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# Digital Skill Literacy among the Elderly in their daily lives

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**ABSTRACT**

Digital technology is increasingly essential for daily functioning, yet a persistent digital divide remains between younger generations and the elderly. Despite facing significant barriers such as physical limitations, low self-confidence, and a lack of guidance, many older individuals express a strong willingness to learn and utilize digital devices for everyday needs. Accordingly, this study investigates digital skill literacy among the elderly in their daily lives, examining their preferred applications, practical knowledge, and specific usage patterns. Employing a qualitative approach, the study was conducted at the Pusat Aktiviti Warga Emas (PAWE) in Kuala Terengganu. Using purposive sampling, the study recruited 15 participants aged 60 and above, with inclusion criteria requiring them to reside in semi-rural areas and have basic smartphone capabilities. The thematic analysis of the Focus Group Discussion (FGD) yielded three primary themes regarding everyday digital literacy: (1) Communication and social connection, (2) Smartphones as an entertainment device, and (3) Casual online social shoppers. While some participants were enthusiastic about sharing their technical skills, others were defensive. Nevertheless, all clearly described their frequent smartphone-use routines. Overall, the findings highlight the practical digital literacy of semi-rural elderly populations and underscore the need for targeted interventions to support their continued technology adoption.

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Digital Literacy; Elderly; Smartphone Usage

## 1. Introduction

Digital technology is essential for modern communication, connectivity, entertainment and leisure, financial matters, and managing healthcare information and services. Digital literacy refers to the knowledge and abilities needed to access, comprehend, assess, apply, and share information through digital and networked technologies. It goes beyond simply owning or using a digital device (Acharya, 2015; Spark et al., 2024). Despite these advantages, many elderly still struggle to adopt modern technology (Zhou et al., 2025; Stamate et al., 2024) and lag younger generations in technology adoption, creating a digital divide (Chee, 2024; Mohan et al., 2024; Stamate et al., 2024; Zhou et al., 2025). Nevertheless, many older adults are willing to learn how to use digital devices for everyday needs. This includes staying in touch with family and friends, managing money, accessing health information, taking photos, exploring information, and engaging in lifelong learning (Kebede et al., 2022; Golant, 2026). However, they continue to face significant digital barriers, including low self-confidence, health concerns, physical limitations, limited guidance, and expensive technology (Aslan, 2025; Al-Muhannadi, 2025). Consequently, mastering digital literacy depends on an individual's skills, access to affordable, user-friendly tools, and adequate social support (Aslan, 2025; Al-Muhannadi, 2025). Thus, accessible learning opportunities and proper supervision are essential to helping elderly overcome these hurdles. Simply having internet or device access does not guarantee meaningful digital engagement, as digital exclusion also involves disparities in skills, usage habits, and outcomes (Wilson et al., 2023). Previous research indicates how digital technology helps older adults manage health, communicate, and participate in daily life, though most studies focus on specific tools, training, or barriers (Lupton & Maslen, 2019; Vaportzis et al., 2017; Wilson et al., 2023). Despite these insights, limited attention has been paid to how the elderly experience digital literacy in their everyday, community-based contexts. In essence, addressing this gap is essential to designing digital literacy initiatives that truly respond to the elderly's daily practical needs.

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# 2. Materials and Methods

## 2.1 Study Setting, Recruitment and Participants

The research was conducted at the elderly care facility known as Pusat Aktiviti Warga Emas (PAWE). The recruitment strategy employed purposive and snowball sampling techniques, overseen by the Chairperson of PAWE in Kuala Terengganu. The Chairperson identified and contacted potential participants and invited them to participate in the study. In addition, the research team disseminated a study poster at PAWE and clearly communicated the inclusion criteria both verbally and in writing to ensure only appropriate participants were selected. To ensure voluntary participation, the research team collaborated with the PAWE Chairperson to organize an initial meeting and briefing before recruitment, during which the recruitment criteria were outlined. Participation was emphasised as voluntary. To be eligible, participants had to be aged 60 years or older, reside in a semi-rural area, and belong to the lower-middle socioeconomic group, as defined by the latest data from the Department of Statistics Malaysia (DOSM) based on the Household Income and Expenditure Survey 2022 (DOSM, 2022). Furthermore, they were required to be able to communicate in either the Malaysian language or English and have the mental and physical ability to use a basic smartphone and participate in focus group discussions. Initially, 23 individuals were recruited for the study. However, only 15 elderly participants consented, while the remaining eight were unable to participate due to personal commitments. All recruitment materials were prepared in Malay and written in simple language. Subsequently, all individuals involved completed informed consent forms to take part in the study. Notably, this study aimed to assess the everyday life digital literacy of elderly in PAWE and examine its effect on their daily activities. Participants then engaged in a focus group discussion lasting approximately one hour, which was audio-recorded using a digital recorder. After the interview, participants received a summary reiterating the research objectives and were informed of their right to withdraw their data. The focus group discussions were subsequently transcribed by a research officer. Finally, the authors analysed the transcripts using inductive thematic analysis. This process involved identifying recurring themes within and across participants' contributions by thoroughly reading and rereading the transcripts. This included highlighting sections where participants discussed the digital literacy, they were familiar with, accessed via their devices, utilized through online media applications, and the various approaches to interacting with technology.

# 3. Results and Discussion

## 3.1 Demographic Characteristics

Of the 23 potential participants who initially indicated interest, 15 elderly people confirmed their involvement and remained fully committed throughout the study. Most participants were female (n = 11), while the remaining participants were male. All elderly participants were Malays and Muslims and had participated in activities at PAWE for almost three years. Table 1 provides additional information regarding the study participants. The names in the table are pseudonyms and do not represent the participants' real names. Specifically, the youngest participant was 62 years old, while the oldest was 67 years old. Based on their interview responses, all participants had worked before reaching retirement age. Most had worked in the government sector, while four had retired from the private sector. Participants who had been employed in the government sector received a monthly pension, whereas those from the private sector relied on savings accumulated in the Employee Provident Fund (EPF) to support themselves after retirement. Since most were employed before retirement, many were familiar with using computers and smartphones. However, only two participants reported being proficient with a single device: a smartphone. Most indicated that the primary purpose of owning a smartphone was to maintain social connections with family and friends. They also used it to search for news and updates on websites, such as Google, as well as through messaging applications such as Telegram and WhatsApp, and social media platforms like TikTok and Facebook. Naturally, all the female used their smartphones for online shopping. However, most of them preferred to avoid engaging with financial services online. They explained that for most online transactions, they relied on their children for assistance since they were concerned about scams and were unfamiliar with the systems.

**Table 1. Demographic Characteristics**

| Participants | Gender | Age | Occupation before retirement | Technology device | The purpose of device | Application and program that are normally utilized |
|---|---|---|---|---|---|---|
| Aunty Amina | Female | 64 | Teacher (Government) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Shopping | Traditional call<br>What apps<br>Telegram<br>TikTok |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | Financial services | Shopee<br>Lazada<br>Facebook<br>YouTube<br>Camera |
| Aunty Bedah | Female | 62 | Administrator (Private) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Shopping | Traditional call<br>What apps<br>Telegram<br>TikTok<br>Shopee<br>Facebook<br>YouTube<br>Camera |
| Aunty Chah | Female | 65 | Auditor (Private) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Shopping<br>Financial services | Traditional call<br>What apps<br>TikTok<br>Shopee<br>Facebook<br>YouTube<br>Camera |
| Aunty Dilla | Female | 64 | Teacher (Government) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Shopping | Traditional call<br>What apps<br>Telegram<br>TikTok<br>Shopee<br>Facebook<br>Camera |
| Aunty Esah | Female | 67 | Administrator (Government) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Shopping | Traditional call<br>What apps<br>Telegram<br>TikTok<br>Shopee<br>Facebook<br>You Tube<br>Camera |
| Aunty Farah | Female | 65 | Administrator (Private) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Shopping | Traditional call<br>What apps<br>Telegram<br>TikTok<br>Facebook<br>Camera |
| Aunty Gina | Female | 64 | Administrator (Private) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Shopping | Traditional call<br>What apps<br>Telegram<br>Shopee<br>Facebook<br>Camera |
| Aunty Hana | Female | 65 | Teacher (Government) | Smartphone & Computer & | Social interaction<br>Searching for news updates | Traditional call<br>What apps<br>Telegram |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | Shopping | TikTok<br>Shopee<br>Lazada<br>Facebook<br>Camera |
| Aunty Ira | Female | 63 | Business (Private) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Shopping<br>Financial services | Traditional call<br>What apps<br>TikTok<br>Shopee<br>Facebook<br>YouTube<br>Camera |
| Aunty Joyah | Female | 66 | Teacher (Government) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Shopping | Traditional call<br>What apps<br>Telegram<br>TikTok<br>Shopee<br>Facebook<br>Camera |
| Aunty Kalsom | Female | 66 | Administrator (Government) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Shopping | Traditional call<br>What apps<br>Telegram<br>Shopee<br>Facebook<br>Camera |
| Uncle Ali | Male | 65 | Armed Forces (Government) | Smartphone | Social interaction<br>Searching for news updates | Traditional call<br>What apps<br>Telegram |
| Uncle Bidin | Male | 63 | Teacher (Government) | Smartphone & Computer | Social interaction<br>Searching for news updates<br>Financial services | Traditional call<br>What apps<br>Telegram<br>YouTube<br>Camera |
| Uncle Chor | Male | 67 | Armed Forces (Government) | Smartphone | Social interaction<br>Searching for news updates | Traditional call<br>What apps<br>Telegram<br>Camera |
| Uncle Dollah | Male | 63 | Healthcare Worker (Government) | Smartphone & Computer | Social interaction<br>Searching for news updates | Traditional call<br>What apps<br>Telegram<br>YouTube<br>Camera |

### 3.2 Overview of Themes

Based on participants' responses, the researcher identified three primary themes. This finding is derived from an analysis of the digital literacy levels among elderly individuals as demonstrated in their everyday lives. During this session, the research identified which types of applications the elderly prefer to use in their daily routines, as well as the specific purposes for which they use them. This highlights the practical digital knowledge this demographic possesses. To illustrate these themes, the study provides direct quotes from participants in the focus group discussion, accompanied by their study identification pseudonyms. Notably, some participants were enthusiastic about sharing their technological skills, while others appeared more defensive when discussing the topic within the group

setting. Nevertheless, they all clearly explained which applications they use frequently each day on their smartphones. The following themes emerged from the study: 1. Communication and social connection, 2. Smartphone as an entertainment device, and 3. Casual online social shoppers.

### 3.2.1 Communication and Social Connection

The findings reveal that elderly participants primarily use smartphones and applications to stay connected with family members, especially their grandchildren. Beyond immediate family, these devices serve as an important lifeline for reaching out to old friends and relatives. When discussing their preferred communication methods, the participants noted that they frequently rely on traditional phone calls. However, many also embrace modern technology, utilising WhatsApp calls to bridge distances with loved ones. Highlighting the value of these connections for older adults, Aunty Farah shared:

"I utilise my phone to contact friends from my professional past."

"Normally, if we go out together with our longtime friends, I will make sure to take photos for memories." Aunty Esah.

This pattern reflects a broader pattern observed among the elderly participants. On WhatsApp, they mainly texted friends to check in and coordinate social activities, while also staying connected with family members. They frequently used WhatsApp video calls to reach children and grandchildren, which helps ease feelings of longing and maintain close family bonds. Beyond communication, the elderly participants demonstrated confidence in using their smartphone cameras, particularly when spending time with family members, especially grandchildren. They frequently took photos during gatherings with old friends, such as activities at PAWE or casual meals out together, to create lasting memories. Additionally, several participants mentioned that they enjoy recording videos of their grandchildren's actions during visits. They stated that these photos and videos serve as remembrances to cherish and share with family members. Many noted that these captured moments help preserve meaningful experiences and strengthen their connection to loved ones. This statement illustrates a recurring theme among the elderly participants. For some, a smartphone's primary function is communication, which helps alleviate loneliness and maintain social connectedness. They also use smartphones to share information and preserve memories through photographs, which they find entertaining. Additionally, the elderly use their devices to browse videos that interest them and to stay updated on current trends.

"I enjoy taking photographs of my grandchild and occasionally share them with my family in our WhatsApp group." Aunty Gina.

Furthermore, one of the most significant uses of smartphones among the elderly is updating their family members, especially their children, about their daily lives and well-being. This practice strengthens bonds and provides the elderly with reassurance and a sense of belonging, knowing they remain actively involved in their family's lives despite physical distance.

### 3.2.2 Smartphone as an Entertainment Device

For the elderly participants in this study, smartphones primarily serve as entertainment during their free time rather than as essential tools for work or productivity. Most respondents mentioned they preferred Facebook, TikTok, and YouTube over other platforms, such as Instagram, when they have spare time. These app selections largely stem from their desire to stay informed about current events, both locally and internationally. Through news feeds, short videos, and shared posts, they can follow developments in their communities and global happenings without relying solely on traditional media. As mentioned by Aunty Hana:

"I browse TikTok so I can get many up-to-date circumstances because most live events happen on TikTok."

Beyond consuming news, many elderly users use Facebook and TikTok to maintain and strengthen their social connections. Although they occasionally post updates about their daily activities, they more often use these platforms to check on the lives of old friends and former colleagues, including those they know through PAWE. This passive and active browsing helps them feel socially connected. It reduces feelings of isolation, especially for those whose mobility or energy levels limit face-to-face interaction. As one participant shared:

"For myself, I like to take pictures when my friends and I get together and post them on Facebook. I would like to remember those times." Aunty Amina

Religious content also features prominently in their smartphone use. Several participants reported using Facebook and YouTube specifically to watch religious talks, sermons, and faith-related programs. These videos allow them to participate in religious activities remotely, revisit teachings, and deepen their spiritual practices at their own pace. For some, this form of digital religious engagement has become a regular part of their routine, especially when attending physical events is difficult. One participant noted:

"I love to watch religious shows on Facebook or YouTube. I can watch the show again and learn more to truly understand, particularly with regard to solah." Uncle Bidin.

Entertainment in the form of dramas and series is another key use case. Several respondents mentioned spending their free time watching local and foreign dramas streamed on their phones through these apps. This provides an easily accessible form of leisure that fits

into their daily schedules and can be enjoyed at home. Among elderly women, browsing YouTube and Facebook to watch cooking shows is popular. These videos offer practical meal ideas and a sense of familiarity and comfort, as many participants associate the recipes and cooking styles with their own life experiences. As one participant explained:

"I enjoy watching YouTube cooking videos because they inspire me to make new dishes. Even though I do not always cook, I still enjoy watching them." Aunty Chah.

Finally, a smaller group of elderly users turns to their smartphones for audio-based entertainment. Some use Facebook, YouTube, and other apps to listen to music, especially older or classic songs that resonate with their generation, as well as to stream classic radio channels. This allows them to enjoy familiar tunes and radio programs without a physical radio, further integrating smartphones into their everyday leisure habits.

### 3.2.3 Casual Online Social Shoppers

A few years ago, many elderly people were hesitant to embrace online shopping or e-commerce, viewing these platforms with considerable uncertainty and caution. Several significant barriers discouraged them from participating, particularly concerns regarding security and trust. For instance, many feared falling victim to financial scams, phishing, or identity theft. As Aunty Dilla and Aunty Esah explained during the study:

"We scared to get cheated and get scam using the online shop last time."

Beyond security concerns, participants also expressed concerns about product quality. They were unsure whether the physical items would match the online descriptions in quality and overall expectations. Similarly, payment-related issues posed a significant obstacle. Many elderly users lacked confidence, digital literacy, and familiarity with secure digital payment gateways, mobile banking, or credit card transactions, which further discouraged them from engaging in online purchases.

Nevertheless, this digital divide has narrowed considerably over time, largely due to more intuitive app designs and increased digital exposure. According to the study's findings, sentiment has shifted dramatically, with most elderly consumers, particularly female, now actively enjoying popular online shopping and social commerce apps such as Shopee, TikTok, and Lazada. Rather than viewing these platforms as intimidating, elderly users routinely use them to purchase both essential daily necessities and vital personal care items, including vitamins and medications. One participant shared:

"I prefer to buy personal items such as cream, powder, and costume from TikTok because the price is cheaper and sometimes, I can get free shipping." Aunty Joyah.

When asked about their transition to digital shopping, most elderly respondents highlighted convenience, speed, and cost-effectiveness as key factors driving their preference for online shopping over traditional shopping. Despite these advantages, some participants remained cautious about potential scams and receiving substandard products. This lingering concern prompted family members, particularly their adult children, to step in occasionally and help with secure digital payments. As Aunty Ira noted:

"I will browse and compare the item I want to buy for a few days, then I will get my daughter to help me with the payment."

Although many elderly have readily adopted smartphones for everyday activities such as online shopping, media capture, and staying connected with loved ones, a significant digital divide remains in online banking. In fact, this study revealed that only a small minority of elderly participants actively utilise digital financial services. When asked about this uncertainty, most non-users stated that they "just do not" use them, reflecting a general passive resistance rather than a specific complaint or technical barrier.

## 3.3 Discussion

In today's digital age, integrating technology into everyday activities has become essential, particularly for older adults seeking to maintain connections, entertain themselves, and shop online. The themes of communication and social connection, entertainment devices, and online shopping reveal the diverse ways elderly use digital tools to enrich their lives. This study discusses how these elderly navigate the digital landscape, focusing on their skills, challenges, and experiences. For the elderly, smartphones serve as an important tool for social connection, countering loneliness and isolation (Sen et al., 2022). For example, participants mainly use them to strengthen family ties, especially with grandchildren, and to reconnect with old friends (Cheng Kiat et al., 2025; Farhi et al., 2025). While traditional calls remain common, platforms such as WhatsApp bridge distances effectively. Additionally, elderly users use photography and video to capture and share cherished moments, enriching daily life and fostering a sense of belonging (Kapoor et al., 2025). This active engagement reinforces that smartphones are not merely devices but essential instruments for emotional and mental well-being. As an entertainment device, elderly users increasingly favour platforms such as Facebook, TikTok, and YouTube for their variety and accessibility. These apps serve dual purposes: entertainment and information, keeping seniors informed about local and global events while aiding them (Guo, 2025; Pandeys, 2025). Religious content is particularly noteworthy, enabling spiritual participation without physical

constraints (Zhang, 2025; Najamuddin, 2025). For elderly women, cooking videos and music blend nostalgia with practicality, reinforcing cultural connections. Thus, the smartphone becomes a multifunctional tool that supports leisure and personal growth for the elderly. Additionally, online shopping behaviour among elderly participants reflects growing digital literacy and reduced barriers. Initially hesitant about security and product reliability, many elderly participants, especially older women, now confidently use platforms such as Shopee and TikTok. They appreciate the convenience, speed, and affordability compared with physical stores (Kovalenko et al., 2021; Kvalsvik, 2022; Shandilya et al., 2022). However, residual scam anxieties persist, highlighting the need for ongoing education. Family members play an important role in guiding secure payment methods, encouraging adoption while addressing concerns. Despite positive trends, a notable digital divide remains regarding online banking. Many elderly participants in this study expressed uncertainty regarding digital financial platforms, highlighting an important area for future community programs focused on building trust and digital skills for online transactions.

## 4. Conclusion

In conclusion, digital literacy among the elderly significantly influences their daily lives, enhancing communication, entertainment, and shopping experiences. While many participants have adapted well to digital technology and use smartphones as an important device for social connection and personal enjoyment, challenges remain, particularly concerning online security and financial transactions. Therefore, by fostering a new generation of tech-savvy elderly, society can enhance their quality of life, ensuring they remain engaged, connected, and empowered in an increasingly digital world.

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### Author Contributions

Yuzana Mohd Yusop: Conceptualization, data curation, writing – original draft.
Sajaratulnisah Othman: Methodology, writing – review & editing.
Nurul Hazirah Wahid: Investigation & data curation.
Zakirah Ahmad Nawi: Investigation & formal analysis

### Conflict of Interest

The authors declare that there is no conflict of interest.

### Ethics Statement

Ethical approval for this research was secured from the Universiti Malaya Research Ethics Committee (Non-Medical) under reference UM. TNC2/UMREC-3313, pertaining to this collaborative research area on the same subject.

### Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

## References

Acharya, K. R., Bautista, J. R., Wilson, J. R., Nahachewsky, J., Briere, J. L., Flanagan, S., & Pilgrim, J. (2015). Aging, E-literacy, and technology: Participatory user-centred design for older adults' digital engagement. Journal of Literacy and Technology, 16(2), 3-32.

Al-Muhannadi, S. B. M. (2025). Navigating the Digital Age: Examining Technology Adoption Among Older Adults in Qatar–Barriers, Benefits, and Support Strategies (master's thesis, Hamad Bin Khalifa University (Qatar)).

Aslan, A. (2025). Reducing Digital Disadvantage in Older Adults and the Role of Families and/or Carers in Increasing Technology Acceptance and Use (Doctoral dissertation, University of Surrey).

Chee, S. Y. (2024). Age-related digital disparities, functional limitations, and social isolation: unravelling the grey digital divide between baby boomers and the silent generation in senior living facilities. Aging & mental health, 28(4), 621-632.

Cheng Kian, K. T., Cheng, M. G., Liu, C., & Chang, M. S. (2025). The role of Information and communication technology (ICT) in the relationship between grandparents and grandchildren in Asia: a review of literature. Asia Pacific Journal of Social Work and Development, 35(4), 400-418.

Department of Statistic Malaysia, (2022). Malaysia's Human Development Index (HDI). Department Of Statistic Malaysia Newsletter, DOSM/BPTMS/1.2022/Series 27. https://www.dosm.gov.my/v1/uploads/files/6_Newsletter/Newsletter%202022/DOSM_BPTMS_1_2022_Series%2027_compressed.pdf

Farhi, F., Jeljeli, R., Setoutah, S., Zamoum, K., Boukhenoufa, A., Saidani, S., & Feguiri, L. (2025). Social media and intergenerational bonding through young adults' communication with older family members. Frontiers in Sociology, 10, 1643296.

S. M. (2026). The "ELDERDES" model: how older adults' adoption of digital environment solutions improves residential experiences, health outcomes, and enables independent living. Frontiers in Public Health, 14, 1724293.

Guo, C. (2025). Digital media and the daily lives of China's senior citizens (p. 198). Taylor & Francis.

Kapoor, V., & Remedios, D. J. (2025, January). Drishtikala (Vision Art): A Photography Exhibition by Senior Citizens for Community Engagement. In International Conference on Research into Design (pp. 237-249). Singapore: Springer Nature Singapore.

Kebede, A. S., Ozolins, L. L., Holst, H., & Galvin, K. (2022). Digital engagement of older adults: scoping review. Journal of Medical Internet Research, 24(12), e40192.

Kovalenko, A., & Mazaheri, E. (2021). Older adults shopping online: A fad or a trend. Impact COVID-19 E-Commer, 1, 67-80.

Kvalsvik, F. (2022). Understanding the role of situational factors on online grocery shopping among older adults. Journal of Retailing and Consumer Services, 68, 103009.

Lupton, D., & Maslen, S. (2019). How women use digital technologies for health: qualitative interview and focus group study. Journal of medical Internet research, 21(1), e11481.

Mohan, R., Saleem, F., Voderhobli, K., & Sheikh-Akbari, A. (2024). Ensuring sustainable digital inclusion among the elderly: A comprehensive analysis. Sustainability, 16(17), 7485.

Najamuddin, A. (2025). The Impact of Islamic Education on Social Media on the Beliefs of the Muslim Community. ETDC: Indonesian Journal of Research and Educational Review, 4(4), 981-991.

Pandey, S. K. (2025). Media in the Digital Age: Trends, Tools, and Cultural Impact. Academic Guru Publishing House.

Sen, K., Prybutok, G., & Prybutok, V. (2022). The use of digital technology for social wellbeing reduces social isolation in older adults: A systematic review. SSM-population health, 17, 101020.

Shandilya, E., & Fan, M. (2022, October). Understanding older adults' perceptions and challenges in using AI-enabled everyday technologies. In Proceedings of the Tenth International Symposium of Chinese CHI (pp. 105-116).

Sparks, J. R., Ober, T. M., Tenison, C., Arslan, B., Roll, I., Deane, P., ... & O'Reilly, T. (2024). Opportunities and challenges for assessing digital and AI literacies. ETS research Institute, https://tinyurl. com/5fwah72v.

Stamate, A., Marzan, M. D., Velciu, M., Paul, C., & Spiru, L. (2024). Advancing user-centric design and technology adoption for aging populations: a multifaceted approach. Frontiers in Public Health, 12, 1469815.

Vaportzis, E. (2026). Internet use, social isolation, and loneliness among older adults: A multi-wave analysis. Computers in Human Behavior, 109053.

Wilson, G., Gates, J. R., Vijaykumar, S., & Morgan, D. J. (2023). Understanding older adults' use of social technology and the factors influencing use. Ageing & Society, 43(1), 222-245.

Xu, H., Xie, B., & Chang, C. H. (2024). Empowering the care of older adults through the use of technology. Work, Aging and Retirement, 10(1), 1–5.

Zhang, L. (2025). The digital age of religious communication: The shaping and challenges of religious beliefs through social media. Studies on Religion and Philosophy, 1(1), 25-41.

Zhou, J., Salvendy, G., Boot, W. R., Charness, N., Czaja, S., Gao, Q., ... & Ziefle, M. (2025). Grand challenges of smart technology for older adults. International Journal of Human–Computer Interaction, 41(7), 4439-4481.