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Research Article

Evaluating UI/UX Aspects in Mobile Applications Catered to Senior Citizens in India: A Comparative Study

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ABSTRACT

Technology has become an invaluable part of everyone's life, with smartphones playing a significant role in daily activities. However, there remains a noticeable gap between younger and older users. As we move towards a more digital future, it is essential to consider whether older adults are truly part of this journey. Are new technologies, such as smartphones and applications, adequately catering to the needs of older individuals? This paper focuses on studying applications designed for seniors and their user interfaces (UI). A well-designed UI is crucial, as it serves as a bridge between the user and the application's features. It is important to create a better UI that addresses the physical and psychological needs of older adults. The study examines three Android applications, structured into five sections for each app: developer information, strengths, weaknesses, and UI suggestions based on the Google Accessibility Scanner. Finally, the paper compares all three apps against expected UI /UX design standards.

Keywords: Senior Citizens, User Experience Design, Healthcare, Mobile App, Visual Design.

INTRODUCTION

The use of smartphones is increasing rapidly, driven by multi-touch interactions and advanced configurations. However, as smartphones advance, they can become more challenging for older adults to use [3]. Mobile applications play a significant role in society by enabling a variety of tasks and facilitating communication. Unfortunately, many of these applications are not designed with older users in mind [2].

Mobile apps are just as important for older adults as they are for younger generations, as evidenced by their use during the COVID-19 pandemic, where they served as a tool to alleviate the effects of self-isolation. The older population is growing rapidly, both in India and worldwide. Mobile applications offer valuable features for seniors, including safety and security, entertainment, healthcare, and socialization, all of which contribute to an improved quality of life [4].

However, most apps fail to account for the physical, mental, and cognitive challenges faced by older adults[9]. Healthcare-related mobile applications tend to be the most commonly used by seniors, compared to other types of applications. Usability, particularly user-friendliness, is a crucial aspect of user experience (UX) for this demographic [1]. It's important to note that UI (user interface) and UX go beyond mere aesthetics; they encompass functionality and accessibility, which foster trust and lead to user satisfaction, quicker navigation, and increased reliability [6]. To address the needs of older adults, guidelines have been developed for designing UI and UX in applications tailored to their challenges [2]. This paper utilizes these guidelines to evaluate whether existing applications align with them.

This study aims to evaluate existing Android applications designed for older adults in India, with a focus on their UI/UX design based on established guidelines. The evaluation will cover aspects such as navigation simplicity, visual design, usability, and availability of help features. By comparing various senior-focused applications, this paper identifies common issues and highlights best practices.

Below are the golden rules that play a major role in applications for older adults, significantly impacting their usability more than any other functionalities [2].

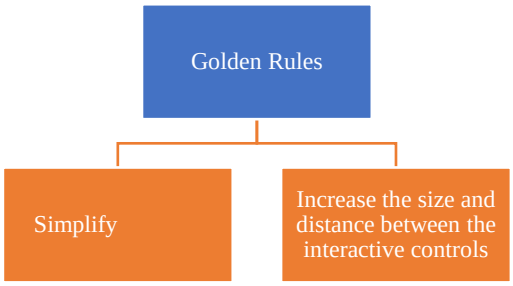

Figure 1: Significant rules for applications

The following are guidelines to enhance the usability of applications for elderly adults. By following these guidelines, older users can become more familiar with the applications and use them more effectively. The guidelines are divided into five categories to clarify how each set of recommendations contributes to different functionalities of the application [2].

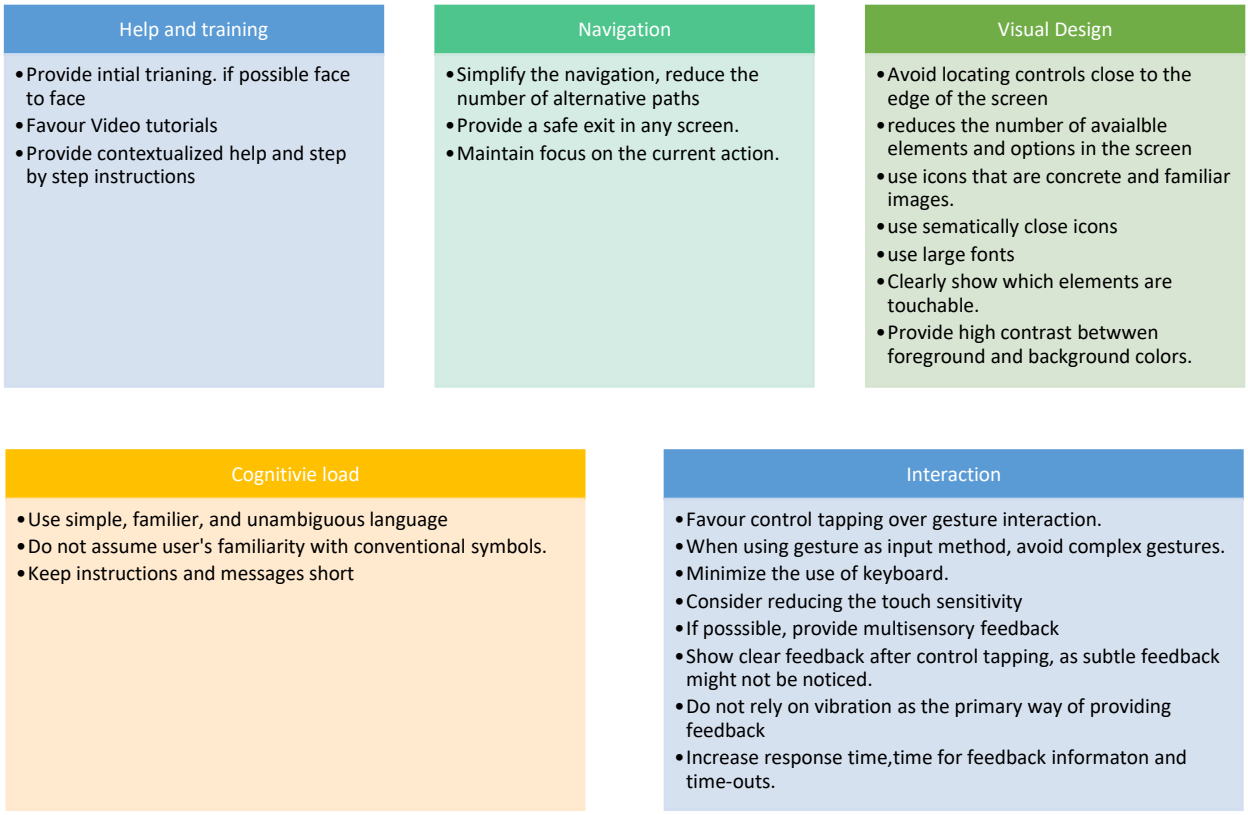

Figure 2: Detailed functionalities for applications for elderly people.

REVIEW OF LITERATURE

This study examines various research papers related to the keywords UI/UX, elderly people, senior-focused applications, and the issues associated with UI/UX design for older adults from around the globe. The papers were obtained from open sources such as Google Scholar, ResearchGate, Springer, and digital libraries. They encompass a range of topics, from existing systematic literature reviews to broader themes and subtopics in the field.

There is considerable research addressing ageism, the digital divide, and the inclusion and exclusion of users. This study highlights how elderly individuals are often excluded from digital inclusion and neglected in the creation of UI/UX designs tailored to their needs. It emphasizes the importance of incorporating their experiences with technology and how UI/UX design can improve their interactions. Additionally, many studies explore what motivates older adults to use technology and the physical, mental, and cognitive challenges they face while doing so, along with proposed solutions to mitigate these difficulties.

Most of the existing research primarily focuses on the older population in Western countries, with significantly fewer studies available regarding Indian elderly people and their interaction with technology or applications designed for them. Although there are common factors that affect older generations globally, Indian elderly individuals confront unique challenges such as language barriers, low literacy rates, and cultural differences.

The findings in this study provide valuable insights, underscoring the significance of UI/UX design for older users to enhance their experience with technology. It is essential for applications to be user-friendly and straightforward, ensuring that they can be easily utilized by elderly individuals. The research conducted on this demographic has established guidelines for UI/UX design tailored specifically to older adults, which are employed in this study.

RESEARCH METHODOLOGY

To evaluate the UI/UX of senior-focused applications in India, we utilized the design guidelines proposed by Miguel Gomez-Hernandez, Xavier Ferré, Christian Moral, and Elena Villalba-Mora. Using these guidelines, we studied and compared three senior-focused applications: Khyaal, Emoha, and Anvaaya. Additionally, we gathered data from sources such as information available on Google Play and user feedback. To assess the UI and accessibility of the applications, we employed the Google Accessibility Scanner. Based on the suggestions provided by the scanner, we thoroughly examined the UI of each application.

CASE STUDY

To examine the UI/UX aspects of mobile applications designed for older adults, three apps have been selected. There are very few available apps, and only some of them are currently functional. For this research, the apps chosen are Khyaal, Emoha, and Anvayaa.

1.Khyaal: Senior Citizens App

a. Developer: Khyaal Inc

b. Information:

   i. Khyaal is dedicated to establishing an online club for senior citizens that offers entertainment and cultivates a sense of community. The platform will feature a variety of events, most of which will be free and organized by Khyaal employees.

   ii. Users can access numerous offerings, including shopping for medical and self-care products, as well as divine and silver collections. There will also be games such as tic-tac-toe and sudoku, along with options to pay bills like electricity and broadband. An AI assistant will be available through chat, and there will be a section for users to explore and apply for job opportunities.

   iii. It is important to note that many of these features are available exclusively to paid members.

c. Strength:

   i. This innovative app is specifically tailored for older adults, ensuring they can effortlessly enjoy their mobile phone experience. It features a variety of engaging and interactive online sessions, including games, social gatherings, and community activities, all available at no cost and with easy accessibility.

   ii. One standout aspect of the app is a dedicated module that curates a selection of popular TV shows and entertainment options that are frequently favored by seniors, allowing them to easily find and enjoy their favorite programs.

   iii. The primary goal of this app is to create a vibrant and enjoyable environment, enhancing the overall experience for its users and fostering a sense of community and connection among older adults.

d. Weakness:

   i. The entertainment module presents challenges in navigation, making it difficult for users to find their way around. Additionally, many of the features and content available in this

module can be easily accessed through other popular platforms such as YouTube and Facebook, which may offer a more user-friendly experience.

ii. One notable drawback of the entertainment module is the absence of an emergency helpline, which could leave users without immediate assistance when they encounter issues. Furthermore, some modules within the entertainment section can be quite confusing, leading to difficulties when trying to enter or exit specific areas. This lack of clarity can frustrate users, detracting from their overall experience.

e. Google Accessibility Scanner Results:

Total Suggestions: 17

- Touch Target :Consider making clickable item larger
- Item Label :Item may not have a label readable by screen readers.
- Item Descriptions:Multiple items have the same descriptions
- Text Contrast:Consider increasing item's text foreground to background contrast ratio.

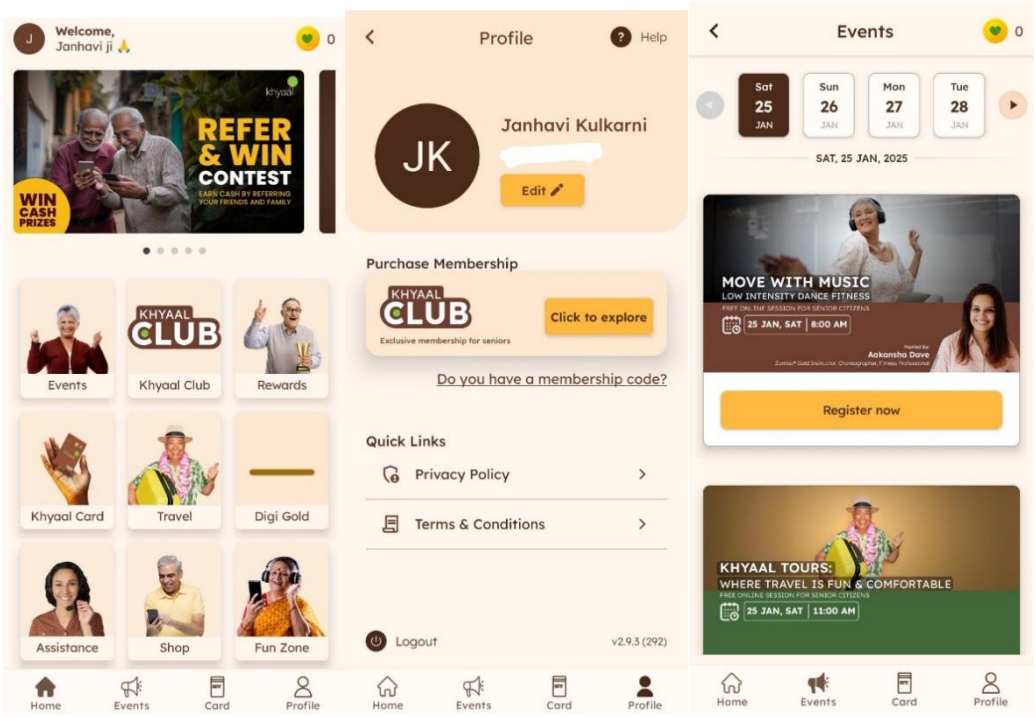

Figure 3: Khyaal App- Home page, Profile page, Events page

2. Emoha: Support for Seniors

a. Developer: Emoha Eldercare

b. Information:

i. The application allows users to request a variety of essential services that are particularly beneficial for senior citizens. This includes medical support, access to medical equipment, diagnostic services, and personalized home healthcare tailored to their specific needs. In addition to health-related services, Emoha facilitates access to crucial home services, such as plumbing, pest control, and other maintenance needs, which can help seniors maintain a safe and comfortable living environment. Tech services, including the installation of CCTV systems for added security, are also readily available.

ii. Emoha features engaging content created by the elder community itself. Shows cover topics such as nutritious meal options, spiritual engagement, entertainment, and fitness. These

programs are designed to entertain and foster a sense of community and connection among users.

iii. Moreover, Emoha offers curated plans for senior citizens, categorized into three tiers: basic, standard, and premium. Each tier provides a range of services that can be purchased based on individual needs and preferences, ensuring that every user can find a suitable option for their lifestyle.

iv. To facilitate user experience, Emoha provides multiple avenues for seeking assistance. Users can easily send requests through the application itself, make phone calls directly to support staff, or communicate via WhatsApp, making it convenient for them to get the help they need at any time.

c. Strength:

i. It offers a great package for older adults that balances fun, engaging activities with the necessary medical care and assistance they may need. The user interface is simpler compared to other apps. It has provided language controls – English and Hindi.

d. Weakness:

i. Color contrast can be improved. Text sizing controls are not provided. Community and Calendar modules are a bit confusing and interchangeable.

e. Google Accessibility Scanner Results:

Total Suggestions: 21

- Touch Target :Consider making clickable item larger
- Item Descriptions:Multiple items have the same descriptions
- Text Contrast:Consider increasing item's text foreground to background contrast ratio.

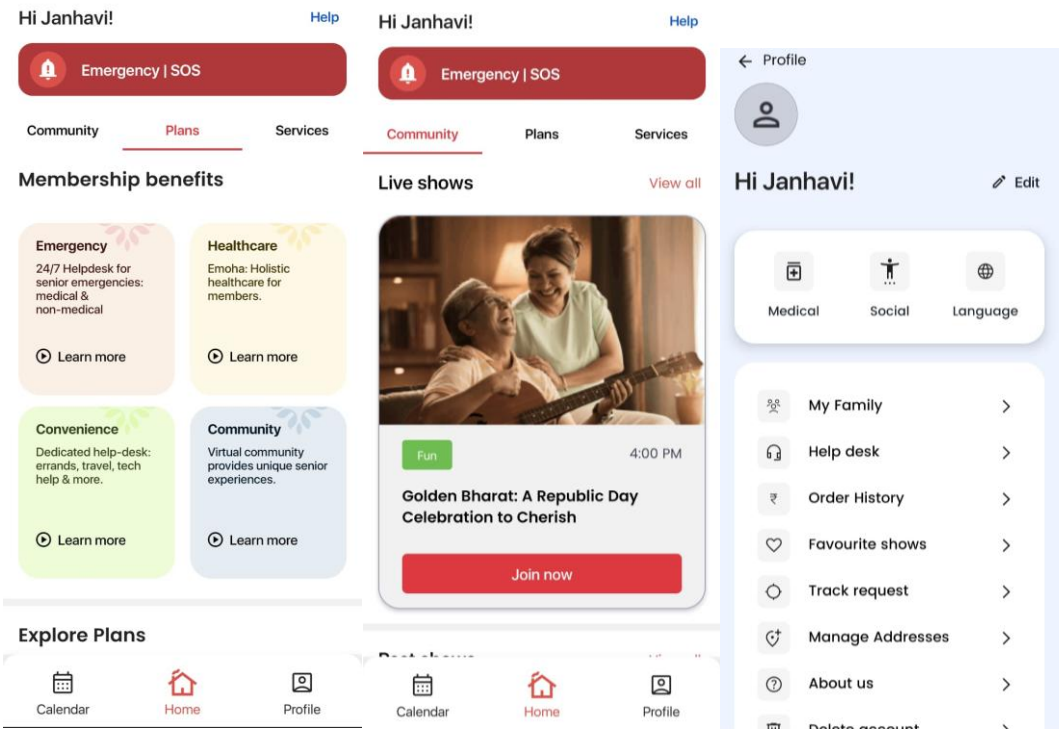

Figure 4: Emoha App- Home page, Community page, Profile page

3.Anvayaa

a. Developer: Anvayaa Kin Care Pvt Ltd

b. Information

i. Anvayaa is designed for elderly individuals and their children who wish to take care of them. Users can request various services, ranging from simple errands such as grocery shopping and maid services to religious services, home cleaning, and repair services. Additionally, Anvayaa offers healthcare assistance, including caregivers, blood tests, appointments, and diagnostics.

ii. A key feature is the emergency button, which allows for immediate assistance in health crises. The app also facilitates social engagement through escorted outings, picnics, social gatherings, and enjoyable activities organized by Anvayaa.

iii. Overall, Anvayaa combines a variety of services for elderly people into one convenient app. However, it is important to note that no service can be accessed without a membership, and the membership rates are higher compared to other applications.

c. Strength:

i. It provides all the features which are needed by elder adults under one roof.

d. Weakness:

i. The navigation is confusing, and the menus are overly complicated. A membership dialog box frequently appears on every page, interrupting the user experience. The sign-up and login pages are poorly designed, and the email verification process can be especially complicated for senior citizens. Additionally, having too many options on one page can be frustrating and may confuse or exhaust older users.

e. Google Accessibility Scanner Result:

Total Suggestions: 61

- Text Scaling:Item's Text size unit is dip
- Image Contrast:Consider increasing the ratio between this image's foreground and background.
- Unsupported Item Type:Item type is not supported.
- Touch Target :Consider making clickable items larger
- Text Contrast:Consider increasing the item's text foreground-to-background contrast ratio.
- Item Label :The item may not have a label readable by screen readers.

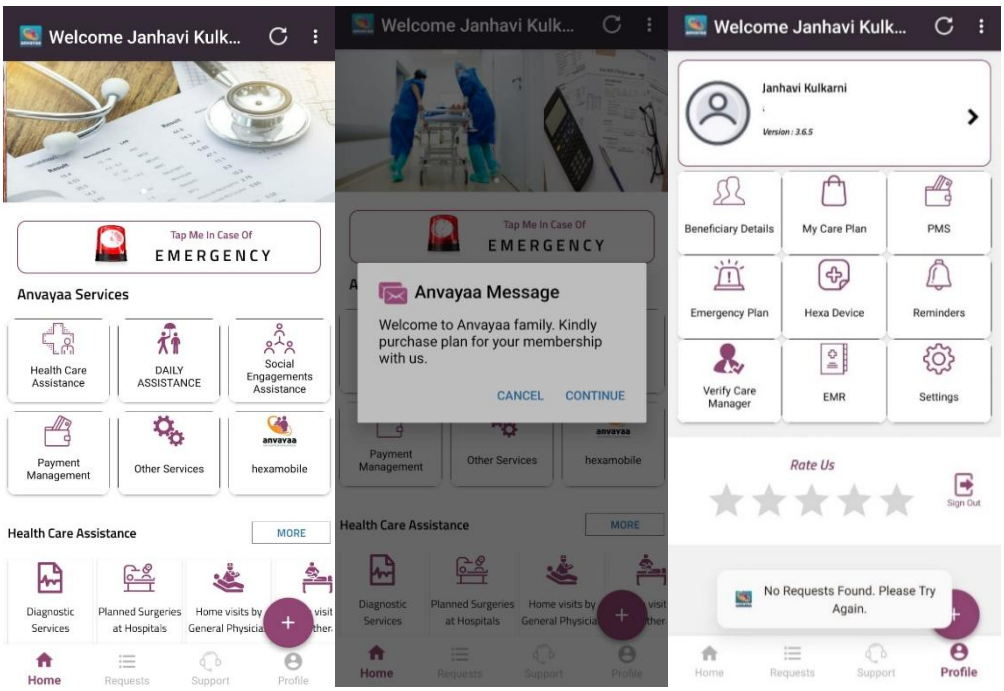

Figure 5: Anvayaa App- Home page, Home page, Profile page

FINDINGS

	Design Expectations	Khyaal	Emoha	Anvayaa
1	Contextualized Help and step-by-step instructions	No	Yes	No
2	Simplified Navigation	No	Yes	No
3	Safe Exit in any screen	Yes	Yes	No
4	Controls far away than the edge of the screen.	Yes	Yes	Yes
5	Large Font Size	No	No	No
6	Font Size Control	No	No	No
7	High contrast between foreground and background colors	No	No	No
8	Short instructions and messages.	No	Yes	No
9	Simple, Familiar, and unambiguous language	Yes	Yes	Yes
10	Labels to icons	Yes	Yes	Yes
11	Emergency Services	No	Yes	Yes
12	Language Control	No	Yes	No

CONCLUSION

The elder population in India is rapidly growing, along with the increasing use of smartphones among older adults. However, there are very few applications specifically designed for this demographic, and even those that exist often have significant issues. We have included only apps that function properly, but there are still many challenges associated with their use. Many of these apps are poorly maintained, and some still show coding errors. While there are good efforts to consolidate various needs into a single app, this can increase cognitive load and necessitate proper maintenance.

One significant oversight is that none of these apps offer adjustable text size and contrast controls, which are crucial features for older users. Despite these drawbacks, the apps do provide a one-stop solution to the various problems faced by elderly individuals. For those who are familiar with smartphones, using a single app can be very beneficial. On the Android Play Store, Khyaal has more downloads and reviews compared to the other applications, and it has a larger reach among the elderly population in India. Anvayaa is still in the early stages of its mobile application development. In contrast, Emoha has a moderate reach but boasts more positive user reviews and holds the highest rating among the three applications. Among the options, such as Khyaal, Emoha, and Anvayaa, Emoha offers a superior user interface and user experience compared to the other existing applications. Emoha is a better mobile application option for elderly people in India, considering UI/UX aspects and other factors.

REFRENCES

[1] Chen, X., Koh, P. C. L., & Wong, S. K. (2022). A Systematic Review on user Experience in Mobile Application Design Among Senior Citizens. INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY (IJERT) Volume, 11.

[2] Gomez-Hernandez, M., Ferre, X., Moral, C., & Villalba-Mora, E. (2023). Design guidelines of Mobile apps for older adults: systematic review and thematic analysis. JMIR mHealth and uHealth, 11, e43186.

[3] Joseph, A. W., Jeevitha Shree, D. V., Saluja, K. P. S., Mukhopadhyay, A., Murugesh, R., & Biswas, P. (2021). Eye tracking to understand impact of aging on mobile phone applications. In Design for Tomorrow—Volume 1: Proceedings of ICoRD 2021 (pp. 315-326). Springer Singapore.

[4] Klimova, B., & Maresova, P. (2016). Elderly people and their attitude towards mobile phones and their applications—a review study. Advanced Multimedia and Ubiquitous Engineering: FutureTech & MUE, 31-36.

[5] Lundy, M., Desai, S. A., & Chin, J. (2023). Bridging the gap Between designers and users: Co-designing health-related voice user interface experiences with older adults. In Proceedings of the ALISE Annual Conference, 2023.

[6] Pedrosa, G. V., Judice, A., Judice, M., Araújo, L., Fleury, F., & Figueiredo, R. (2022, June). Applying user-centered design on digital transformation of public services: A case study in brazil. In DG. O 2022: The 23rd Annual International Conference on Digital Government Research (pp. 372-379).

[7] Vercruyssen, A., Schirmer, W., Geerts, N., & Mortelmans, D. (2023, September). How “basic” is basic digital literacy for older adults? Insights from digital skills instructors. In Frontiers in Education (Vol. 8, p. 1231701). Frontiers Media SA.

[8] Yap, Y. Y., Tan, S. H., & Choon, S. W. (2022). Elderly's intention to use technologies: a systematic literature review. Heliyon, 8(1).

[9] Zhao, Y. U., Hu, X., & Men, D. (2019). Design and research of health aids based on app in the elderly. In Advances in Human Factors and Ergonomics in Healthcare and Medical Devices: Proceedings of the AHFE 2018 International Conference on Human Factors and Ergonomics in Healthcare and Medical Devices, July 21-25, 2018, Loews Sapphire Falls Resort at Universal Studios, Orlando, Florida, USA 9 (pp. 367-372). Springer International Publishing.