Street Art & Urban Creativity | Vol. 11, No. 1, 2025 | ISSN 2183-9956
Street Art & Urban Creativity. Scientific Journal
https://doi.org/10.25765/sauc.v11.5680

ESSENTIAL DIGITAL COMPETENCIES FOR THE CITIZEN EMPOWERMENT OF OLDER ADULTS

LETICIA SOPHIA ROCHA-MACHADO [1], CARMEN LLORENTE-BARROSO[2*]
[1] Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil
[2] Universidad Complutense de Madrid (UCM), Madrid, Spain; [*]Correspondence Author

KEYWORDS

Older adult
Digital competencies
Empowerment
Citizenship

ABSTRACT

The objective of this article is to identify the essential competences for empowering the senior collective by guaranteeing their digital citizenship. A methodological triangulation is proposed based on a systematic review of the literature, a participant observation with 45 older adults, users of the Canal Sénior platform, and an open qualitative survey applied to 24 of these subjects. The results reflect the priority of strengthening three competences: Digital safety; digital communication; and management of health information available online. These findings show the scarcity of training for the development of a critical use of technologies by older adults. The change in the ways of communicating and accessing information requires meeting the demand of seniors with new knowledge and skills. This study provides a glimpse of the digital deficiencies of this sector of the population, but it also reveals the need for further research in this area.

Received: 13 / 11 / 2024
Accepted: 06 / 01 / 2025

1. Introduction

Information and communication technologies (ICT) are increasingly present in the daily lives of most people worldwide. This poses a risk of growing exclusion for the population of people aged 60 and over, due to digital divides (Hargittai, 2003; Van-Deursen & Helsper, 2015; Van-Deursen & Van-Dijk, 2014). Furthermore, advancements in artificial intelligence (AI) tools are creating communication scenarios that generate significant expectations, but also a degree of uncertainty (Shyam-Sundar & Lee, 2022). This is a matter of particular concern given its potential impact on vulnerable demographics, such as the senior population.

The challenges posed by relentless technological progress in developed societies are particularly challenging for older adults, who are one of the most disconnected segments of the population. In this regard, lifelong learning provides a valuable opportunity for individuals who have the necessary time to engage in learning activities (Delors, 1996; Freire, 1993). Digitalisation has created a range of possibilities for providing lifelong learning opportunities to older people residing in rural or remote areas or for those with limited mobility (Llorente-Barroso et al., 2021; Wang et al., 2016). However, the inequalities that have been detected among this social group in terms of digital capital point to the persistence of different profiles of internet users over 60 and reveal inequalities in the benefits they derive from ICT (Llorente-Barroso et al., 2023b; Loos, 2013; Sánchez-Valle et al., 2022; Vulpe & Craciun, 2020).

At the educational level, digital competences are associated with the critical and responsible use of digital devices for learning, work or social participation. They therefore conceptually extend beyond the scope of technical knowledge and skills (Ferrari, 2013; Vuorikari et al., 2022). These digital competences should be incorporated into any lifelong learning programme, encompassing affective and socio-cultural processes (Marinho-Araujo & Rabelo, 2015). Currently, the comprehensive integration of older adults necessitates their digital empowerment, which entails the cultivation of a level of digital competences that many of them currently lack. Within this conceptual framework, the principal objective of this paper is to identify the technological competences that enable the empowerment of seniors and guarantee their digital citizenship.

1.1. New Paths for Lifelong Learning for Older People

In the context of ongoing technological development, a salient concern that has emerged pertains to the imperative of devising inclusive educational initiatives that facilitate the digital empowerment of seniors, thereby ensuring their preparedness for a connected society. Despite the fact that senior citizens express a predilection for conventional lifelong learning methodologies (Bai et al., 2020), due to the physical social interactions they engender among peers (Llorente-Barroso et al., 2022), ICT has rendered an educational provision capable of extending to this demographic in complex or unfavourable circumstances (Llorente-Barroso et al., 2021). In their study, Wang et al. (2016) conclude that digitisation has enabled the development of a valuable training type for people with reduced mobility. During the course of the pandemic, educational institutions and training platforms specialising in older adults utilised digital tools to offer online versions of their programmes, thereby providing an escape route to mitigate the unwanted loneliness to which a significant proportion of this group was condemned (Llorente-Barroso et al., 2021). Beyond the conventional e-learning models, social networks have emerged as conduits for collaborative learning, particularly appealing to older adults due to the intergenerational connections they have facilitated (Caliandro et al., 2021; Carenzio et al., 2021).

A salient issue with e-learning pertains to the fact that not all older adults possess the capacity to capitalise on its potential benefits, akin to other advantages associated with digitalisation. Research by Ragnedda et al. (2020) demonstrated the adverse impact of ageing on the development of digital capital. Furthermore, intragenerational disparities have been identified among the population aged over 60 years, delineating the presence of diverse digital profiles within this demographic and, consequently, resulting in inequalities in technology utilisation (Llorente-Barroso et al., 2023b; Loos, 2013; Sánchez-Valle et al., 2022). Consequently, the promotion of policies aimed at equipping older adults with the necessary digital skills to effectively utilise ICTs assumes paramount importance (Llorente-Barroso et al., 2023a).

1.2 Importance of Digital Capital for Citizenship Empowerment of Older People

The social, cultural and economic integration of older adults requires their digital inclusion (Kolotouchkina et al., 2023; Lin et al., 2018), which necessitates their technological training based on specific competences. At the close of the 20th century, within the domain of education, competencies transitioned from serving merely as an evaluation instrument to becoming vehicles for the edification of knowledge, skills and attitudes for life (Perrenoud, 1999). Consequently, the acquisition of competences began to encompass critical and reflective learning, integrating not only knowledge but also two other mobilising elements: skills and attitudes (Zabala & Arnau, 2010).

In 2013, DigComp, the inaugural document establishing the digital skills framework for EU citizens, was presented (Ferrari, 2013). This document identified the technological skills that were understood to be the general skills needed by European citizens. Subsequent iterations of the framework have been published, with the most recent iteration being DigComp 2.2 (Vuorikari et al., 2022). The initial report in this series already delineated that digital competences are those that enable the engaged, critical, responsible and safe use of ICT for learning, working and social participation (Ferrari, 2013; Vuorikari et al., 2022). The total number of digital skills that have been defined is 21, which are classified into five competence areas (Ferrari, 2013; Vuorikari et al., 2022). Table 1 reflects the competences identified within each of these areas.

Table 1. Digital skills map

COMPETENCE AREA	SPECIFIC COMPETENCE
Digital information search and management	Browsing, searching and filtering digital data and information
	Evaluation of digital content, data and information
	Management of digital content, data and information
Communication and participation in digital environments	Interaction through digital tools
	Dissemination of content through digital technologies
	Participation through digital tools
	Collaboration through digital technologies
	Developing behaviour on the Internet
	Digital identity management
Digital content creation	Digital content creation
	Integration, modification and editing of digital content
	Knowledge of copyright and intellectual property rights
	Programming
Digital security and/or cybersecurity	Protection of digital devices
	Defending privacy and personal data
	Ensuring health and well-being
	Safeguarding the environment
Solving problems and needs in digital environments	Technical problem solving
	Identification of needs and development of digital solutions
	Creative use of digital technologies
	Recognition of digital skills gaps

Source: Own elaboration based on Ferrari (2013) and Vuorikari et al. (2022).

The ongoing digitalisation process renders digital skills imperative for older adults to adequately manage aspects pertaining to economic transactions, leisure and entertainment, as well as social participation and citizens' obligations and rights (Fuente-Cobo, 2017; Kolotouchkina et al., 2023). In this regard, it is imperative for this demographic to acquire the requisite technological skills to achieve citizen empowerment, thereby enabling them to become masters of their own lives and generators of

critical thinking capable of contributing to social transformation (Baquero, 2012). In this regard, the utilisation of digital tools has been demonstrated to empower older adults (Sánchez-Valle et al., 2017). Despite the challenges faced by seniors in mastering technology, they are increasingly active on social networks, sharing their content, experiences and opinions (Sánchez-Valle, 2023). Their presence and participation in digital spaces signifies their autonomy and contributes to a more inclusive and sustainable citizenry, a phenomenon that benefits both individuals and society at large (Sánchez-Valle et al., 2017; Slegers et al., 2007).

1.3. The Role of Social Partners in Promoting Digital Citizenship among Senior Citizens

Digital inclusion acts as a catalyst for socialisation for senior citizens and a brake on their social exclusion, as it inspires their sense of belonging to a community group (Kolotouchkina et al., 2023). Digital environments encourage the development of new forms of social relationships among seniors (Landeiro et al., 2017), with some of them being motivated to participate (Hausknecht et al., 2023; Kolotouchkina et al., 2023; Sánchez-Valle, 2023). Digitalisation provides vulnerable adults with a channel for citizen interaction, yet the various institutional and social actors lack the expertise to leverage this channel for the enhancement of this demographic's circumstances (Llorente-Barroso et al., 2023a).

The various digital divides have marked significant inequalities that have particularly affected the most vulnerable social groups (Hargittai, 2003; Van-Deursen & Helsper, 2015; Van-Deursen & Van-Dijk, 2014). The challenges faced by numerous older individuals in cultivating technological competencies and amassing adequate digital capital (Llorente-Barroso et al., 2023b; Ragnedda et al., 2020; Sánchez-Valle et al., 2022) have undermined their capacity for citizen participation at all levels (social, political, cultural and civil) (Ferrucci et al., 2020; Gilbert, 2010; Kolotouchkina et al. 2023; Mihelj et al., 2019; Sánchez-Valle, 2023). The commitment demonstrated by public institutions and the private sector appears to be inadequate in addressing the diverse needs identified among various segments of the senior population (Llorente-Barroso et al., 2023a). While there are some initiatives to promote the e-inclusion of older adults, none have been implemented effectively. At the European level, there is an absence of a comprehensive strategy that focuses exclusively on this demographic. However, a joint plan is required to achieve the full inclusion of older adults (Cabra-De-Luna, 2023). One of the latest attempts to define a synchronised and comprehensive policy for Europe's older citizens was the Green Paper on ageing (European Commission, 2021). However, this proposal once again treats ageing as a social cost or expense, and ignores its emotional and productive dimension, failing to consider the potential benefits of citizen empowerment of this public in European societies (Goat-De-Moon, 2023). In order to address this issue, Europe must shift its prevailing paradigm on ageing and move away from its customary welfarist perspective. This is necessary to avoid perpetuating ageist approaches that hinder the empowerment of older adults (Cabra-De-Luna, 2023; Hausknecht et al., 2023; Kolotouchkina et al., 2023). However, the absence of a coordinated approach between administrations hinders the implementation of strategic plans that facilitate the digital inclusion of seniors, thereby impeding their social integration and citizen empowerment (Kolotouchkina et al., 2023; Llorente-Barroso et al., 2023a; Sánchez-Valle et al., 2017).

2. Objectives and Methodology

The theoretical approach delineated in the preceding section has been instrumental in formulating the overarching objective of this research endeavour into two distinct objectives (SO):

1) SO1. The second objective is to map the digital competences that are considered essential to empower older adults and guarantee their full citizenship rights.

2) SO2. The second objective is to identify the demand for technological skills amongst seniors, with the aim of achieving their digital empowerment and, consequently, enhancing their social inclusion. In order to achieve these two specific objectives (SO), a methodological triangulation with a qualitative, interpretative and exploratory approach is proposed, as it is considered the most appropriate to facilitate an understanding of the complex issues that comprise the object of study. The proposed design is based on three research techniques, which are described below in relation to the specific objective (SO) they seek to satisfy:

1) A systematic literature review was conducted in the first instance and in connection with SO1 in order to map the digital competence framework for citizen empowerment of older adults. This type of analysis facilitates the organisation of existing scientific and academic literature in certified databases to consolidate views and establish trends (Elsbach & Knippenberg, 2020; Manterola et al., 2013; Snyder, 2019). For this research, the search focused on articles published in journals indexed in Web of Science Core Collection, as it is one of the most relevant scientific databases (Singh et al., 2021). Specifically, the Social Sciences Citation Index (SSCI) and the Arts & Humanities Citation Index (A&HCI) were utilised as extraction banks. The search criteria were based on the following tag chains, elaborated in relation to SO1 and the object of study:

- («Digital competences» OR «digital skills» OR «digital capital» OR «ICT» OR «Internet») AND («older adults» OR «older people» OR «senior citizens» OR «elderly»).
- («Digital empowerment» OR «digital inclusion») AND («older adults» OR «older people» OR «senior citizens» OR «elderly»).

Furthermore, the extraction of sources was limited exclusively to articles published in open access during the last five years (2019-2024) within the following categories: communication, information, education, interdisciplinary social sciences and multidisciplinary humanities. The thematic fields to be explored were decided on the basis of the complexity of the object of study. To refine the results further, three exclusion guidelines were applied:

- Conference abstracts, book chapters and reviews.
- Written studies in languages other than English.
- Article reviews.

The data obtained from this systematic literature review were used to design the survey questionnaire that was subsequently applied.

2) In the second instance, and connected to SO2, two qualitative techniques were combined for the purpose of primary data collection. During the initial phase of this component of the research, a participant observation approach was conceptualised and executed in a class offered through Canal Sénior (https://canalsenior.es/). The class was attended by a total of 45 Spaniards over the age of 60, who were regular users of this platform. This session was conducted in accordance with the terms agreed with the coordination of Canal Sénior, who provided approval for the contents of the course and offered technical support to facilitate its implementation. Consequently, a one-hour class was held, in synchronous mode, and open to questions. The content of the course pertained to an informative digital map application, which is deemed advantageous for tourism in Brazil, the country in which one of the researchers is a teacher. The international tourist incentive was employed to emphasise the practical benefits of digital technologies for the participants. Following this, a survey was administered to assess the digital competencies of the participants and to ascertain their needs in this respect, with the overarching objective being to empower them as citizens. The survey was administered after the conclusion of the instructional session, and its implementation entailed the preliminary formulation of a concise questionnaire comprising three questions, grounded in the findings derived from a systematic review of extant literature. Canal Sénior, in accordance with its policy of protecting its users, did not allow the questionnaire to be extended so as not to overload its users when completing it. A total of 24 attendees of the class who had previously completed the survey were included in the analysis. Despite the limited sample size and the brevity of the questionnaire, the open-ended nature of the survey enabled the collection of sufficient data to assess the digital skills of the participants and explore the technological shortcomings that hinder their citizen empowerment. The subsequent processing and analysis of the data was undertaken using an interpretative approach, guided by the results of the systematic literature review and according to the content analysis process outlined by Bardin (1986).

3. Results

3.1. Map of Essential Digital Competencies to Achieve Seniors' Digital Empowerment and Full Citizenship (SO1)

The search in the Social Sciences Citation Index (SSCI) and the Arts & Humanities Citation Index (A&HCI) of the Web of Science Core Collection database, according to the inclusion and exclusion criteria described in the systematic literature review protocol, yielded a total of 64 results. A detailed analysis of the abstracts identified the possibility of 26 publications to define the competence map of digital citizen empowerment of seniors. The 38 discarded articles, although interesting for covering aspects related to some of the isolated dimensions of the object of study, were not useful for constructing an approach to the aforementioned framework of digital competences for the empowerment of older adults and therefore did not serve the real purpose of this study. Table 2 lists the articles finally analysed and their IDs.

Table 2. References analysed from all those obtained in the systematic literature review

ID	REFERENCE
A1	Bartol, J., Prevodnik, K., Vehovar, V., & Petrovčič, A. (2024). The roles of perceived privacy control, internet privacy concerns and internet skills in the direct and indirect internet uses of older adults: Conceptual integration and empirical testing of a theoretical model. *New Media & Society*, 26(8), 4490-4510. https://doi.org/10.1177/14614448221122734
A2	Beneito-Montagut, R., Rosales, A., & Fernández-Ardèvol, M. (2022). Emerging digital inequalities: A comparative study of older adults' smartphone use. *Social Media + Society*, 8(4). https://doi.org/10.1177/20563051221138756
A3	De-Boer, P. S., Van-Deursen, A. J., & Van-Rompay, T. J. (2024). The lights are on, but no one's home: A performance test to measure digital skills to use IoT home automation. *New Media & Society*, 26(9), 5259-5290. https://doi.org/10.1177/14614448221133737
A4	Dibeltulo, S., Culhane, S., Treveri-Gennari, D. (2020). Bridging the digital divide: Older adults' engagement with online cinema heritage. *Digital Scholarship in the Humanities*, 35(4), 797-811. https://doi.org/10.1093/llc/fqz079
A5	Fernández-Ardèvol, M., Rosales, A., & Cortès, F. M. (2023). Set in stone? Mobile practices evolution in later life. *Media and Communication*, 11(3), 40-52. https://doi.org/10.17645/mac.v11i3.6701
A6	Hage, E., Van-Offenbeek, M., Boonstra, A. (2020). New rules of engagement: How adaptation to online media changes older adults' social connectedness. *Journal of Computer-Mediated Communication*, 25(2), 182-197. https://doi.org/10.1093/jcmc/zmz028
A7	Hänninen, R., Taipale, S., & Luostari, R. (2021). Exploring heterogeneous ICT use among older adults: The warm experts' perspective. *New Media & Society*, 23(6), 1584-1601. https://doi.org/10.1177/1461444820917353
A8	Jokisch, M. R., Göbl, L., Schlichting, J., Leopold, D., & Doh, M. (2023). ICT volunteering as a protective factor for older adults: Investigating motives of internet use, internet self-efficacy and perceived obsolescence. *Educational Gerontology*, 49(5), 387-399. https://doi.org/10.1080/03601277.2023.2201763
A9	Klank, C., Himmelsbach, I., & Doh, M. (2023). A qualitative case study focusing on the relationship of biography, education, and ICT use of older adults. *Educational Gerontology*, 49(5), 375-386. https://doi.org/10.1080/03601277.2023.2209447
A10	Kolotouchkina, O., Viñarás-Abad, M., & Mañas-Viniegra, L. (2023). Digital ageism: Emerging challenges and best practices of age-friendly digital urban governance. *Media and Communication*, 11(3), 6-17. https://doi.org/10.17645/mac.v11i3.6711
A11	Korpela, V., Pajula, L., & Hänninen, R. (2023). Older adults learning digital skills together: Peer tutors' perspectives on non-formal digital support. *Media and Communication*, 11(3), 53-62. https://doi.org/10.17645/mac.v11i3.6742
A12	Llorente-Barroso, C., Sánchez-Valle, M., & Viñarás-Abad, M. (2023). The role of the Internet in later life autonomy: Silver surfers in Spain. *Humanities and Social Sciences Communications*, 10, 56. https://doi.org/10.1057/s41599-023-01536-x

ID	REFERENCE
A13	Magsamen-Conrad, K., Dillon, J. M., Billotte Verhoff, C., & Faulkner, S. L. (2019). Online health-information seeking among older populations: Family influences and the role of the medical professional. *Health Communication*, 34(8), 859-871. https://doi.org/10.1080/10410236.2018.1439265
A14	Marler, W., & Hargittai, E. (2024). Division of digital labor: Partner support for technology use among older adults. *New Media & Society*, 26(2), 978-994. https://doi.org/10.1177/14614448211068437
A15	Olsson, T., Samuelsson, U., & Viscovi, D. (2019). Resources and repertoires: Elderly online practices. *European Journal of Communication*, 34(1), 38-56. https://doi.org/10.1177/0267323118810852
A16	Olsson, T., & Viscovi, D. (2020). Who actually becomes a silver surfer? Prerequisites for digital inclusion. *Javnost-The Public*, 27(3), 230-246. https://doi.org/10.1080/13183222.2020.1794403
A17	Papí-Gálvez, N., & La-Parra-Casado, D. (2023). Age-based digital divide: Uses of the Internet in people over 54 years old. *Media and Communication*, 11(3), 77-87. https://doi.org/10.17645/mac.v11i3.6744
A18	Petrovčič, A., Reisdorf, B. C., Grošelj, D., & Prevodnik, K. (2023). A typology of aging internet users: Exploring digital gradations in internet skills and uses. *Social Science Computer Review*, 41(5), 1921-1940. https://doi.org/10.1177/08944393221117753
A19	Rosales, A., & Fernández-Ardèvol, M. (2020). *Ageism in the era of digital platforms. Convergence,* 26(5-6), 1074-1087. https://doi.org/10.1177/1354856520930905
A20	Rosales, A., Fernández-Ardèvol, M., Gómez-León, M., & Jacobetty, P. (2024). Old age is also a time for change: Trends in news intermediary preferences among internet users in Canada and Spain. *Humanities and Social Sciences Communications*, 11, 455. https://doi.org/10.1057/s41599-024-02940-7
A21	Sádaba, C., Salaverría, R., & Bringué-Sala, X. (2023). How to teach the elderly to detect disinformation: A training experiment with WhatsApp. *Profesional de la Información*, 32(5), e320504. https://doi.org/10.3145/epi.2023.sep.04
A22	Sánchez-Valle, M. (2023). The perception of older adults regarding socio-political issues disseminated on social networks. *Media and Communication*, 11(3), 112-123. https://doi.org/10.17645/mac.v11i3.6748
A23	Silva, P., Matos, A. D., & Martinez-Pecino, R. (2022). The protective role of the Internet in depression for Europeans aged 50+ living alone. *Social Media + Society*, 8(1). https://doi.org/10.1177/20563051221077675
A24	Xiaobing, H., & Meng, C. (2022). The impact of internet use on community participation of older adults: Evidence from China. *Sage Open*, 12(2). https://doi.org/10.1177/21582440221097387
A25	Yu, R. P. (2020). Use of messaging apps and social network sites among older adults: A mixed-method study. *International Journal of Communication*, 14(21), 4453-4478. https://ijoc.org/index.php/ijoc/article/view/14435
A26	Zhao, Y., & Zhu, B. (2024). An evaluation of digital inclusion response policies for elderly in China. *Policy & Internet*, 16(2), 209-473. https://doi.org/10.1002/poi3.399

Source: Own elaboration based on the analysis of selected publications (2024).

These articles mapped up to ten digital competences that are essential for the empowerment of older people as citizens. Below is a brief description of each of them and a reference to the corresponding publication.

Table 3. Map of essential competences for the digital empowerment of older adults

DIGITAL COMPETENCE AND DESCRIPTION	AUTHORS
Digital citizenship: Facilitates the participation of these subjects as citizens through digital technologies, which implies their interaction with public administrations and institutions to guarantee and enforce their full rights.	Bartol et al. (2024); Hage et al. (2020); Hänninen et al. (2021); Klank et al. (2023); Kolotouchkina et al. (2023); Llorente-Barroso et al. (2023); Rosales & Fernández-Ardèvol (2020); Sánchez-Valle (2023); Zhao & Zhu, (2024).
Digital participation and/or collaboration: Allows seniors to interact with others in	Beneito-Montagut et al. (2022); De-Boer et al. (2024); Dibeltulo et al. (2020); Llorente-Barroso

DIGITAL COMPETENCE AND DESCRIPTION	AUTHORS
cyberspace, disseminate content through technological tools, and participate or collaborate through different online networks.	et al. (2023); Sádaba et al. (2023); Sánchez-Valle (2023); Xiaobing & Meng (2022); Yu, (2020).
Digital communication: Helps this vulnerable group to have the knowledge, skills and attitudes to interact online with other individuals (peers and non-peers), to disseminate content in cyberspace, and to participate or collaborate on the Internet. It is one of the most valued competences by older adults themselves, as it provides them with a link to their loved ones.	Beneito-Montagut et al. (2022); De-Boer et al. (2024); Fernández-Ardèvol et al. (2023); Llorente-Barroso et al. (2023); Magsamen-Conrad et al. (2019); Marler & Hargittai (2024); Olsson & Viscovi (2020); Olsson et al. (2019); Papí-Gálvez & La-Parra-Casado (2023); Petrovčič et al. (2023); Yu, (2020).
Searching for and managing health information in online environments: Equip older adults with skills to find and use reliable health and wellbeing data in verified digital spaces.	Magsamen-Conrad et al. (2019); Marler & Hargittai (2024); Olsson et al. (2019); Olsson & Viscovi (2020); Rosales et al. (2024); Sádaba et al. (2023); Silva et al. (2022).
Searching for and managing financial information in cyberspace: Enables this segment of the population to make online purchases and banking transactions.	Llorente-Barroso et al. (2023); Marler & Hargittai (2024); Olsson et al. (2019); Olsson & Viscovi (2020); Rosales et al. (2024).
Digital collective leadership: Favours the empowerment of these individuals as a group or social reference in cyberspace. This competence requires adequate digital identity management and the development of relatively advanced Internet behaviour.	Hage et al. (2020); Hänninen et al. (2021); Jokisch et al. (2023); Klank et al. (2023); Kolotouchkina et al. (2023); Korpela et al. (2023); Marler & Hargittai (2024); Rosales & Fernández-Ardèvol (2020); Sánchez-Valle (2023); Xiaobing & Meng (2022).
Individual digital leadership: This drives the individual empowerment of seniors who have become micro-influencers. This qualification also requires good digital identity management and strong online behaviour.	Hänninen et al. (2021); Jokisch et al. (2023); Klank et al. (2023); Korpela et al. (2023); Llorente-Barroso et al. (2023); Marler & Hargittai (2024); Sánchez-Valle (2023); Silva et al. (2022).
Digital resilience: Prepares seniors to successfully overcome difficulties encountered in cyberspace, including adapting to technological developments, solving technical problems, creative use of ICT and recognising digital capital gaps.	Bartol et al. (2024); Beneito-Montagut et al. (2022); Dibeltulo et al. (2020); Fernández-Ardèvol et al. (2023); Hage et al. (2020); Kolotouchkina et al. (2023); Zhao & Zhu, (2024).
Digital security or cybersecurity: Offers tools and capabilities to this population group to protect their privacy, personal data, devices, health and well-being (reconciliation between online and offline life).	Bartol et al. (2024); Fernández-Ardèvol et al. (2023); Jokisch et al. (2023); Llorente-Barroso et al. (2023); Magsamen-Conrad et al. (2019); Papí-Gálvez & La-Parra-Casado (2023); Petrovčič et al. (2023).
Digital content creation: Enables older adults to create digital content, integrate and modify it, and even program it; it also enables them to recognise authorship and intellectual property rights.	De-Boer et al. (2024); Korpela et al. (2023); Petrovčič et al. (2023); Sádaba et al. (2023); Sánchez-Valle (2023); Yu, (2020).

Source: Own elaboration based on the analysis of selected publications (2024).

This mapping served as a pillar on which to build the survey questionnaire, which was used at the end of the participant observation (online session via Canal Sénior) to assess the digital competences of older adults and identify their needs in this area in order to achieve their civic empowerment.

3.2. Assessment of Digital Skills and Identification of Technological Needs for the Empowerment of Older Adults (SO2)

The decision to hold the class on the Canal Sénior platform enabled participant observation of 45 adults over the age of 60 residing in Spain. This session proved to be essential in order to record the knowledge, skills and attitudes towards digital empowerment that these people demonstrated, as well as their

shortcomings in achieving them. Following the completion of the course, the platform automatically dispatched an open survey to the participants, thereby collating the information collected during the course. As previously mentioned, only 24 of the 45 course participants completed the questionnaire in full; however, the depth of the responses obtained allows us to extract some valuable considerations for the research.

The analysis of the data from the participant observation and the survey enabled the following interpretative and exploratory insights to be drawn from SO2:

1) Participants in the survey of an open-ended nature recognised three digital skills as being essential to achieving fluency in their daily lives in the present day:

- Digital security or cybersecurity: The protection of personal data and privacy in digital environments has become one of the major concerns of people aged 60 and over, as they are aware of the growing number of cyber-scams of which they are the main tar-get due to their lack of information and technological knowledge. Therefore, this competence is absolutely necessary for older adults to achieve their digital empowerment. In this sense, participants called for digital literacy policies aimed at seniors to integrate this issue as a priority; only in this way will they be able to exercise their digital citizenship.
- Digital communication: Social networking and instant messaging applications allow seniors to connect with family and friends, breaking down geographical barriers. However, for this communication to be effective and to maintain strong links, it requires technological skills that not all older people have. Respondents say they need training to choose the right channel for each type of communication, to know the appropriate language in each digital environment, and to understand the rules of empathy and connection in different applications. Digital communication is a powerful tool for building and maintaining relationships at a distance, but it requires the development of skills that need to be taught to older audiences to facilitate their civic empowerment.
- Finding and managing health information in online environments Identifying reliable sources of health information in the digital environment is essential for a population affected by various age-related conditions. In addition, older adults need training to understand and make appropriate use of health information available on the Internet to make decisions that contribute to their well-being. This training would empower seniors and contribute to their digital empowerment and guarantee their right to access information.

2) Respondents recognise the relative importance of individual digital leadership skills, digital citizenship and finding and managing financial information in cyberspace, despite their determination to achieve citizen empowerment. It is also surprising that they do not attach much importance to digital participation or collaboration through the dissemination of online content.

3) The participants do not even refer to the competences of collective digital leadership, digital resilience and digital content creation, some of which are considered essential in the literature review in order for them to achieve digital empowerment and thus ensure their citizenship and social inclusion.

4. Conclusions and Discussion

The results of the systematic literature review delineate ten digital literacies to achieve digital empowerment of older adults and ensure their full citizenship rights (SO1). Of the identified knowledge, skills and attitudes, the results of the participant observation and survey conducted indicate that three stand out as particularly salient to older individuals. For instance, the findings reveal a notable interest among the older adult population in enhancing their competencies in cybersecurity, digital communication, and locating and evaluating health-related information within online environments (SO2). Additionally, there is some interest shown in their individual digital leadership, digital citizenship and finding and managing financial information in cyberspace. However, there is no explicit interest expressed in collective digital leadership, digital resilience and digital content creation, which are considered essential skills for their digital empowerment (SO2).

In the course of this research, participants have identified digital security as the most critical competency for their digital empowerment. The cultivation of cybersecurity knowledge, skills and

attitudes endows older users with the means to safeguard their personal data and privacy (Bartol et al., 2024; Jokisch et al., 2023; Magsamen-Conrad et al., 2019). A prevailing concern among senior citizens, particularly those with limited digital proficiency, is the apprehension of cyber-attacks, scams and online fraud (Llorente-Barroso et al., 2023; Petrovčič et al., 2023).

Digital communication was identified as the second most valued skill for older adults surveyed to ensure their digital inclusion. Furthermore, ICT-mediated interactions with loved ones have been identified as a significant tool for maintaining feelings of closeness, particularly among individuals residing in geographically remote areas (De-Boer et al., 2024; Olsson & Viscovi, 2020).

As demonstrated in the findings of the study, citizens aged 60 and over also attach great importance to finding and managing reliable health information in digital environments. This is considered essential by said citizens in order to understand certain aspects linked to their health and to enable them to make decisions accordingly in an autonomous manner (Magsamen-Conrad et al., 2019; Rosales et al., 2024; Sádaba et al., 2023).

Beyond these digital skills, which are recognised as essential by older adults themselves (Kolotouchkina et al., 2023; Zhao & Zhu, 2024), several of the publications analysed point out that it is necessary to encourage the use of digital technologies to defend and guarantee the citizens' rights of seniors. However, achieving the digital empowerment of this demographic contingent is contingent on their capacity to assume their individual and collective leadership. According to Sánchez-Valle (2023), it is essential to foster their socio-political engagement in cyberspace. The involvement of older adults in digital networks and communities is crucial for them to be able to assume a leadership role at all levels (Xiaobing & Meng, 2022; Yu, 2020) that empowers them socially (Yu, 2020).

The findings of this preliminary study provide a glimpse of some of the needs of the senior population, but also emphasise the necessity for further research. The advent of artificial intelligence (AI) applications is precipitating a paradigm shift in the communicative context and its normative precepts, giving rise to both opportunities and challenges (Shyam-Sundar & Lee, 2022), particularly for less tech-savvy demographics such as older adults.

5. Acknowledgements

This research was carried out within the framework of the project «Harnessing Creative Competencies and Technological Innovations to Foster an Inclusive Discourse on Disability and Ageing in the Digital Environment» (Ref. 258), funded by the Vice-Rectorate for Quality at the Complutense University of Madrid (UCM) as part of the Innova-Docencia 2024–2025 programme.

References

Bai, X., He, Y., & Kohlbacher, F. (2020). Older people's adoption of e-learning services: A qualitative study of facilitators and barriers. *Gerontology & Geriatrics Education, 41*(3), 291-307. https://doi.org/10.1080/02701960.2018.1469488

Baquero, R. V. A (2012). Empoderamento: Instrumento de emancipação social? Uma discussão conceitual. *Revista Debates (UFRGS), 6*(1), 173-187. https://doi.org/10.22456/1982-5269.26722

Bardin, L. (1986). *Análisis de contenido*. Akal.

Bartol, J., Prevodnik, K., Vehovar, V., & Petrovčič, A. (2024). The roles of perceived privacy control, internet privacy concerns and internet skills in the direct and indirect internet uses of older adults: Conceptual integration and empirical testing of a theoretical model. *New Media & Society, 26*(8), 4490-4510. https://doi.org/10.1177/14614448221122734

Beneito-Montagut, R., Rosales, A., & Fernández-Ardèvol, M. (2022). Emerging digital inequalities: A comparative study of older adults' smartphone use. *Social Media + Society, 8*(4). https://doi.org/10.1177/20563051221138756

Cabra-De-Luna, M. A. (2023, July 12). *European strategy for older persons (SOC/757-EESC-2023)*. European Economic and Social Committee. https://bit.ly/3Pnd6WC

Caliandro, A., Garavaglia, E., Sturiale, V., & Di-Leva, A. (2021). Older people and smartphone practices in everyday life: An inquire on digital sociality of Italian older users. *The Communication Review, 24*(1), 47-78. https://doi.org/10.1080/10714421.2021.1904771

Carenzio, A., Ferrari, S., & Rasi, P. (2021). Older people's media repertoires, digital competences and media literacies: A case study from Italy. *Education Sciences, 11*, 584. https://doi.org/10.3390/educsci11100584

De-Boer, P. S., Van-Deursen, A. J., & Van-Rompay, T. J. (2024). The lights are on, but no one's home: A performance test to measure digital skills to use IoT home automation. *New Media & Society, 26*(9), 5259-5290. https://doi.org/10.1177/14614448221133737

Delors. J. (2010). *Educação: Um tesouro a descobrir*. Cortezo.

Dibeltulo, S., Culhane, S., & Treveri-Gennari, D. (2020). Bridging the digital divide: Older adults' engagement with online cinema heritage. *Digital Scholarship in the Humanities, 35*(4), 797-811. https://doi.org/10.1093/llc/fqz079

Elsbach, K. D., & Knippenberg, D. (2020). Creating high-impact literature reviews: An argument for «integrative reviews». *Journal of Management Studies, 57*(6), 1277-1289. https://doi.org/10.1111/joms.12581

European Commission (2021, January 27). *Green paper on ageing. Fostering solidarity and responsibility between generations (COM(2021) 50 final).* European Union. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0050

Fernández-Ardèvol, M., Rosales, A., & Cortès, F. M. (2023). Set in stone? Mobile practices evolution in later life. *Media and Communication, 11*(3), 40-52. https://doi.org/10.17645/mac.v11i3.6701

Ferrari, A., (2013). Punie, Y., & Brecko, B. (Eds.), *DigComp: A framework for developing and understanding digital competence in Europe*. EUR 26035-JRC83167. Publications Office of the European Union. https://doi.org/10.2788/52966

Ferrucci, P., Hopp, T., & Vargo, C. J. (2020). Civic engagement, social capital, and ideological extremity: Exploring online political engagement and political expression on Facebook. *New Media & Society, 22*(6), 1095-1115. https://doi.org/10.1177/1461444819873110

Freire, P. (1993). *Educação e mudança*. Paz e Terra.

Fuente-Cobo, C. (2017). Públicos vulnerables y empoderamiento digital: El reto de una sociedad e-inclusiva. *Profesional de la Información, 26*(1), 5-12, https://doi.org/10.3145/epi.2017.ene.01

Gilbert, M. (2010). Theorizing digital and urban inequalities. *Information, Communication & Society, 13*(7), 1000-1018. https://doi.org/10.1080/1369118X.2010.499954

Hage, E., Van-Offenbeek, M., & Boonstra, A. (2020). New Rules of engagement: How adaptation to online media changes older adults' social connectedness. *Journal of Computer-Mediated Communication, 25*(2), 182-197. https://doi.org/10.1093/jcmc/zmz028

Hänninen, R., Taipale, S., & Luostari, R. (2021). Exploring heterogeneous ICT use among older adults: The warm experts' perspective. *New Media & Society, 23*(6), 1584-1601. https://doi.org/10.1177/1461444820917353

Hargittai, E. (2003). The digital divide and what to do about it. In D. C. Jones (Ed.), *New economy handbook* (pp. 821-841). Academic Press.

Hausknecht, S., Clemson, L., O'Loughlin, K., McNab, J., & Low, L. F. (2023) Co-designing alternative frames of ageing and experiences of challenging ageism in Australia. *Educational Gerontology, 49*(1), 48-59. https://doi.org/10.1080/03601277.2022.2070347

Jokisch, M. R., Göbl, L., Schlichting, J., Leopold, D., & Doh, M. (2023). ICT volunteering as a protective factor for older adults: Investigating motives of internet use, internet self-efficacy and perceived obsolescence. *Educational Gerontology, 49*(5), 387-399. https://doi.org/10.1080/03601277.2023.2201763

Klank, C., Himmelsbach, I., & Doh, M. (2023). A qualitative case study focusing on the relationship of biography, education, and ICT use of older adults. *Educational Gerontology, 49*(5), 375-386. https://doi.org/10.1080/03601277.2023.2209447

Kolotouchkina, O., Viñarás-Abad, M., & Mañas-Viniegra, L. (2023). Digital ageism: Emerging challenges and best practices of age-friendly digital urban governance. *Media and Communication, 11*(3), 6-17. https://doi.org/10.17645/mac.v11i3.6711

Korpela, V., Pajula, L., & Hänninen, R. (2023). Older adults learning digital skills together: Peer tutors' perspectives on non-formal digital support. *Media and Communication, 11*(3), 53-62. https://doi.org/10.17645/mac.v11i3.6742

Landeiro, F., Barrows, P., Nuttall-Musson, E., Gray, A. M., & Leal, J. (2017). Reducing social isolation and loneliness in older people: A systematic review protocol. *BMJ Open, 7*(5), e013778. https://doi.org/10.1136/bmjopen-2016-013778

Lin, Z., Yang, L., & Zhang, Z. (2018). To include, or not to include, that is the question: Disability digital inclusion and exclusion in China. *New Media & Society, 20*(12), 4436-4452. https://doi.org/10.1177/1461444818774866

Llorente-Barroso, C., Anzanello-Carrascoza, J., & Ferreira, I. (2023a). Corporate commitment and the social inclusion of vulnerable adults: From corporate and institutional awareness to brand value and citizen engagement. *Icono14, 21*(1). https://doi.org/10.7195/ri14.v21i1.1982

Llorente-Barroso, C., Kolotouchkina, O., & Mañas-Viniegra, L. (2021). The enabling role of ICT to mitigate the negative effects of emotional and social loneliness of the elderly during COVID-19 pandemic. *International Journal of Environmental Research and Public Health (IJERPH), 18*(8), 3923. https://doi.org/10.3390/ijerph18083923

Llorente-Barroso, C., Kolotouchkina, O., Mañas-Viniegra, L., & Viñarás-Abad, M. (2022). ICT-mediated learning as a form of socio-emotional support for older adults. *Interaction Design and Architecture(s) Journal (IxD&A), 54*, 38-33. https://doi.org/10.55612/s-5002-054-001

Llorente-Barroso, C., Sánchez-Valle, M., & Viñarás-Abad, M. (2023b). The role of the Internet in later life autonomy: Silver surfers in Spain. *Humanities and Social Sciences Communications, 10*, 56. https://doi.org/10.1057/s41599-023-01536-x

Loos, E. F. (2013). Designing for dynamic diversity: Representing various senior citizens in digital information sources. *Observatorio (OBS*) Journal, 7*(1), 21-45. https://doi.org/10.15847/obsOBS712013639

Magsamen-Conrad, K., Dillon, J. M., Billotte Verhoff, C., & Faulkner, S. L. (2019). Online health-information seeking among older populations: Family influences and the role of the medical

professional. *Health Communication, 34*(8), 859-871. https://doi.org/10.1080/10410236.2018.1439265

Manterola, C., Astudillo, P., Arias, E., & Claros, N. (2013). Systematic reviews of the literature. What should be known about them. *Cirugía Española, 91*(3), 149-155. https://doi.org/10.1016/j.cireng.2013.07.003

Marinho-Araujo, C., & Rabelo, M. L. (2015). Avaliação educacional: A abordagem por competências. *Avaliação, 20*(2), 443-466, 2015. https://shorturl.at/zeQdP

Marler, W., & Hargittai, E. (2024). Division of digital labor: Partner support for technology use among older adults. *New Media & Society, 26*(2), 978-994. https://doi.org/10.1177/14614448211068437

Mihelj, S., Leguina, A., & Downey, J. (2019). Culture is digital: Cultural participation, diversity and the digital divide. *New Media & Society, 21*(7), 1465-1485. https://doi.org/10.1177/146144481882281

Moreau, M., & Leathwood, C. (2006). Graduates' employment and the discourse of employability: a critical analysis. *Journal of Education and Work, 19*(4), 305–324. https://doi.org/10.1080/13639080600867083

Olsson, T., Samuelsson, U., & Viscovi, D. (2019). Resources and repertoires: Elderly online practices. European *Journal of Communication, 34*(1), 38-56. https://doi.org/10.1177/0267323118810852

Olsson, T., & Viscovi, D. (2020). Who actually becomes a silver surfer? Prerequisites for digital inclusion. *Javnost - The Public, 27*(3), 230-246. https://doi.org/10.1080/13183222.2020.1794403

Papí-Gálvez, N., & La-Parra-Casado, D. (2023). Age-based digital divide: Uses of the Internet in people over 54 years old. *Media and Communication, 11*(3), 77-87. https://doi.org/10.17645/mac.v11i3.6744

Perrenoud, P. (1999). *Construir as competências desde a escola*. Artmed Editora.

Petrovčič, A., Reisdorf, B. C., Grošelj, D., & Prevodnik, K. (2023). A typology of aging internet users: Exploring digital gradations in internet skills and uses. *Social Science Computer Review, 41*(5), 1921-1940. https://doi.org/10.1177/08944393221117753

Ragnedda, M., Ruiu, M. L., & Addeo, F. (2020). Measuring digital capital: An empirical investigation. *New Media & Society, 22*(5), 793-816. https://doi.org/10.1177/1461444819869604

Rosales, A., & Fernández-Ardèvol, M. (2020). Ageism in the era of digital platforms. *Convergence, 26*(5-6), 1074-1087. https://doi.org/10.1177/1354856520930905

Rosales, A., Fernández-Ardèvol, M., Gómez-León, M., & Jacobetty, P. (2024) Old age is also a time for change: Trends in news intermediary preferences among internet users in Canada and Spain. *Humanities and Social Sciences Communications, 11*, 455. https://doi.org/10.1057/s41599-024-02940-7

Sádaba, C., Salaverría, R., & Bringué-Sala, X. (2023). How to teach the elderly to detect disinformation: A training experiment with WhatsApp. *Profesional de la Información, 32*(5), e320504. https://doi.org/10.3145/epi.2023.sep.04

Sánchez-Valle, M. (2023). The perception of older adults regarding socio-political issues disseminated on social networks. *Media and Communication, 11*(3), 112-123. https://doi.org/10.17645/mac.v11i3.6748

Sánchez-Valle, M., Llorente-Barroso, C., & Abad-Alcalá, L. (2022). Perceptions and attitudes of Spanish «digital seniors» towards e-government. *International Journal of Electronic Government Research (IJEGR), 18*(1), 1-19. http://doi.org/10.4018/IJEGR.297228

Sánchez-Valle, M., Viñarás-Abad, M., & Llorente-Barroso, C. (2017). Empowering the elderly and promoting active ageing through the Internet: The benefit of e-inclusion programmes. En I. Kollak (Ed.), *Safe at home with assistive technology* (pp.95-108). Springer International Publishing.

Shyam-Sundar, S., & Lee, E. J. (2022). Rethinking communication in the Era of artificial intelligence. *Human Communication Research, 48*(3), 379-385. https://doi.org/10.1093/hcr/hqac014

Silva, P., Matos, A. D., & Martinez-Pecino, R. (2022). The protective role of the Internet in depression for Europeans aged 50+ living alone. *Social Media + Society, 8*(1). https://doi.org/10.1177/20563051221077675

Singh, V. K., Singh, P., Karmakar, M., Leta, J., & Mayr, P. (2021). The journal coverage of Web of Science, Scopus and Dimensions: A comparative analysis. *Scientometrics, 126*(6), 5113-5142. https://doi.org/10.1007/s11192-021-03948-5

Slegers, K., Van-Boxtel, M. P., & Jolles, J. (2007). Effects of computer training and internet usage on the well-being and quality of life of older adults: A randomized, controlled study. *Educational Gerontology, 33*, 91-110. https://doi.org/10.1080/03601270600846733

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research, 104*, 333-339. https://doi.org/10.1016/j.jbusres.2019.07.039

Van-Deursen A. J. A. M., & Helsper E. J. (2015). A nuanced understanding of internet use and non-use among the elderly. *European Journal of Communication, 30*(2), 171-187. https://doi.org/10.1177/0267323115578059

Van-Deursen, A. J. A. M., & Van-Dijk, J. A. G. M. (2014). The digital divide shifts to differences in usage. *New Media & Society, 16*(3), 507-526. https://doi.org/10.1177/1461444813487959

Vulpe, S., & Crăciun, A. (2020). Silver surfers from a European perspective: Technology communication usage among. *European seniors. European Journal of Ageing, 17*(1), 125-134. https://doi.org/10.1007/s10433-019-00520-2

Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The digital competence framework for citizens - With new examples of knowledge, skills and attitudes*. EUR 31006 EN-JRC128415. Publications Office of the European Union. https://doi.org/10.2760/490274

Wang, R., De-Donder, L., De-Backer, F., Shihua, L., Honghui, P., Thomas, V., Vanslambrouck, Silke, & Lombaerts, K. (2016). Back to school in later life: Older Chinese adults' perspectives on learning participation barriers. *Educational Gerontology, 42*(9), 646-659. https://doi.org/10.1080/03601277.2016.1205385

Xiaobing, H., & Meng, C. (2022). The impact of internet use on community participation of older adults: Evidence from China. *Sage Open, 12*(2). https://doi.org/10.1177/21582440221097387

Yu, R. P. (2020). Use of messaging apps and social network sites among older adults: A mixed-method study. *International Journal of Communication, 14*(21), 4453-4478. https://ijoc.org/index.php/ijoc/article/view/14435

Zabala, A., & Arnau, L. (2010). *Compreender e ensinar competências*. Artmed.

Zhao, Y., & Zhu, B. (2024). An evaluation of digital inclusion response policies for elderly in China. *Policy & Internet, 16*(2), 209-473. https://doi.org/10.1002/poi3.399