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Beyond the digital divide: exploring older adults' experiences of digital inclusion and socialisation

Isabel Barbosa[1] · **Elizabeth Real de Oliveira**[1]

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Abstract

This study examines how older adults engage with digital technologies, with a particular focus on social media and online communities, and how these experiences reflect and shape their Digital Maturity. Moving beyond deficit-based views of ageing and technology, it explores how older adults perceive and navigate their digital engagement, the strategies they use to overcome challenges and leverage opportunities, and how cognitive, emotional, and social dimensions intersect in their digital lives. Drawing on in-depth narrative interviews with 17 participants aged 55–75, the study analyses personal accounts of digital meaning-making, barriers and enablers, and online socialisation through the Digital Maturity framework. The findings reveal the heterogeneous nature of older adults' digital trajectories, highlighting individual agency, emotional resilience, and the role of digital platforms in sustaining social connectivity in later life. By articulating how Digital Maturity manifests in everyday digital practices, the study contributes to debates in social gerontology and digital inclusion, and offers person-centred insights for policy-makers, practitioners, and technology designers seeking to foster equitable, age-inclusive digital environments. These results also point towards future research on technology adoption and digital well-being across the life course, calling for more nuanced, context-sensitive approaches to understanding digital engagement among diverse older populations.

Keywords Digital inclusion · Narrative interviews · Technology adoption · Digital experiences · Digital maturity · Social media · Online communities

✉ Isabel Barbosa
isabel.barbosa@upt.pt

Elizabeth Real de Oliveira
elizabeth.real@upt.pt

[1] Research on Economics, Management and Information Technologies, Portucalense University, REMIT, Rua Dr. António Bernardino Almeida, 541-619, Porto 4200-072, Portugal

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1 Introduction

In an increasingly digitalised world, older adults face significant challenges in digital inclusion and social media engagement. Despite the potential of digital platforms to mitigate social isolation and enhance quality of life (Sepúlveda-Loyola et al., 2020), only one in four older Europeans possess basic or above-basic digital skills, exacerbating inequalities in access to services and social connectivity in later life (van Kessel et al., 2022). This digital divide not only restricts access to essential resources but also shapes how older adults participate in online communities and sustain meaningful relationships.

Much of the existing literature adopts a deficit-based perspective, emphasising what older adults cannot do rather than their capabilities and adaptive strategies in digital spaces (Barrie et al., 2021). Such approaches overlook the heterogeneous, multidimensional nature of older adults' digital engagement, including their capacity for learning, resilience, and creative appropriation of technologies. In particular, there is a notable gap in research on the lived experiences of older adults navigating social media and online communities from a strength-based, person-centred perspective.

To address this gap, the present study introduces Digital Maturity as a conceptual framework for examining older adults' digital engagement, with a specific focus on social media and online communities. Through narrative interviews, we explore how older adults perceive and navigate their digital engagement (RQ1), the strategies they employ to overcome challenges and leverage opportunities in these environments (RQ2), and how cognitive, emotional, and social dimensions of Digital Maturity manifest in their everyday digital practices (RQ3). In doing so, the study responds to calls for more comprehensive examinations of older generations' technological and digital inclusion and for the active involvement of older adults in research and technology design (Fisk et al., 2018; Schreurs et al., 2017).

Our research contributes to the growing literature on ageing in the digital era by adopting a human rights and strength-based approach to digital inclusion, foregrounding older adults' agency, competencies, and evolving digital identities. By identifying key elements that enable older adults to participate fully and benefit from digital technologies - particularly through social media and online communities - we aim to inform the development of inclusive digital strategies and foster intergenerational digital equity. This focus offers critical insights for policymakers, technology developers, and researchers seeking to design equitable, age-inclusive digital environments and extends debates in social gerontology and digital inclusion by empirically demonstrating how Digital Maturity is enacted in later life.

2 Literature review

2.1 Digital inclusion and social media in later life

Research on digital inclusion in later life has largely concentrated on defining the construct, mapping its determinants, and demonstrating its importance for older adults' quality of life and participation. Attitudinal factors, socio-economic sta-

tus, health, and age-related limitations have all been identified as central drivers of unequal access and use (Choudrie et al., 2020; Mitchell et al., 2019; Mohan et al., 2024; Seifert & Rössel, 2021; van Kessel et al., 2022). However, much of this work conceptualises older adults primarily through a deficit lens, emphasising lack of skills, vulnerability, and risk, rather than their adaptive strategies, learning capacities, and diverse motivations for engaging with digital technologies. Evidence on the consequences of digital (dis)engagement for mental health and cognition is also mixed, with some studies reporting benefits such as reduced depression and enhanced cognitive abilities, while others show that specific forms of online engagement may have limited or ambivalent effects (Damant et al., 2017; Liu & Li, 2024). Methodologically, the field remains dominated by cross-sectional and short-term intervention studies, which constrain insights into how digital inclusion trajectories unfold across time and life transitions (Diniz et al., 2020; Liu et al., 2022; McCosker et al., 2023; Moore & Hancock, 2022). A further limitation is the strong focus on Western and a few non-Western contexts such as China, with relatively little comparative work that examines how digital inclusion is shaped by different welfare regimes, cultural norms, and infrastructures (Alhassan & Adam, 2021; Liu & Li, 2024). Taken together, these gaps point to the need for in-depth, context-sensitive research that foregrounds older adults' own narratives of digital engagement - particularly in relation to social media and online communities - and examines digital inclusion not only as access and skills but as an evolving, multidimensional process within later life. This study responds to that need by using narrative interviews to explore how older adults themselves make sense of digital inclusion, situating their experiences within a broader framework of Digital Maturity.

2.2 Digital ageism and self-perceptions

A growing body of work has examined how ageism operates in digital contexts, showing that stereotypes about older adults as technophobic, slow, or incompetent shape both technology design and everyday interactions. Studies document the impact of negative stereotypes on older adults' willingness to adopt and experiment with technologies, as well as the ways in which stereotype threat and internalised ageism can undermine confidence and learning in digital environments (Barber, 2017; Ivan & Cutler, 2021; Köttl et al., 2021). At the design level, older adults are often excluded from participatory processes, leading to products and interfaces that implicitly cater to younger users and reproduce ageist assumptions (Chin et al., 2024; Mannheim et al., 2023). Moreover, research has only begun to theorise how older adults' self-perceptions as 'digital subjects' are shaped by a lifetime of social positioning, intergenerational relations, and accumulated experiences with technology. There is limited qualitative work that traces how older adults narrate, negotiate, and sometimes resist ageist discourses in their everyday digital practices, particularly on social media and in online communities. By focusing on older adults' narratives of digital engagement, this study contributes to filling this gap, showing how Digital Maturity involves not only skills but also shifts in self-perception, identity, and resistance to ageist framings in digital spaces.

2.3 Social media engagement in later life

Research on social media use among older adults has documented growing adoption rates and identified common benefits and barriers related to maintaining relationships, accessing information, and coping with health and mobility constraints (Barnard et al., 2013; Kelly et al., 2017; Lee & Coughlin, 2015; Ramírez-Correa et al., 2023). Nonetheless, much of this work treats 'older adults' as a homogeneous group, often collapsing diverse cohorts, socio-economic positions, and cultural backgrounds into a single age category. As a result, the literature provides limited insight into how social media practices vary across different subgroups of older adults, or how usage patterns and platform preferences evolve over time in response to life-course events, changing family dynamics, and shifting technological ecosystems (Grey et al., 2024; Li et al., 2024). Evidence on the mental health implications of social media engagement is likewise inconclusive: while some studies highlight its potential to reduce isolation, others underscore risks related to privacy, information overload, or exposure to distressing content, especially among the oldest-old. There is also a dearth of robust evaluations of digital literacy programmes and other initiatives aimed at sustaining meaningful, long-term social media engagement beyond initial training, particularly for those over 75 who remain least connected (Barnard et al., 2013). These limitations underscore the importance of research that examines social media not just as a tool or outcome variable, but as a site where older adults actively construct, negotiate, and maintain social relationships, identities, and forms of participation. By attending to older adults' own accounts of social media and online community use, this study sheds light on how such engagements can function as both resources and constraints within broader processes of Digital Maturity.

2.4 Digital maturity: a multidimensional, strength-based framework

Digital Maturity represents a paradigm shift in how older adults' engagement with digital technologies is understood, moving away from deficit-based narratives and towards a recognition of their agency, diversity, and potential for growth. Rather than treating older adults as passive or reluctant users, this perspective emphasises how they learn, experiment, and creatively integrate digital tools into everyday life to support autonomy, social connection, and well-being. In this view, Digital Maturity is conceptualised as multidimensional, encompassing cognitive aspects (such as digital skills, problem-solving, and critical engagement with online information), emotional aspects (including confidence, enjoyment, and anxiety regulation), and social aspects (such as network building, reciprocity, and participation in online communities). While these dimensions are increasingly acknowledged in the literature, there is still limited empirical work showing how they intersect in day-to-day practices and across different stages of later life, particularly through older adults' own narratives. By grounding the Digital Maturity framework in older adults' stories of digital inclusion, social media use, and online socialisation, this study advances a more nuanced, person-centred understanding of digital engagement in later life and provides a theoretical lens for future research on ageing and technology.

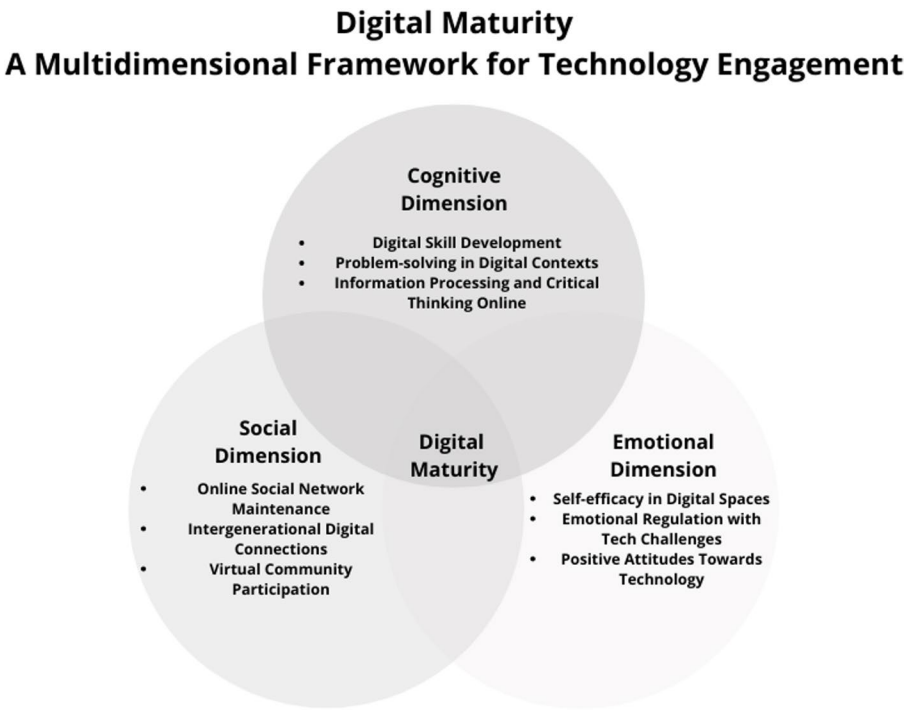

Fig. 1 Digital maturity: a multidimensional framework for technology engagement

At its core, the Digital Maturity framework comprises four interrelated components that offer a more granular view of older adults' digital engagement. The first component, digital literacy and skills acquisition, refers to developing and maintaining a repertoire of skills ranging from basic device use to more complex tasks such as navigating online services and managing personal data, which is fundamental for bridging the digital divide (Blažič & Blažič, 2020). The second component, adaptive use of technology for personal needs, highlights how older adults tailor technologies - such as assistive tools, health apps, or communication platforms - to their own preferences and life circumstances, thereby supporting independence and self-efficacy (Yusif et al., 2016). The third component, online social engagement and community participation, underscores the role of digital platforms in sustaining and expanding social networks, including intergenerational connections and participation in online communities that counteract isolation (Rillera Marzo, 2024). The fourth component, continuous learning and growth in digital environments, captures the ongoing processes of exploration and adaptation through which older adults keep up with technological change, reinforcing a view of later life as a period of continued learning rather than decline (Muñoz-Rodríguez et al., 2020). Together, these components highlight Digital Maturity as a dynamic, evolving process rather than a fixed endpoint, yet existing research has rarely examined how they interact in practice or how they contribute jointly to digital well-being Fig. 1.

The multidimensional model of Digital Maturity explicitly integrates cognitive, emotional, and social dimensions of digital engagement in later life. Cognitively, the framework attends to how older adults acquire and refine digital skills, solve problems online, and critically evaluate digital content, building on evidence that certain forms of digital engagement can enhance cognitive functioning (Liu & Li, 2024). Emotionally, it foregrounds how digital engagement can nurture positive affect, confidence, and a sense of mastery, while also acknowledging experiences of frustration or anxiety, and how these are managed over time (Damant et al., 2017). Socially, the framework focuses on the ways digital technologies facilitate social support, intergenerational contact, and participation in virtual communities, which can reinforce feelings of belonging and reduce loneliness (Liu & Li, 2024). By emphasising the interdependence of these dimensions, the model provides a holistic account of Digital Maturity and underscores that cognitive gains, emotional experiences, and social connections are mutually shaping aspects of older adults' digital lives.

Central to this framework is a strength-based approach that contrasts with traditional deficit-based models of ageing and technology. A strength-based perspective foregrounds older adults' existing capabilities, life-course experiences, and capacity for lifelong learning, viewing them as active agents who can shape their own digital trajectories rather than as passive recipients of technological change (Hertzog et al., 2008; Neves & Mead, 2021). This orientation supports autonomy and self-directed engagement, encouraging older adults to define their own goals and interests in digital environments and to build upon what they already know and value (Hill et al., 2015). In contrast, deficit-based approaches emphasise limitations, assume a homogeneous decline in digital abilities, and risk reinforcing ageist stereotypes and self-ageism, which can deter older adults from experimenting with new technologies (Hargittai & Dobransky, 2017; Zou et al., 2024). The Digital Maturity framework explicitly seeks to shift this narrative by focusing on heterogeneity, adaptability, and agency, and by advocating interventions that build on strengths rather than solely attempting to remedy perceived deficits.

Within this study, Digital Maturity is not only a theoretical construct but also an analytical lens that structures the empirical work. The four components and three dimensions of the framework inform the design of the narrative interview guide and guide the interpretation of participants' accounts of digital engagement, particularly in relation to social media and online communities. The third research question (RQ3) is explicitly grounded in this framework, asking how Digital Maturity manifests in older adults' lived experiences across cognitive, emotional, and social dimensions. The subsequent findings sections map onto specific elements of the framework: 'Personal digital engagement experiences' speaks primarily to cognitive aspects and skills trajectories; 'Meaning-making in digital socialisation' and 'Emotional and social dimensions of online interactions' focus on emotional and social dimensions; 'Barriers and enablers of digital participation' and 'Self-perception as digital consumers' cut across components by showing how structural conditions, identity work, and agency shape movement within and between phases of Digital Maturity. By making these connections explicit, the study demonstrates how the Digital Maturity framework can be operationalised in qualitative research and how it helps to synthesise

heterogeneous narratives into a coherent, multidimensional account of older adults' digital engagement.

3 Methodology

This study employed a qualitative design to explore older adults' experiences with digital environments, with a particular focus on social media platforms and online communities. The research questions examined how older adults navigate these spaces, which factors influence their Digital Maturity, and how their narratives align with or challenge the proposed framework.

3.1 Participants and recruitment

Seventeen participants aged 55–75 were recruited through purposive sampling to capture a diverse group of older adults at different stages of later life. Participants were initially contacted via community and senior centres, university lifelong learning programmes, and local associations, complemented by snowballing through existing contacts to reach individuals regularly engaging with digital technologies. From an initial pool of 32 individuals who expressed interest, those who met the inclusion criteria and contributed to maximum variation in gender, socio-economic background, and digital proficiency were invited to participate, resulting in a final sample of 17.

Inclusion criteria required participants to be between 55 and 75 years old, to be regular users of at least one digital device (e.g., smartphone, tablet, computer), and to engage with social media or online communities at least once a week. The sample comprised 10 women and 7 men. Socio-economic status was operationalised using a combination of highest educational attainment and main occupational history, and participants were grouped into lower, middle, and higher SES categories (5 lower, 7 middle, 5 higher). Digital proficiency was assessed through brief screening questions about frequency of Internet use, variety of online activities performed, and self-rated confidence in solving digital problems, and categorised as low, moderate, or high (4 low, 8 moderate, 5 high). The aim was not statistical representativeness but maximum variation in experiences across these dimensions.

The sample size was guided by saturation principles for in-depth narrative work, where 15–20 interviews are commonly sufficient to capture thematic richness. Recruitment ceased once no substantively new themes emerged in successive interviews, indicating that theoretical saturation had been reached (Braun & Clarke, 2019).

3.2 Data collection

Data were collected through semi-structured, in-depth interviews lasting between 60 and 90 min. An interview guide was developed based on the research questions and the Digital Maturity framework, covering topics such as personal digital histories, social media practices, perceived barriers and enablers, emotional experiences online, and reflections on ageing and technology. According to participant preference

and accessibility, interviews were conducted either face-to-face (e.g., in community centres, participants' homes, or university facilities) or via video conferencing platforms. All interviews were audio-recorded with participants' informed consent and transcribed verbatim for analysis.

3.3 Data analysis

A narrative analysis approach was used to interpret the interview data, allowing attention to life-course trajectories, turning points, and meaning-making processes in participants' digital engagement. The analysis followed a five-step process: (1) familiarisation with the data through repeated reading of transcripts; (2) identification of key events and turning points in participants' digital histories; (3) analysis of narrative themes related to Digital Maturity (e.g., learning, resilience, social connection); (4) examination of participants' self-positioning as digital users and as older adults; and (5) interpretation of these narratives in relation to the cognitive, emotional, and social dimensions of the Digital Maturity framework (Dodgson, 2017). Throughout the analysis, the research team moved iteratively between individual narratives and cross-case patterns to preserve narrative depth while identifying shared processes.

3.4 Trustworthiness

Several strategies were implemented to enhance the trustworthiness of the study. Participants were invited to review their interview transcripts and, where feasible, preliminary interpretations of their narratives, allowing them to clarify or elaborate on their accounts (member checking). Regular peer debriefing sessions among the research team were used to challenge assumptions, refine emerging interpretations, and discuss alternative readings of the data. Thick descriptions of participants' contexts and digital practices were developed to enable readers to assess the transferability of the findings. In addition, a reflexive journal was maintained throughout the research process to document analytic decisions, positionality, and potential biases (Darawsheh, 2014).

3.5 Ethical considerations

The study protocol was reviewed and approved by the University's Institutional Review Board. All procedures adhered to the ethical guidelines of the Research Centre and the principles of the Declaration of Helsinki, ensuring respect for autonomy, confidentiality, and non-maleficence. Participants received written and verbal information about the study, provided informed consent, and were reminded that they could withdraw at any time without consequence. To protect anonymity, all identifying information was removed from transcripts and pseudonyms were used in reporting the findings.

By combining narrative interviews with narrative analysis within the Digital Maturity framework, this methodological approach provided a rich, contextualised understanding of older adults' experiences with digital technologies and social media, and

supported the development of theoretically informed, practice-relevant insights into digital engagement in later life.

4 Findings and discussion

4.1 Personal digital engagement experiences

Participants' narratives revealed diverse digital engagement trajectories, reflecting the heterogeneity of older adults' technological interactions and how they perceive and navigate their online lives (RQ1). Many described a gradual adoption process, often initiated by family encouragement or necessity, such as starting to use Facebook to see grandchildren's photos and later managing community pages, illustrating how Digital Maturity can evolve over time as older adults actively reshape their online presence (Kebede et al., 2022). A life-course perspective was evident, with past experiences and accumulated decisions shaping current attitudes toward technology; as one participant remarked:

> We have lived all these years and are not bothered now.

This quote highlights how long-standing dispositions influence present digital engagement (Hill et al., 2015).

Beyond these broad trajectories, several participants emphasised a targeted, pragmatic approach to digital engagement, prioritising skills and activities perceived as directly valuable for daily life. For example, one participant noted:

> I see a value in learning how to do a specific activity, such as finding health information or communicating with family and friends.

This quote noted a focus on concrete, meaningful tasks that is consistent with Mannheim et al. (2019), who emphasise older adults' interest in learning specific digital activities. Another participant described moving from disinterest to curiosity as they realised the breadth of information and content (history, geography, poetry) available online, underscoring how personal interests can act as powerful motivators for digital engagement.

These patterns address RQ1 by showing that older adults' digital engagement is shaped by a complex interplay of life-course histories, personal interests, and perceived value, rather than by age alone. They also speak to RQ3 by illustrating the cognitive dimension of Digital Maturity (skills and problem-solving) and the continuous learning component, as participants selectively expand their digital repertoires in response to what matters most to them. Consistent with Blažič and Blažič (2020), the findings suggest that interventions which build on older adults' existing interests and perceived benefits - rather than generic training - may be more effective in fostering digital inclusion.

4.2 Meaning-making in digital socialisation

Digital platforms emerged as significant spaces for social connection and self-expression, with many participants using social media to maintain relationships and share aspects of their everyday lives, such as hobbies or family events. A participant shared:

> Sharing my gardening progress on Instagram gives me a sense of purpose and connects me with like-minded people.

This quotes illustrates how social media can function as a distinct social resource in later life, complementing face-to-face interactions and supporting social connectivity (Cornejo et al., 2013). These findings directly address RQ1 by clarifying how older adults perceive the relational value of digital engagement and RQ3 by highlighting the social dimension of Digital Maturity, particularly the component of online social engagement and community participation.

Participants also framed digital technologies as vital tools for staying connected during moments of physical separation, especially in the context of pandemic-related restrictions. One participant explained that connecting digitally helps prevent loneliness and isolation and promotes mental and emotional well-being, echoing studies that link digital connectivity with improved well-being among older adults. At the same time, experiences with platforms such as Zoom were sometimes described as confusing or frustrating, indicating that the benefits of digital socialisation are mediated by usability and support, and reinforcing debates about the ambivalent mental-health impacts of online social interaction (Chen et al., 2022; Leist, 2013; Yu et al., 2021).

These findings contribute to RQ2 by identifying strategies older adults use to manage social connection digitally, such as privileging certain platforms over others or relying more heavily on modalities they find intuitive. They also enrich RQ3 by showing how the emotional dimension of Digital Maturity encompasses both positive experiences (belonging, purpose) and challenges (frustration, fatigue) and how older adults make sense of these tensions in constructing their digital social identities.

4.3 Barriers and enablers of digital participation

The analysis revealed a complex interplay of barriers and enablers shaping older adults' digital participation, foregrounding the strategies they employ to overcome challenges and leverage opportunities (RQ2). On the barrier side, participants frequently mentioned complex interfaces, rapid technological change, and concerns about online safety; worries about 'clicking the wrong thing' or being exposed to hackers underscored how security anxieties can inhibit engagement and confidence. These concerns mirror prior research on technical and psychological barriers in later-life technology use and highlight the need for targeted education on digital safety tailored to older adults' specific fears and learning preferences (Barrie et al., 2021).

At the same time, participants identified powerful enablers, particularly community-based initiatives and peer or intergenerational support. Local workshops - such

as those organised by libraries or community centres - were described as pivotal in building confidence for tasks like online banking, while family members and friends, especially grandchildren, often acted as patient, trusted 'digital mentors'. These accounts address RQ2 by illustrating concrete strategies older adults use to navigate digital challenges (seeking local training, drawing on family expertise) and align with the skills acquisition and adaptive use components of Digital Maturity (RQ3), where learning is embedded in everyday relationships and community contexts.

Interestingly, several participants expressed a desire for more advanced training, stating that they 'know the basics' but want to learn features such as photo editing or cloud storage, challenging assumptions that older adults are primarily novice users. This demand for tiered, progressive learning opportunities reinforces the argument for differentiated digital literacy programmes that recognise varying levels of Digital Maturity and support continuous learning, rather than focusing solely on basic access. Collectively, these findings extend earlier work by showing that digital inclusion policies must attend not only to initial barriers but also to the ongoing ambitions and aspirations of older users.

4.4 Emotional and social dimensions of online interactions

Participants described a wide range of emotions associated with digital engagement, from enjoyment, reassurance, and connectedness to anxiety, frustration, and occasional overload. For example, one interviewee noted loving video calls with family but feeling more isolated when technical glitches disrupted communication, capturing the ambivalent emotional texture of digital socialisation in later life (Kebede et al., 2022). Many participants portrayed online and offline interactions as complementary rather than substitutive, reporting that chatting online before meeting in person could make face-to-face encounters feel more meaningful, a pattern consistent with research linking social media use to mood benefits when embedded in broader social routines (Kim & Fingerman, 2022).

These accounts speak directly to RQ3 by illuminating the emotional dimension of Digital Maturity - how older adults regulate feelings of anxiety, satisfaction, and fatigue in digital contexts - and to RQ2 by revealing coping strategies such as selective platform use or temporary withdrawal when technology feels overwhelming. Some participants avoided specific platforms, like Zoom, due to concerns about keeping up with features or 'doing something wrong', illustrating how technological anxiety can act as a barrier that potentially exacerbates feelings of isolation for certain individuals. Privacy worries also shaped engagement; the fear of personal information 'getting out there' led some participants to limit what they shared or to avoid particular services altogether, reinforcing the importance of privacy-enhancing design for older users.

These findings extend existing debates on digital technologies and well-being by demonstrating that the effects of digital socialisation are highly individualised and contingent on personal histories, skills, and social networks. They further underscore that supporting Digital Maturity requires not only skill-building but also attending to emotional safety and comfort online, for example through more intuitive interfaces, clear privacy controls, and empathetic support.

4.5 Self-perception as digital consumers

The study uncovered a broad spectrum of self-perceptions among older adults as digital consumers, which strongly influenced their motivation to engage with technologies and the strategies they used to navigate digital environments (RQ2). Some participants framed themselves as capable, curious users who saw digital services as opportunities to remain 'sharp and involved in society', using engagement with 'the latest apps' to resist ageist stereotypes and signal ongoing competence (Neves & Mead, 2021). Others articulated anxiety and hesitation, especially around high-stakes tasks such as online banking, describing fear of mistakes and security breaches that limited their willingness to adopt new services, consistent with findings on technology anxiety and its indirect effects on use intentions (Mariano et al., 2022).

Interface design and perceived respect for older adults' experience emerged as central to these self-perceptions. Participants rejected 'dumbed-down' applications and instead called for intuitive, well-structured interfaces that acknowledge their cognitive and experiential resources, echoing research suggesting that cognitive age and self-concept are more salient than chronological age in shaping adoption (Yang & Shih, 2020). Positive technological self-view and self-efficacy were associated with greater openness to experimenting with new tools and higher subjective well-being, aligning with An et al. (2024) and reinforcing the importance of building confidence alongside skills.

These patterns address RQ1 by showing how older adults understand themselves as digital actors and RQ3 by demonstrating how Digital Maturity includes an identity component - how individuals position themselves in relation to technology, age norms, and societal expectations. They also highlight that one-size-fits-all approaches to design and training risk overlooking the diversity of older adults' digital identities and needs, supporting calls for person-centred, strengths-based interventions that build on positive self-perceptions while directly addressing specific anxieties and constraints (Barrie et al., 2021).

5 Conclusion

This study examined how older adults perceive and navigate digital engagement, particularly on social media and in online communities (RQ1), revealing heterogeneous trajectories shaped by life-course experiences, personal interests, and the perceived usefulness of specific digital activities. Older adults' digital practices ranged from cautious, task-oriented use to expansive, creative engagement, challenging deficit-based assumptions that equate later life with uniform digital exclusion. The findings also showed that older adults employ a variety of strategies to overcome barriers and leverage opportunities in their digital engagement (RQ2), including drawing on community-based learning, intergenerational support, selective platform use, and privacy-management practices, while sometimes deliberately avoiding certain technologies when they feel overwhelmed or insecure. Finally, the study demonstrated how Digital Maturity manifests in the lived experiences of older adults (RQ3), across cognitive dimensions (skills acquisition, prob-

lem-solving), emotional dimensions (confidence, enjoyment, anxiety regulation), and social dimensions (online social participation, intergenerational connection, and resistance to ageist stereotypes), supporting a strength-based view of later-life digital engagement.

More broadly, this research expands the concept of digital inclusion for older adults by evidencing the diversity of their competencies, motivations, and interests, countering the notion of a single 'digital divide' defined by age alone and underscoring the importance of nuanced, person-centred understandings of digital participation in later life. It also illuminates the complex interplay between digital engagement and social connection: while many participants experienced social media as a vital resource for maintaining relationships and mitigating isolation, others reported ambivalence, frustration, or emotional fatigue, indicating that the social benefits of technology are contingent on usability, support, and individual circumstances. These insights call for interventions and policies that recognise both the opportunities and the limits of digital technologies in addressing loneliness and social exclusion among older adults.

The introduction of Digital Maturity as a multidimensional framework offers a holistic lens for analysing and supporting older adults' technology use, integrating cognitive, emotional, and social aspects of digital participation and foregrounding agency, lifelong learning, and heterogeneity rather than decline. This framework has practical implications for the design of digital literacy programmes and services, suggesting the value of tiered learning opportunities that build on existing strengths, respect older adults' experience, and address emotional as well as technical barriers. For marketing and consumer research, the findings argue for moving beyond age-based segmentation and stereotypical portrayals, advocating instead for strategies that attend to digital confidence, online activity preferences, and the diverse identities of older digital consumers.

The study's qualitative design and modest, context-specific sample limit the statistical generalisability of the findings, although they provide rich, in-depth insight into processes and meanings that are often obscured in large-scale surveys. Future research could build on this work through longitudinal designs that trace the evolution of Digital Maturity over time, cross-cultural comparisons that interrogate how different social and policy contexts shape digital engagement, and intersectional analyses examining how age intersects with gender, class, health, and other identities in structuring digital opportunities and constraints. Overall, the study encourages researchers, policymakers, practitioners, and designers to move beyond simplified narratives about older adults and technology, to recognise the diversity and dynamism of later-life digital engagement, and to develop more inclusive, empowering approaches that support older adults' rights and capacities to participate fully in an increasingly digital world.

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Data availability The datasets generated and analysed during the current study are not publicly available due to privacy concerns but are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate The Internal Review Board of the University reviewed and approved the study protocol. The board determined the study's compliance with ethical standards, given the non-sensitive nature of the information collected and the carefully constructed interview guide. All participants provided informed written consent prior to their involvement in the study. The research was conducted in full accordance with the ethical research practices of the Research Centre and adhered to the principles of the Declaration of Helsinki, ensuring the protection of participants' rights and well-being throughout the study.

Consent for publication Not Applicable – This manuscript contains no person's data.

Competing interests The authors declare that they have no competing interests.

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