initial resistance from some participants who were skeptical about their ability to learn new technology. Additionally, the study was limited to a specific geographic area and demographic, which may affect the generalizability of the findings.

## Recommendations

Based on the study's findings, the following recommendations are proposed:

**1. Development of More E-learning Resources:** Additional modules focusing on diverse aspects of smartphone usage could further benefit elderly learners.

**2. Community Programmes:** Initiatives promoting the adoption of smartphone applications among the elderly should be supported through community programmes and the active involvement of family members.

**3. Further Research:** Continued research is needed to refine e-learning tools and assess their long-term impact on the digital literacy and quality of life of the elderly.

## Implications

The findings suggest several policy implications:

**1. Integration into Community Programmes:** Local governments and community organizations should incorporate digital literacy training for the elderly into their programmes. Regular workshops and sustained support can facilitate ongoing learning and adaptation to emerging technologies.

**2. Support for E-learning Development:** Policy initiatives should prioritize the development of e-learning modules tailored to different aspects of smartphone usage for older adults. This may include funding for research and development, as well as partnerships with technology companies.

**3. Access to Technology:** Ensuring that elderly individuals have access to affordable smartphones and reliable internet connections is crucial. Subsidies or programmes providing discounted devices and services can help bridge the accessibility gap.

## Conclusion

This study highlights the significant impact of e-learning modules in teaching elderly individuals how to use smartphone applications. The positive reception and

demonstrated effectiveness of the module emphasize the importance of developing targeted educational resources for the elderly population. By addressing their specific needs, such modules can improve digital literacy, strengthen social connectivity, and contribute to overall well-being. The findings provide a strong foundation for future research and policy initiatives aimed at promoting digital inclusion for the elderly.

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